Appendix I: Traffic Study

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Chico Walmart Expansion Project

Transportation Study

June 13, 2016

RS15-3366

FEHR PEERS

1. INTRODUCTION

This study analyzes the potential transportation impacts of the proposed Walmart Expansion Project under Existing, Short Term, and Cumulative conditions. Where significant impacts are identified, mitigation measures are recommended to lessen their significance.

PROJECT DESCRIPTION

According to *Preliminary Site Plan, Walmart Store No. 2044-09 Expansion* (RSC Engineering, 2015), the project site is situated on approximately 27 acres north of Wittmeier Drive, west of Forest Avenue, south of Baney Lane, and east of State Route 99 (SR 99). The proposed project includes the following land use components:

- Expansion of the Walmart store to have an additional 66,500 square feet (131,302 square-foot existing Walmart expanded to 197,802 square feet)
- New fuel station with 16 fueling positions and a 1,500 square-foot convenience market
- Development of Parcel 2 assumed to accommodate 26,300 square feet of retail or restaurant uses
- Development of Parcel 3 assumed to accommodate 25,700 square feet of retail or restaurant uses.

The project includes the following modifications to the existing transportation network as described in **Section 3 - Existing Plus Project Conditions**.:

STUDY AREA

Potential project impacts are analyzed at study facilities operated and maintained by the City of Chico, Caltrans, and private property owners. City of Chico study facilities include intersections in a study area generally bounded by and including E 20th Street, Notre Dame Boulevard, Skyway Road, and Dr. Martin Luther King Jr. Parkway. Caltrans study facilities include SR 99 mainline and ramp facilities adjacent to the project site, including the interchanges at E 20th Street and Skyway Road.

STUDY INTERSECTIONS

The study area includes the fourteen study intersections listed in **Table 1**. The location of the project site in relation to the study intersections is presented in **Figure 1**. All study intersections are operated and maintained by the City of Chico except for intersections 2, 3, 12, and 13, which are operated and maintained by Caltrans.

TABLE 1:
STUDY INTERSECTIONS

	Intersection	Jurisdiction
1	E 20th St. / Dr. MLK Jr. Pkwy.	City of Chico
2	E 20th St. / SR 99 SB Ramps	Caltrans
3	E 20th St. / SR 99 NB Ramps	Caltrans
4	E 20th St. / Business Lane	City of Chico
5	E 20th St. / Chico Mall Access	City of Chico
6	E 20th St. / Forest Ave.	City of Chico
7	Forest Ave. / Baney Lane	City of Chico
8	Forest Ave. / Walmart Driveway	City of Chico
9	Forest Ave. / Wittmeier Dr. - Talbert Dr.	City of Chico
10	Forest Ave. / Notre Dame Blvd.	City of Chico
11	E Park Ave. / Dr. MLK Jr. Pkwy.	City of Chico
12	Skyway Road / SR 99 SB Ramps	Caltrans
13	Skyway Road / SR 99 NB Ramps	Caltrans
14	Skyway Road / Notre Dame Blvd.	City of Chico

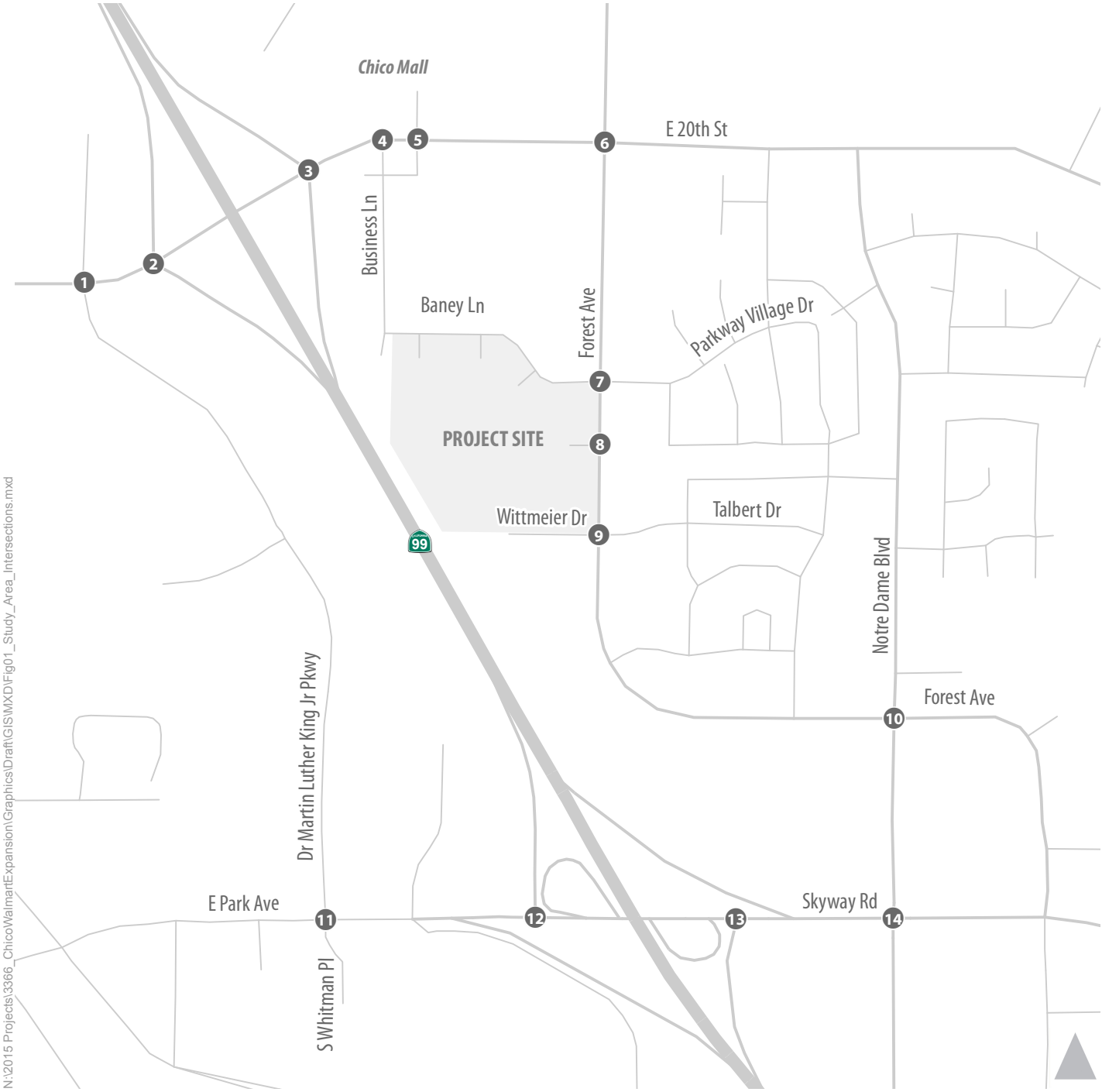


Figure 1

Study Area Intersections

2. ENVIRONMENTAL SETTING

The existing transportation system within the study area is comprised of roadways, bicycle facilities, pedestrian facilities, and public transit service and facilities operated and maintained by multiple jurisdictions.

EXISTING ROADWAY SYSTEM

A network of local roadways, private roadways, and freeway facilities form the roadway system within the study area. The following key roadways within this system would serve trips associated with the proposed project.

Local Roadways

E 20th Street is a major east-west arterial that begins in the west at Park Avenue, and continues east through the SR 99 interchange to Bruce Road, where the roadway continues as Warfield Lane into a residential development. With the exception of the easternmost ½ mile of roadway near Bruce Road, E 20th Street is a divided four lane roadway with channelized left turn pockets at major streets, a posted Class II bike lane, and a posted speed limit of 35 mph.

East Park Avenue and **Skyway Road** combine to serve as a major east-west arterial. East Park Avenue (Business SR 99) extends westward from the SR 99 interchange approximately ¾ mile before terminating at Midway / Park Avenue. Skyway Road extends eastward from the SR 99 interchange into the foothills. In the vicinity of the project site, both roadways are divided four lane facilities with channelized left turn pockets at major streets, except within the SR 99 interchange where only a single westbound through lane exists between the ramps. The roadways maintain a posted speed limit of 35 mph west of Notre Dame Boulevard, 45 mph between Notre Dame Boulevard and the City's eastern limits, and 50-55 mph east of the City.

Forest Avenue is a major north-south arterial providing connectivity between the east-west arterial streets of SR-32, E 20th Street, and Skyway Road (via Notre Dame Boulevard as described below). Within the vicinity of the project, Forest Avenue maintains a divided four lane configuration arterial with channelized left turn pockets at major streets, a posted Class II bike lane, and a posted speed limit of 35 mph.

Notre Dame Boulevard is a north-south arterial connecting Forest Avenue and Skyway Road, serving as the southern continuation for Forest Avenue traffic traveling through to Skyway Road. Although Notre Dame Boulevard continues north from Forest Avenue and south from Skyway Road, these facilities are two lane collector roadways. Between Forest Avenue and Skyway Road, the roadway is a divided four lane facility with channelized left turn pockets and a posted speed limit of 35 mph.

Wittmeier Drive is a short two lane east-west roadway along the southern boundary of the proposed project, terminating to the west as a cul-de-sac, and to the east at Forest Avenue. The roadway continues east through Forest Avenue into a residential subdivision as Talbert Drive. Two future driveways along Wittmeier Drive will provide access to the proposed Walmart Expansion project.

Private Roadways

Baney Lane is a private east-west street that has a two lane undivided cross-section with a left-turn pocket at the easternmost Walmart driveway. At the eastern terminus, Baney Lane forms a signalized intersection with Forest Avenue with two left-turn lanes and one through lane. East of the Forest Avenue intersection, Baney Lane continues into a residential subdivision as Parkway Village Drive. At the western terminus, Baney Lane tees into Business Lane. There are three existing Walmart driveways on Baney Lane that provide access to the project site.

Business Lane is a private street that runs in a north-south direction providing connectivity between E 20th Street and Baney Lane. Business Lane has a two lane undivided cross-section. At the northern terminus, Business Lane forms a right-turn-only stop sign controlled intersection with E 20th Street. Within the cul-de-sac located at the roadway's southern terminus south of Baney Lane, the roadway transitions into the private alley behind the existing Walmart, which will also exist behind the proposed project as an additional access route to and from the project site.

Chico Mall Access and the Toys R Us Parking Lot Drive Aisle are private internal roadways providing connectivity between E 20th Street and Business Lane. The Toys R Us Parking Lot Drive Aisle runs east-west with two eastbound lanes and one westbound lane. The Chico Mall Access roadway runs north-south with a four lane divided cross section. The roadway meets E 20th Street at a signalized intersection. Outbound traffic traveling westbound on E 20th Street often utilize these private roadways due to the left-turn restriction at the E 20th Street / Business Lane intersection. However, the City's preference is for traffic to utilize Forest Avenue instead of Business Lane, a private street.

Freeway Facilities

State Route 99 (SR 99) is a major state freeway facility that traverses north/south through central and northern California. SR 99 mainline, ramp, and ramp terminal facilities are operated and maintained by Caltrans. SR 99 serves as the primary inter-regional auto and truck travel route that connects the northern valley cities of Chico and Yuba City with Sacramento and central valley cities of Stockton, Modesto, Fresno, and Bakersfield. Within the City of Chico, SR 99 also serves as a major commuter route providing vital north/south circulation, with a four lane divided cross section and a posted speed limit of 55 mph. Within the study area, SR 99 has interchanges with two local roadways, E 20th Street and Skyway Road.

Caltrans reported an Annual Average Daily Traffic Volume (AADT) of 50,000 and 71,000 vehicles on SR 99 just south and north of the E 20th Street interchange, respectively, in the *2014 Traffic Volumes on California State Highways* publication. Additionally, the average truck percentage on SR 99 is approximately 6.6 percent for the section south and north of the E 20th Street interchange per the *2014 Average Daily Truck Traffic on the California State Highway System* publication.

EXISTING BICYCLE FACILITIES

The California Department of Transportation recognizes four classifications of bicycle facilities:

- Class I – A Class I facility, commonly referred to as a Bikeway or Bike Path, is a facility separated from automobile traffic for the exclusive use of bicyclists. Class I facilities can be designed to accommodate other modes of transportation, including pedestrians and equestrians, in which case they are referred to as shared use paths.`

- Class II – Class II facilities, commonly referred to as Bike Lanes, are dedicated facilities for bicyclists immediately adjacent to automobile traffic. Class II facilities are identified with striping, pavement markings and signage.
- Class III – Class III facilities, commonly referred to as Bike Routes, are on-street routes where bicyclists and automobiles share the road. They are identified with pavement markings and signage, and are typically assigned to low-volume and/or low-speed streets.
- Class IV – Class IV facilities, commonly referred to as protected bicycle lanes or cycle tracks, are a facility that combines elements of Class I and Class II facilities. They offer an exclusive bicycle route immediately adjacent to a roadway similar to a Class II facility, but provide a physical separation from traffic with plastic delineators, raised curb, or parked automobiles.

The project site is currently served by a variety of bicycle facilities, as depicted in **Figure 2**. A Class I path traverses the southern edge of the existing Walmart, providing a separated bicycle and pedestrian route between Forest Avenue and Business Lane. The north-south portion of the path is part of the SR 99 Bikeway, a crosstown bicycle facility that the City plans to extend south to Skyway Road. Access points are available near the southeast corner of the existing Walmart, at the Business Lane cul-de-sac, and at the Forest Avenue and Baney Lane intersection. Class II bike lanes are present along Business Lane and Forest Avenue immediately abutting the eastern and western edges of the existing Walmart. Nearby Class II facilities along E 20th Street, Skyway Road, and Notre Dame Boulevard provide connectivity between the project site and destinations throughout Chico.

Currently, there is a bicycle rack located in front of the store for Walmart patrons and employees.

EXISTING PEDESTRIAN FACILITIES

Pedestrian facilities are generally present on roadways throughout the study area. Crosswalks are present at local signalized intersections, and continuous sidewalks are available on all but the following local roadways:

- The north side of Forest Avenue, between Flying V Street and Bar Triangle Street.
- The south side of Skyway Road, from Carmichael Drive to Notre Dame Boulevard.

Sidewalks are present along the Business Lane, Baney Lane, Forest Avenue, and Wittmeier Drive frontages of the project site. Pedestrian connections to Walmart are also available via the Class I path bisecting the project site, with path access available near the southeast corner of the store.

EXISTING TRANSIT SERVICE AND FACILITIES

Butte Regional Transit (B-Line) provides bus service in Chico and throughout Butte County. B-Line is administered and operated by the Butte County Association of Governments.

B-Line routes and stops within the vicinity of the project site are displayed in **Figure 3**. Two B-Line stops are located immediately adjacent to the existing Walmart store along Forest Avenue south of Baney Lane. Each stop is outfitted with a shelter, benches, lighting, and trash receptacles. Together, these stops serve as the Forest Xfer transfer point for B-Line services.

Six B-Line routes serve the two stops near Walmart, including Routes 5, 14, 17, 20, 40, and 41. Route schedule information is summarized in **Table 2**. Bus service is generally available during weekday and Saturdays only, with limited service availability on Sundays. Bus routes serving Walmart connect riders to destinations throughout Chico and the broader Butte County area, including Oroville and Paradise.

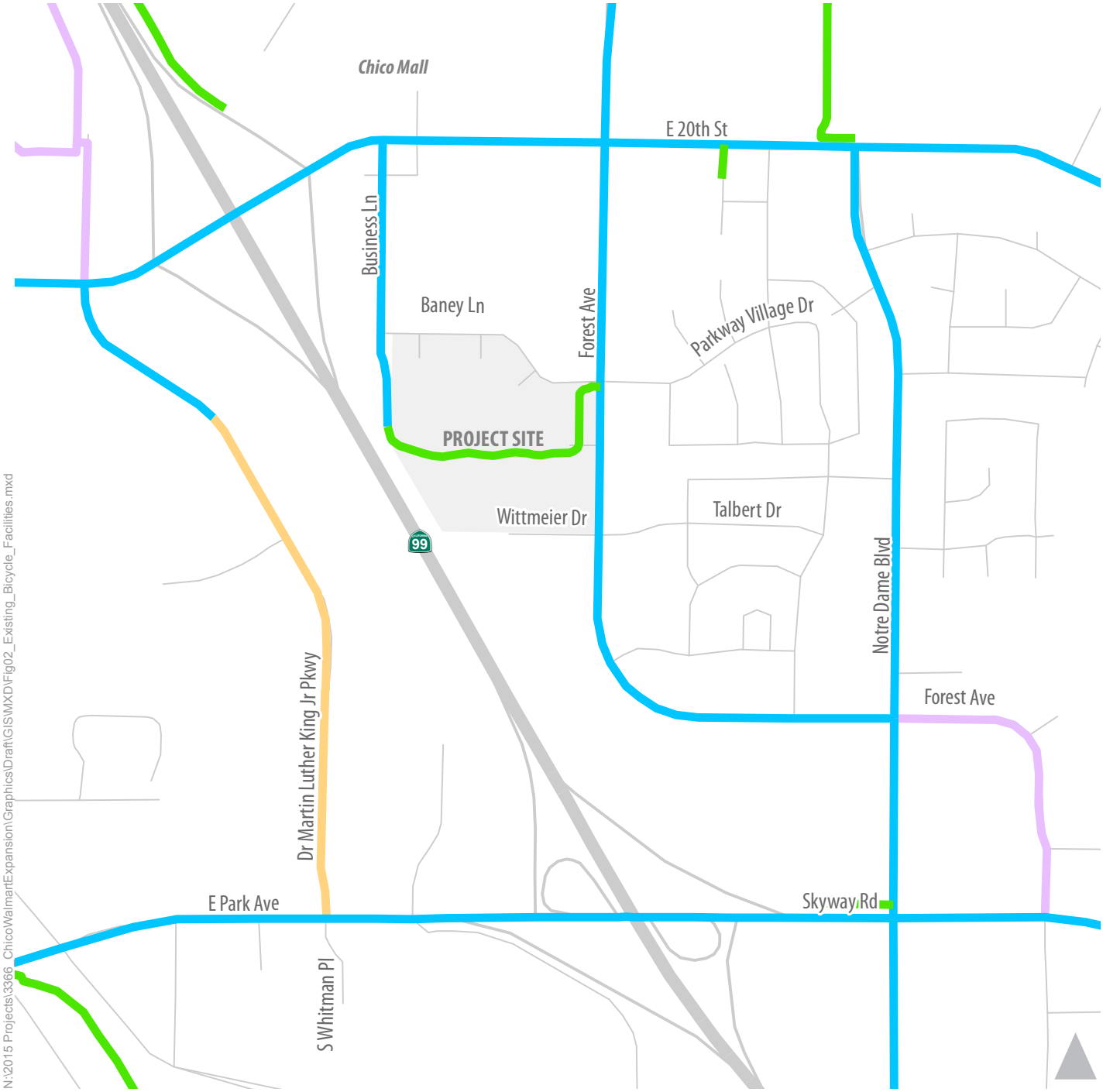
TABLE 2:
EXISTING TRANSIT SERVICE SCHEDULE SUMMARY

Route	Weekday		Saturday		Sunday	
	Frequency (min)	Span	Frequency (min)	Span	Frequency (min)	Span
5 (E. 8th Street)	30/60	7 AM – 8 PM	60	8 AM – 7 PM	-	-
14 (Park / Forest / MLK)	30/60	6 AM – 10 PM	60	8 AM – 7 PM	-	-
17 (Park / MLK / Forest)	60	7 AM – 6 PM	60	8 AM – 6 PM	-	-
20 (Chico – Oroville)	60	6 AM – 8 PM	120	8 AM – 6 PM	120	8 AM – 6 PM
40 (Paradise – Chico)	60/120	7 AM – 7 PM	120	8 AM – 7 PM	120	10 AM – 6 PM
41 (Paradise Pines – Chico)	60/120	6 AM – 7 PM	180	10 AM – 6 PM	-	-

Notes:

1. Where applicable, service frequency is provided for peak/off peak time periods

Source: Butte Regional Transit



Existing Bicycle Facilities

- Class I Bike Path
- Class II Bike Lane
- Class III Bike Route
- Connector Route

Figure 2

Existing Bicycle Facilities

Transit Stop

Butte Regional Transit Route

Figure 3

Existing Transit Routes and Facilities

ANALYSIS METHODS

Traffic operations at each study roadway facility were evaluated using Level of Service (LOS). LOS is a qualitative measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion and delay under stop-and-go conditions.

Signalized Intersections

Traffic operations at all study intersections operated and maintained by the City of Chico and Caltrans are analyzed for weekday AM, weekday PM, and Saturday peak hours using procedures and methodologies described in the *Highway Capacity Manual* (*HCM*) (Transportation Research Board, 2010). These methodologies were applied using Synchro traffic operations analysis software.

Table 3 specifies the average delay range for each LOS category based on HCM procedures. The reported average delay values are rounded to the nearest second. The associated LOS is based on the second decimal point of the delay values. For instance, a signalized intersection with average delay of 34.85 would have a reported LOS of C, whereas a signalized intersection with average delay of 35.05 would have a reported LOS of D. However, the reported delay for both instances would be '35 seconds'.

Unsignalized Intersections

Unsignalized study intersections are analyzed using Synchro, which employs the HCM 2010 procedures. At all-way stop-controlled intersections, the average delay and LOS is reported for the average of all vehicles passing through the intersection. At side-street stop-controlled intersections, the average delay and LOS is reported for both the entire intersection and for the minor-street movement with the greatest delay. **Table 3** specifies the average delay range for each LOS category based on HCM procedures.

TABLE 3: INTERSECTION LEVEL OF SERVICE THRESHOLDS		
Level of Service	**Signalized Intersections**	**Unsignalized Intersections**
	HCM[1] (Avg. Delay per Vehicle)	**HCM[1] (Avg. Delay per Vehicle)**
A	≤ 10.0	≤ 10.0
B	> 10.0 to 20.0	> 10.0 to 15.0
C	> 20.0 to 35.0	> 15.0 to 25.0
D	> 35.0 to 55.0	> 25.0 to 35.0
E	> 55.0 to 80.0	> 35.0 to 50.0
F	> 80.0	> 50.0

Notes:

1. Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

Freeway Facilities

Per Caltrans standards, existing conditions freeway segment operations are evaluated using methodologies from the Transportation Research Board's 2010 *Highway Capacity Manual*. The LOS for a basic freeway segment is based on the vehicle density (passenger cars/lane/mile) as shown in **Table 4**. Freeway merge segments are those where two traffic streams combine into one single stream, while freeway diverge segments are those where one traffic stream separates into two separate streams. The performance LOS for merge and diverge sections is computed in one of two ways. If both the ramp and the adjacent freeway mainline segment are under capacity, then LOS is based on the density of the ramp junction. If either the ramp or the adjacent freeway mainline segment have reached (or exceed) capacity, then the merge/diverge segment is considered to operate at LOS F regardless of the computed ramp junction density. The LOS for ramp junctions is based on the vehicle density (passenger cars/lane/mile) as shown in **Table 4**.

Per Caltrans standards, the performance of freeway ramp weaving segments under future conditions was analyzed using the Leisch methodology as defined in the *2010 Highway Design Manual* (Caltrans). The Leisch method calculates weave section density in passenger cars per mile per lane and assigns a LOS based on appropriate thresholds.

TABLE 4:
FREEWAY LEVEL OF SERVICE DEFINITIONS

Level of Service[1]	Mainline (Density)[1]	Ramp Junctions (Density)[1]
A	≤ 11	≤ 10
B	> 11 to 18	> 10 to 20
C	> 18 to 26	> 20 to 28
D	> 26 to 35	> 28 to 35
E	> 35 to 45	> 35
F	> 45 or Demand exceeds capacity[2]	Demand exceeds capacity[2]

Notes:

1. Density expressed in passenger car equivalents per hour per mile per lane.
2. Occurs when freeway demand exceeds upstream (diverge) or downstream (merge) freeway segment capacity, or if off-ramp demand exceeds off-ramp capacity.

Source: *HCM*, (Transportation Research Board, 2010) Exhibits 11-5 and 13-2.

ANALYSIS SCENARIOS

The following scenarios are analyzed in this report:

- Existing Conditions – represents the existing setting upon which project-specific impacts are evaluated.
- Existing Plus Project Conditions – represents Existing Conditions plus the full buildout of the Walmart Expansion Project.
- Short Term No Project Conditions – assumes the development of approved projects in Chico expected to be developed within the next five years, but no development associated with the Walmart Expansion Project.
- Short Term Plus Project Conditions – represents Short Term No Project Conditions plus the full buildout of the Walmart Expansion Project.
- 2035 Cumulative No Project Conditions – assumes the development of numerous reasonably foreseeable land uses expected in 2035, but no development associated with the Walmart Expansion Project.
- 2035 Cumulative Plus Project Conditions – represents 2035 Cumulative No Project Conditions plus the full buildout of the Walmart Expansion Project.

TRAFFIC COUNTS

Freeway mainline and study intersection traffic counts were collected on Wednesday, October 7, 2015 and Saturday, October 10, 2015 during the weekday AM, weekday PM, and Saturday peak periods. During all counts, weather conditions were generally dry, no unusual traffic patterns were observed, and the Chico Unified School District was in full session.

The AM peak hour is defined as the one-hour of peak traffic flow (which is the highest total volume count over four consecutive 15-minute count periods) counted between 7:00 AM and 9:00 AM on a typical weekday. The PM peak hour is defined as the one-hour of peak traffic flow counted between 4:00 PM and 6:00 PM on a typical weekday. The Saturday peak hour is defined as the one-hour of peak traffic flow counted between 11:30 AM and 1:30 PM on a Saturday. In general, the AM peak hour within the study area occurred from 7:45 AM to 8:45 AM, the PM peak hour occurred from 4:30 PM to 5:30 PM, and the Saturday peak hour occurred from 12:15 PM to 1:15 PM.

Intersection turning lane geometrics, traffic control, and existing weekday AM, weekday PM, and Saturday peak hour traffic volumes for the study intersections are displayed on **Figure 4**. Weekday AM, weekday PM, and Saturday peak hour traffic volumes for freeway mainlines and ramps are displayed on **Figure 5**.

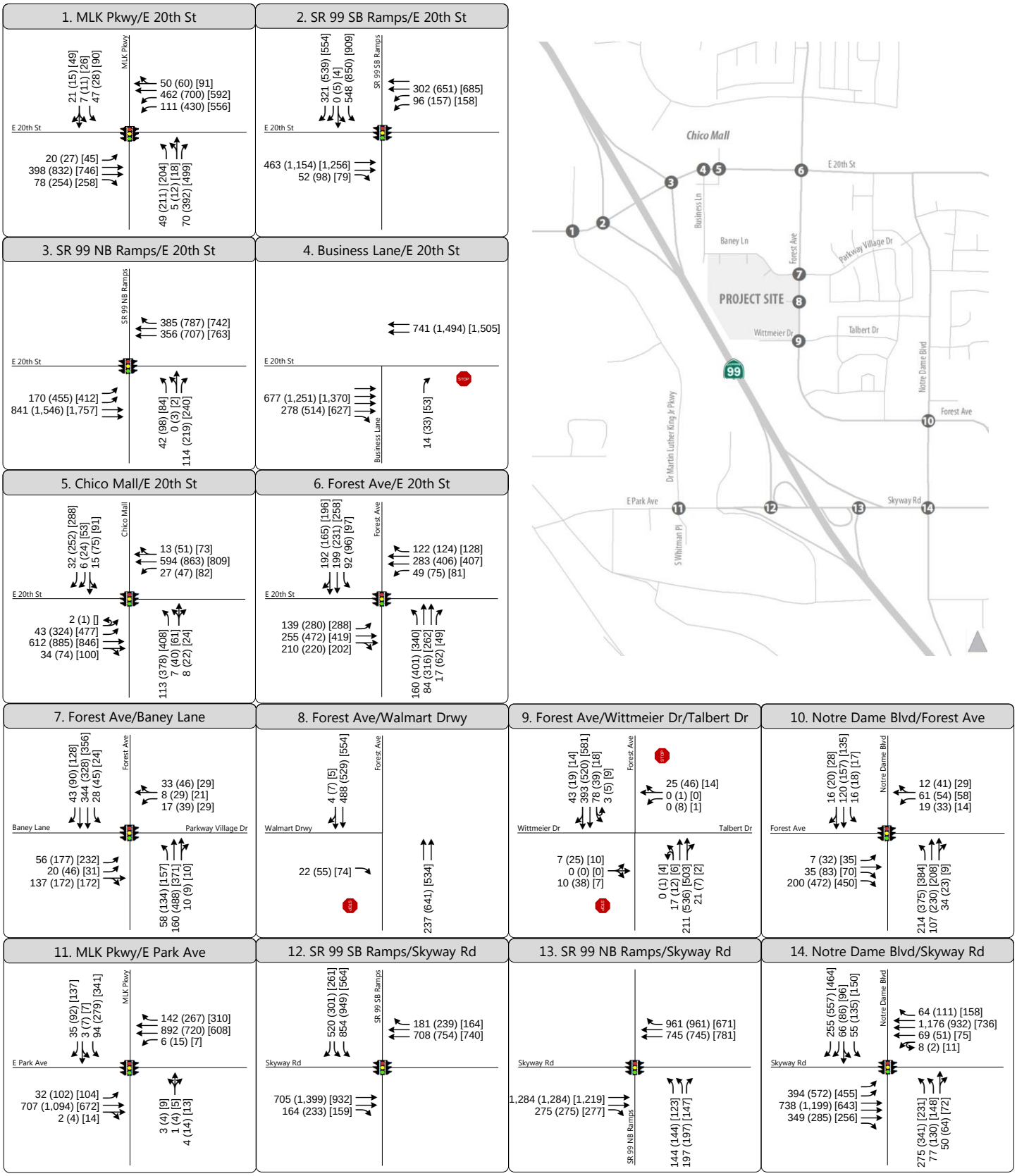


Figure 4

Peak Hour Traffic Volumes and Lane Configurations Existing Conditions

XX - AM Peak Hour Volumes

(XX) - PM Peak Hour Volumes

[XX] - Saturday Peak Hour Volumes

Figure 5

Existing Freeway Mainline and Ramp Volumes

EXISTING TRAFFIC OPERATIONS

Local Intersections

Existing peak hour intersection traffic operations were evaluated utilizing existing traffic volumes and existing intersection lane geometrics and control. **Table 5** provides a summary of the existing peak hour intersection LOS. As shown, all of the study area intersections operate with an average of LOS D or better during the weekday AM, weekday PM, and Saturday peak hours. Overall, the existing roadway system can be characterized as operating efficiently.

TABLE 5:
STUDY INTERSECTION OPERATIONS – EXISTING CONDITIONS

Intersection		Control Type	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS
1	E 20th St. / Dr. MLK Jr. Pkwy.	Signal	15	B	20	C	28	C
2	E 20th St. / SR 99 SB Ramps	Signal	10	A	15	B	18	B
3	E 20th St. / SR 99 NB Ramps	Signal	5	A	11	B	11	B
4	E 20th St. / Business Ln.	TWSC	13	B	16	C	18	C
5	E 20th St. / Chico Mall Access	Signal	10	B	21	C	26	C
6	E 20th St. / Forest Ave.	Signal	28	C	42	D	48	D
7	Forest Ave. / Baney Ln.	Signal	20	B	25	C	24	C
8	Forest Ave. / Walmart Driveway	TWSC	11	B	11	B	11	B
9	Forest Ave. / Wittmeier Dr. - Talbert	TWSC	16	C	22	C	19	C
10	Forest Ave. / Notre Dame Blvd.	Signal	13	B	14	B	14	B
11	E Park Ave. / Dr. MLK Jr. Pkwy.	Signal	10	A	13	B	13	B
12	Skyway Road / SR 99 SB Ramps	Signal	11	B	14	B	8	A
13	Skyway Road / SR 99 NB Ramps	Signal	5	A	5	A	4	A
14	Skyway Road / Notre Dame Blvd.	Signal	23	C	29	C	24	C

Notes:

1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For side-street stop controlled intersections, the delay is reported in seconds per vehicle for the worst individual movement. All results are rounded to the nearest second.

Source: Fehr & Peers, 2015

Freeway Facilities

Existing peak hour mainline and ramp operations were evaluated utilizing existing peak hour traffic volumes on SR 99 mainline and ramp facilities. **Table 6** summarizes current SR 99 freeway mainline and ramp operations. As shown, all mainline and ramp segments operate with an average of LOS E or better during the weekday AM, weekday PM, and Saturday peak hours under existing conditions.

TABLE 6:
FREEWAY LEVEL OF SERVICE – SR 99 EXISTING CONDITIONS

Freeway Facility	Junction Type	Target LOS	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Density	LOS	Density	LOS	Density	LOS
Northbound State Route 99								
South of Skyway Road	Basic	D	14.1	B	17.0	B	10.8	A
Skyway Road Off-Ramp	Diverge	D	19.1	B	22.4	C	15.4	B
Skyway Road Loop On-Ramp	Merge	E	17.3	B	21.8	C	14.8	B
Skyway Road Slip On-Ramp	Merge	E	26.7	C	30.2	D	20.0	B
Skyway Road to E 20th Street	Basic	E	23.7	C	27.8	D	16.8	B
E 20th Street Off-Ramp	Diverge	E	29.3	D	31.4	D	21.2	C
E 20th Street On-Ramp	Merge	E	31.1	D	36.2	E	26.2	C
North of E 20th Street	Basic	E	28.3	D	37.0	E	22.8	C
Southbound State Route 99								
North of E 20th Street	Basic	E	34.1	D	37.0	E	23.7	C
E 20th Street Off-Ramp	Diverge	E	38.2	E	39.9	E	29.8	D
E 20th Street On-Ramp	Merge	E	27.6	C	25.8	C	16.6	B
E 20th Street to Skyway Road	Basic	E	24.5	C	22.7	C	13.6	B
Skyway Road Off-Ramp	Diverge	E	31.6	D	29.3	D	20.3	C
Skyway Road Loop On-Ramp	Merge	D	16.7	B	17.1	B	12.1	B
Skyway Road On-Ramp	Merge	D	18.3	B	19.2	B	13.6	B
South of Skyway Road	Basic	D	15.2	B	16.1	B	10.5	A

Source: Fehr & Peers, 2015

3. EXISTING PLUS PROJECT CONDITIONS

This section describes the project-related traffic impacts under Existing Plus Project conditions. The Existing Plus Project scenario is the analysis scenario in which traffic impacts associated with the proposed project are analyzed in comparison to the Existing Conditions scenario. Trips associated with the proposed project were layered on top of the Existing Conditions volumes to establish Existing Plus Project volumes.

PROJECT LAND USE

According to *Preliminary Site Plan, Walmart Store No. 2044-09 Expansion* (see **Figure 6**), the project would be situated on approximately 27 acres north of Wittmeier Drive, west of Forest Avenue, south of Baney Lane, and east of SR 99. The proposed project includes the following land use components:

- Expansion of the Walmart store to have an additional 66,500 square feet (131,302 square-foot existing Walmart expanded to 197,802 square feet)
- New fuel station with 16 fueling positions and a 1,500 square-foot convenience market
- Development of Parcel 2 assumed to accommodate 26,300 square feet of retail or restaurant uses
- Development of Parcel 3 assumed to accommodate 25,700 square feet of retail or restaurant uses.

PROJECT ROADWAY MODIFICATIONS

The Existing Plus Project scenario assumes the completion of the following roadway modifications that are included in the proposed project. These roadway modifications are also incorporated into analyses related to the Short Term Plus Project and Cumulative Plus Project scenarios presented in later chapters.

Baney Lane Modifications

Proposed modifications to Baney Lane address potential project-related traffic impacts at the E 20th Street / Chico Mall intersection and on private roadways surrounding the project site. Proposed Baney Lane modifications also anticipate the need for improved traffic control in order to minimize potential vehicle conflicts as development occurs on the north side of the street. These modifications are consistent with the City's preference to channelize traffic towards Forest Avenue instead of Business Lane, a private street:

- **Relocated Walmart East Driveway.** The proposed project includes the relocation of the Walmart East Driveway approximately 180 feet west of its current location based on the site plan shown in **Figure 6**. This modification would provide additional space for eastbound vehicle queuing at the Forest Avenue / Baney Lane intersection, extending the storage for the Number 2 left-turn lane from 250 feet to 400 feet. A queuing analysis conducted for the eastbound left-turn movement in the Existing Plus Project, Short Term Plus Project, and Cumulative Plus Project scenarios indicates that vehicle queues may reach up to 75 feet, 225 feet, and 275 feet during the AM, PM, and Saturday peak hours, respectively. The extended eastbound left-turn storage distance should sufficiently accommodate any eastbound left-turn vehicle queuing and provide clear westbound left-turning vehicle access from Baney Lane into the Walmart East Driveway.

- **Restricted left turns from the three Walmart driveways to Baney Lane.** Similar to the current configuration of the Baney Lane / Walmart West Driveway, the proposed project site plan calls for the construction of a raised channelization island at the Baney Lane / Walmart Central Driveway and the relocated Baney Lane / Walmart East Driveway to physically prohibit outbound left turns at these driveways. These modifications are proposed to address both restricted sight distance to the east and to encourage traffic to utilize the Forest Avenue access rather than the Business Lane to Toys R Us private street route. These restrictions are assumed in the traffic analysis, and existing outbound left-turns from Walmart at these driveways have been appropriately reassigned onto the network.
- **Modifications to the existing traffic segment on Baney Lane between Forest Avenue and Business Lane.** The following modifications would accommodate project-related traffic and redirected traffic resulting from the Walmart Baney Lane driveways reconfiguration:
    - Baney Lane from Forest Avenue to Walmart East Driveway – Lane channelization would accommodate queues at the Forest Avenue / Baney Lane intersection and provide westbound left-turn access into Walmart.
    - Eastbound Baney Lane at Forest Avenue – Left-turns onto Forest Avenue would be facilitated by the proposed extension of the Number 1 left-turn lane to 260 feet (with 210 feet of storage) and the Number 2 left-turn lane storage distance to 400 feet.
    - Westbound Baney Lane at Walmart East Driveway – The proposed left-turn lane would facilitate turns into the Walmart parking lot.
    - Baney Lane from relocated Walmart East Driveway to Walmart West Driveway – Modifications are not proposed for the existing lane configuration along this segment of Baney Lane. Estimated project-related traffic volumes, particularly westbound left-turn volumes, are relatively low along this segment, suggesting that additional turn lanes are not necessary. For example, during Saturday peak hour conditions under the Cumulative Plus Project scenario, when surrounding roadway volumes are at their highest, westbound through and left-turn volumes at the Baney Lane / Walmart Central Driveway are estimated to measure at 73 and 68 vehicles, respectively. Turn-lanes are typically warranted when turn volumes exceed 100 vehicles per hour. Moreover, traffic operations calculations at this location estimate a westbound approach delay of four seconds, equivalent to LOS A.
- **Modifications to the Forest Avenue / Baney Lane traffic signal.** The eastbound Baney Lane approach would include dual left-turn lanes approaching Forest Avenue and a combined through-right lane. The northbound Forest Avenue approach would include a through lane, combined through-right lane, and a lengthened exclusive left-turn lane from 200 feet to 325 feet. A queuing analysis conducted for the northbound left-turn movement in the Existing Plus Project, Short Term Plus Project, and Cumulative Plus Project scenarios indicates that vehicle queues may reach up to 125 feet, 250 feet, and 325 feet during the AM, PM, and Saturday peak hours, respectively. The extended northbound left-turn storage distance should sufficiently accommodate any northbound left-turn vehicle queuing. Signal timing at the intersection would be modified to accommodate project-related traffic.

Wittmeier Drive Modifications

The following modifications to Wittmeier Drive are included to accommodate project-related traffic accessing the southern edge of the project site:

- **Two new driveways on Wittmeier Drive.** Additional driveways on Wittmeier Drive would provide access via the southern edge of the project site.
- **Conversion of the Forest Avenue / Wittmeier Drive-Talbert Drive intersection from a stop controlled intersection to a signalized intersection.** A signalized intersection is included to accommodate project-related traffic accessing the project site via the new Wittmeier Drive driveways. According to a traffic signal warrants analysis conducted for Existing Plus Project, Short Term Plus Project, and Cumulative Plus Project conditions, the roadway configuration and traffic volumes at this intersection meet the criteria of Signal Warrant 4 as defined by the California Manual on Uniform Traffic Control Devices (Caltrans, 2012). The detailed warrants analysis is included in the Technical Appendix.

  The redesigned intersection at Forest Avenue / Wittmeier Drive-Talbert Drive will contain the following lane geometrics:

  - The northbound Forest Avenue approach would provide a through lane, combined through-right lane, and an exclusive left-turn lane.
  - The southbound Forest Avenue approach would provide a through lane, combined through-right lane, and a lengthened left-turn lane from 100 feet to 175 feet. A queuing analysis conducted for the southbound left-turn movement in the Existing Plus Project, Short Term Plus Project, and Cumulative Plus Project scenarios indicates that vehicle queues may reach up to 100 feet, 75 feet, and 50 feet during the AM, PM, and Saturday peak hours, respectively. The extended southbound left-turn storage distance should sufficiently accommodate any southbound left-turn vehicle queuing.
  - The eastbound Wittmeier Drive approach would provide dual 250-foot left-turn lanes and a combined through-right lane. A queuing analysis conducted for the eastbound left-turn movement in the Existing Plus Project, Short Term Plus Project, and Cumulative Plus Project scenarios indicates that vehicle queues may reach up to 50 feet, 75 feet, and 75 feet during the AM, PM, and Saturday peak hours, respectively. The eastbound left-turn storage distance should sufficiently accommodate any eastbound left-turn vehicle queuing. The length of the proposed eastbound left-turn lanes could potentially be reduced due to the estimated vehicle queues, however, exact lane geometry should be determined as part of the follow-up Wittmeier Drive analysis detailed in Mitigation Measure 4. A queuing analysis conducted for the eastbound right-turn movement in the Existing Plus Project, Short Term Plus Project, and Cumulative Plus Project scenarios indicates that vehicle queues may reach up to 25 feet, 50 feet, and 50 feet during the AM, PM, and Saturday peak hours, respectively. The eastbound left-turn and right-turn queues should not impede access to existing and proposed driveways along Wittmeier Drive, particularly westbound left-turns into the eastern-most driveway of the adjacent automotive dealership on the south side of Wittmeier Drive. This driveway is located approximately 150 west of the Forest Avenue / Wittmeier Drive-Talbert Drive intersection.

    - The westbound Talbert Drive approach would provide a left-turn lane and a combined through-right lane.

- **Widen Wittmeier Drive.** The road cross-section would be widened from 40 feet to 64 feet to accommodate four, 12-foot lanes (three eastbound and one westbound lane) and two, eight foot parking shoulders.

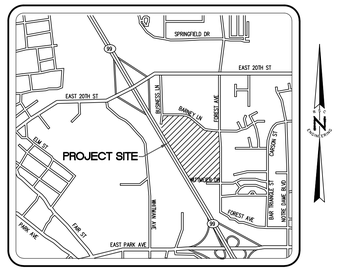
Bicycle Network Modifications

The proposed project includes new construction that would conflict with the existing Class I bicycle path traversing the southern edge of the existing Walmart store. The proposed project site plan includes the relocation of the existing path to near the edge of the project site immediately parallel to Forest Avenue, Wittmeier Drive, and SR 99. This modification will continue to accommodate bicycle travel to and from the project site and maintain the continuity of the surrounding bicycle network. This modification is largely consistent with the future bicycle network identified in the *Chico Urban Area Bicycle Plan*, including a portion of the planned SR 99 Bikeway that the City plans to extend south to Skyway Road. The proposed project does not include approximately 75 feet of the City's planned SR 99 Bikeway located between the southwest corner of the proposed bicycle path and the southern edge of the project site. The proposed project also includes a total of forty bicycle parking locations (twenty covered and twenty uncovered) near entrances to the Walmart store.

Pedestrian Network Modifications

The proposed project includes a new on-site pedestrian walkway through the central portion of the parking lot to provide pedestrian access between Forest Avenue and the southeast store entrance. Pedestrians would also be able to continue to utilize the relocated bike path. The project does not include any modifications to the surrounding public sidewalk network. New crosswalks are proposed for each leg of the modified Forest Avenue / Wittmeier Intersection.

STORE NO. 2044-09
PROTO TYPE: C-182E-SGR-OR
GLA = 184,940 SF
BUILDING AREA = 190,275 SF



VICINITY MAP

CITY OF CHICO SITE ANALYSIS

BUILDING ANALYSIS	
EXISTING BUILDING:	125,889 SF
BUILDING EXPANSION:	64,386 SF
TOTAL BUILDING:	190,275 SF
BUILDING PARKING	
STANDARD PARKING	594 SPACES
COMPACT PARKING	146 SPACES
ACCESSIBLE PARKING	24 SPACES (INC. 5 VAN)
TOTAL	764 SPACES
BUILDING PARKING RATIO:	4.02/1,000 SF
FUEL STATION ANALYSIS	
FUEL STATION KIOSK: (4 BAYS/8 PUMPS)	1,481 SF
FUEL STATION PARKING	
STANDARD PARKING	9 SPACES
ACCESSIBLE PARKING	2 SPACES (INC. 1 VAN)
TOTAL	11 SPACES
FUEL STATION PARKING RATIO:	7.43/1,000 SF

CITY OF CHICO REQUIREMENTS

RETAIL GENERAL MERCHANDISE	4.0/1,000	761 SPACES
FUEL STATION	4.0/1,000	6 SPACES
TOTAL		767 SPACES

**PARKING COUNT AND RATIO DO NOT INCLUDE SPACES OCCUPIED BY CART CORRALS (36 SPACES) OR OUTDOOR DISPLAY AND SALES AREA (22 SPACES)

**TYPICAL PARKING STALL IS 9.5' X 20'

**40 BICYCLE SPACES TO BE PROVIDED (20 COVERED BIKE LOCKERS AND 20 UNCOVERED BIKE SPACES)

ACREAGE SUMMARY

WALMART PARCEL:	21.88 AC
PARCEL 2:	2.63 AC
PARCEL 3:	2.57 AC
TOTAL:	27.08 AC

SITE COVERAGE

BUILDING:	5.03 AC	18.6%
HARDSCAPE:	12.83 AC	47.4%
LANDSCAPE:	4.16 AC	15.3%
HYDROSEED:	5.06 AC	18.7%
TOTAL:	27.08 AC	100%

SITE DATA

LOCAL JURISDICTION:	CITY OF CHICO, CA
ZONING CLASSIFICATION:	CR REGIONAL COMMERCIAL
LAND USE CLASSIFICATION:	RC REGIONAL COMMERCIAL
BUILDING SETBACKS:	0' FRONT, REAR AND SIDE

LEGEND

- BOUNDARY LINE
- RIGHT OF WAY LINE
- PARKING COUNT
- PROPOSED CART CORRALS
- RELOCATED OVERHEAD POWER LINES
- PROPOSED CURB
- EXISTING CURB
- 42' TALL PARKING LOT LIGHTS
- PROPOSED EXPANSION
- HEAVY DUTY CONCRETE
- OUTDOOR DISPLAY AND SALES AREA
- BIOSWALE AREA

REV. NO.	DATE	DESCRIPTION	DWN BY: INIT.	CITY APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER RICHARD S. CHUREY No. 29033 Exp. Mar. 31, 2017 CIVIL STATE OF CALIFORNIA

RSC ENGINEERING
2250 Douglas Blvd., Suite 150
Roseville, CA 95661
Phone 916.788.4408 Fax 916.788.4408

PROJECT NO. 027-046
DRAWN BY: RSC Eng
CHECKED BY: RSC Eng
DESIGNED BY: RSC Eng

PRELIMINARY SITE PLAN
WALMART STORE NO. 2044-09 EXPANSION
2044 FOREST AVENUE
CHICO, CA 95928

SHEET TITLE
SITE PLAN

SHEET NO.
SP
OF 1

DATE: OCTOBER 29, 2015

PROJECT SITE ACCESS

Project site access would be available via driveways on Baney Lane, Business Lane, Forest Avenue, and Wittmeier Drive:

- Baney Lane / Walmart Driveway West – side street stop-controlled, restricted outbound left-turn
- Baney Lane / Walmart Driveway Central – side street stop-controlled, restricted outbound left-turn
- Baney Lane / Walmart Driveway East – side street stop-controlled, restricted outbound left-turn
- Business Lane / Walmart Rear Alley – side street stop-controlled
- Forest Avenue / Walmart Driveway – side street stop-controlled, right-in/right-out
- Wittmeier Drive / Walmart Driveway West - side street stop-controlled
- Wittmeier Drive / Walmart Driveway East – side street stop-controlled

The primary local access points include the existing signalized intersection at Forest Avenue / Baney Lane and the new signalized intersection at Forest Avenue / Wittmeier Drive. Inbound-only local access is also available via E 20th Street at Business Lane and Chico Mall. Bicycle access would be available via the relocated on-site Class I bike path and Class II bike lane on Forest Avenue. Pedestrian access would be available via sidewalks on Baney Lane and Forest Avenue.

PROJECT ON-SITE CIRCULATION

On-site traffic circulation is provided via two-way internal roadways connecting to the Baney Lane, Forest Avenue, and Wittmeier Drive driveways and one-way drive aisles striped for diagonal parking. The truck route from the Business Lane driveway would provide access to the truck docking facilities located at the rear of the store. Bicyclists would be able to traverse the project site via the bike path located along the eastern, southern, and western edge of the project site. A pedestrian system of sidewalks and crosswalks, including the new pedestrian path through the center of the project site, would provide pedestrian access to the store from Forest Avenue and the on-site parking lot. Traffic accessing the fuel station would circulate through a two-way internal roadway connecting the Forest Avenue / Walmart Driveway and Wittmeier Drive / Walmart Driveway East.

PROJECT TRUCK TRAFFIC

It is anticipated that the proposed project will have an average of ten truck deliveries per day. Of these, it is anticipated that six will be large semi-trucks. The proposed project land uses are expected to generate the following additional daily truck trips:

- Walmart Expansion
    - Five large semi-trucks per day
    - Two small trucks per day
- Fuel Station
    - One large semi-truck per day
- Commercial Parcels
    - Two small trucks per day

According to the project site plan, the existing truck route/fire lane behind the store would be extended south towards a new truck turnaround. Located at the southwest corner of the store near the loading dock, the truck turnaround would be 130 feet in diameter.

The primary truck route for deliveries to the store is from Business Lane. Trucks exiting SR 99 at the E 20th Street off-ramp would turn south on Business Lane, proceed to the Walmart access at the end of Business Lane, and unload merchandise at the truck well bays behind the Walmart. Trucks would exit the site via Business Lane, Baney Lane, or Wittmeier Drive to return to SR 99 or travel to other stops in the area.

For the delivery of smaller merchandise, an at grade service door would be provided adjacent to the truck bay loading area. Smaller trucks access the site from Business Lane and park adjacent to these loading areas.

For access to the proposed fuel station, it is anticipated that trucks will utilize Forest Avenue / Walmart Driveway and Wittmeier Drive / Walmart Driveway East.

PROJECT TRIP GENERATION

This section documents the expected trip generation of the proposed Chico Walmart Expansion Project. For analysis purposes, the term "project" refers to the development of the proposed expansion of the existing Walmart store, the fuel station with convenience market, and two outlot parcels for commercial use, as well as proposed modifications to the roadway system.

Existing Walmart Trip Generation

Traffic counts of driveways to/from the existing Walmart store were collected in October 2015 and used to develop a trip generation rate to apply to the Walmart expansion project. The counts were taken from 7 to 9 AM and from 4 to 6 PM on Wednesday, October 7. 2015, and from 11 AM to 2 PM on Saturday, October 10, 2015.

Table 7 shows the existing Walmart trip generation and actual trip rates based on the driveway counts.

TABLE 7:
EXISTING WALMART TRIP GENERATION

Description	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour		
	Total	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**
Trips Counted	**275**	155	120	**713**	340	373	**987**	505	482
Trip Rate per 1,000 s.f.	**2.09**	56%	44%	**5.43**	48%	52%	**7.52**	51%	49%

Note: Existing Walmart store has 131,302 square feet of retail use.

Proposed Project Trip Generation

The trip generation of the project will consist of various trip types: primary trips, internal trips, pass-by trips, and diverted trips (each trip type is described below). The project's impact will be analyzed based on the net changes to the number of trips on the surrounding roadway network.

Gross Trips

Gross trips constitute all of the trip types: primary, internal, pass-by, and diverted. The gross project trips were first calculated to determine all of the project trips that would be generated before any adjustments were made to account for internalization, pass-by, and diverted link trips. Trip generation was determined using the rates calculated from the existing Walmart driveway counts and from the *Institute of Transportation Engineers* (ITE) *Trip Generation Manual* (9th Edition).

To determine the appropriate trip rates for the proposed Walmart expansion, trip rates contained in the *ITE Trip Generation Manual* were compared to the actual rates of the existing Walmart. The ITE Manual reports trip rates for a free-standing discount superstore containing a full service grocery department (ITE land use 813), and a free standing discount store without a grocery component (ITE land use 815). **Table 8** shows that the trip rates derived from actual counts at the existing Walmart store are higher than those from the

ITE land uses 813 and 815 for all peak hours being analyzed in this study. Therefore, the actual trip rates from the existing Walmart store were used to estimate the trip generation of the Walmart expansion.

TABLE 8:
TRIP GENERATION RATES COMPARISON FOR WALMART EXPANSION

Land Use Description (ITE Code)	Trip Rates per ksf		
	Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Free Standing Discount Superstore (813)	1.85	4.35	5.64
Free Standing Discount Store (815)	1.06	4.98	7.39
Existing Walmart (Counts)	2.09	5.43	7.52

ITE trip generation rates for "Gasoline/Service Station with Convenience Market" (ITE land use 945) were used to estimate the trip generation of the proposed fuel station. ITE trip generation rates for "Shopping Center" (ITE land use 820) were used to estimate the trip generation of the proposed retail/restaurant uses on Parcels 2 and 3.

Table 9 shows the trips rates used and gross trips calculated for the proposed project land uses. As shown, the proposed project is estimated to generate 352 gross AM peak hour trips, 770 gross PM peak hour trips, and 967 Saturday peak hour trips.

TABLE 9:
GROSS PROJECT TRIPS

Land Use Description (ITE Code)	Units	Trip Rates								
		Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour		
		Trip Rate	In %	Out %	Trip Rate	In %	Out %	Trip Rate	In %	Out %
Walmart Expansion[1]	ksf	**2.09**	56%	44%	**5.43**	48%	52%	**7.52**	51%	49%
Fuel Station (945)	fueling positions	**10.16**	50%	50%	**13.51**	50%	50%	**13.51**	50%	50%
Parcels 2 & 3 Commercial (820)	ksf	**0.96**	62%	38%	**3.71**	48%	52%	**4.82**	52%	48%
Land Use Description	**Quantity**	**Trips**								
		Weekday AM Peak Hour			**Weekday PM Peak Hour**			**Saturday Peak Hour**		
		Total	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**
Walmart Expansion	66.5 ksf	**139**	78	61	**361**	173	188	**500**	255	245
Fuel Station	16 fueling positions	**163**	82	81	**216**	108	108	**216**	108	108
Parcels 2 & 3 Commercial	52.0 ksf	**50**	31	19	**193**	93	100	**251**	131	120
Total Gross Trips		**352**	191	161	**770**	374	396	**967**	494	473

Notes:
1. Trip rates for the Walmart Expansion are based on the actual trip rates calculated from the existing Walmart driveway counts.

Internal Trip Reduction

As noted previously, the proposed project consists of the Walmart expansion, fuel station, and Parcels 2 and 3 commercial land uses. Because the proposed project is a mixed-use development with complimentary land uses, it is expected that some vehicles visiting one of the three future land uses on the project site may also visit one (or both) of the other land uses.

For example, a vehicle leaving Walmart may stop at the gas station, and/or Parcels 2 and 3 before leaving the project site. Additionally, some vehicles drawn to the site to stop at the gas station may also stop at Parcels 2, 3, or Walmart (or vice versa).

When a vehicle visits a project site, it is typically calculated as two trips to account for the inbound and outbound component of the round trip. However, if this same vehicle also visited one (or both) of the

other two land uses, it would result in four (or six) trips when taking into account the inbound and outbound component to and from each land use. Given the proximity of the proposed land uses to each other, some of these trips might not occur using a vehicle but rather could be accomplished on foot after parking.

The primary objective of the traffic analysis is to analyze impacts to the adjacent roadway system. Therefore, it is reasonable to reduce the gross trip generation volumes to account for only the inbound vehicular trip entering the project site, and the outbound vehicular trip exiting the project site.

A conservative estimate of five percent internal trip reduction of the total gross project trips plus existing Walmart trips was assumed. **Table 10** shows the internal trip reduction for the project and total external project trips.

TABLE 10:
INTERNAL PROJECT TRIP REDUCTION

	Trip Reduction Percentage								
	Weekday AM Peak Hour			**Weekday PM Peak Hour**			**Saturday Peak Hour**		
	Reduction %			**Reduction %**			**Reduction %**		
Internal Trip Reduction	5%			5%			5%		
Description	**Trips**								
	Weekday AM Peak Hour			**Weekday PM Peak Hour**			**Saturday Peak Hour**		
	Total	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**
Existing Walmart Trips	**275**	155	120	**713**	340	373	**987**	505	482
Total Gross Project Trips	**352**	191	161	**770**	374	396	**967**	494	473
Existing Walmart and Total Gross Project Trips	**627**	346	281	**1,483**	714	769	**1,954**	999	955
Total Internal Trip Reduction	**-31**	-17	-14	**-74**	-36	-38	**-98**	-50	-48
Total External Existing Walmart and Project Trips	**596**	329	267	**1,409**	678	731	**1,856**	949	907
Total External Project Trips	**321**	174	147	**696**	338	358	**869**	444	425

Pass-By Trip Reduction

Pass-by trips are defined as trips that would occur on the roadway immediately adjacent to the project with or without the project. These trips are simply an intermediate stop of a primary trip and do not involve any route diversion; therefore, pass-by trips do not add any through traffic to an existing roadway.

The location of the project site, although close to many higher traffic roadways such as E 20th Street, is only immediately adjacent to Forest Avenue and Baney Lane. The traffic on these streets is lower than the

average adjacent roadway volumes reported in the studies within the ITE Trip Generation Handbook for similar land uses. The average pass-by trip reduction percentage in the PM peak period for Free Standing Discount Superstore is 27 percent, for Shopping Center it is 34 percent, and for Gas Station with Convenience Market it is 56 percent. Due to lower traffic on the adjacent roadways, a conservative estimate of a 17 percent pass-by trip reduction was assumed for the Walmart Expansion, a 10 percent pass-by reduction for the fuel station, and a 15 percent pass-by reduction for the Parcels 2 & 3 commercial uses, as shown in **Table 11**.

TABLE 11:
PASS-BY PROJECT TRIP REDUCTION

Land Use Description	Pass-By Trip Reduction		
	Weekday AM Peak Hour	**Weekday PM Peak Hour**	**Saturday Peak Hour**
	Reduction %	**Reduction %**	**Reduction %**
Walmart Expansion	17%	17%	17%
Fuel Station	10%	10%	10%
Parcels 2 & 3 Commercial	15%	15%	15%

Diverted Trip Reduction

Diverted trips are similar in nature to pass-by trips. Whereas a pass-by trip is captured from existing traffic traveling along the roadway adjacent to the project, a diverted trip is captured from existing traffic along a nearby roadway that "diverts" to a another roadway to access the project site. These trips are an intermediate stop of a primary trip, but involve a route diversion, adding traffic only to the roadways and intersections which correspond to the diverted portion of the travel route to/from the project site.

Within this analysis, it is assumed that trips would be diverted to the project site from the following nearby roadways: SR 99, E 20th Street, and Skyway Road.

The ITE Trip Generation Handbook reports average diverted trip reduction percentages for the proposed project land uses. The average diverted trip reduction percentage in the PM peak hour for Free Standing Discount Store is 35 percent, for Shopping Center it is 26 percent, and for Gas Station with Convenience Market it is 32 percent. The diverted trip reduction percentages in the ITE Trip Generation Handbook were assumed for the fuel station, while a conservative estimate of a 23 percent diverted trip reduction was assumed for the Walmart expansion, and a 25 percent diverted trip reduction for the Parcels 2 and 3 commercial uses. **Table 12** shows the diverted trip reduction percentages for the project.

TABLE 12: DIVERTED PROJECT TRIP REDUCTION			
Land Use Description	**Diverted Trip Reduction**		
	Weekday AM Peak Hour	**Weekday PM Peak Hour**	**Saturday Peak Hour**
	Reduction %	**Reduction %**	**Reduction %**
Walmart Expansion	23%	23%	23%
Fuel Station	21%	32%	32%
Parcels 2 & 3 Commercial	25%	25%	25%

Total New Primary Trips

Table 13 shows the total new primary trips after deducting the pass-by trips and diverted trips. The proposed project is projected to generate 194 new weekday AM peak hour trips, 384 new weekday PM peak hour trips, and 477 new Saturday peak hour trips.

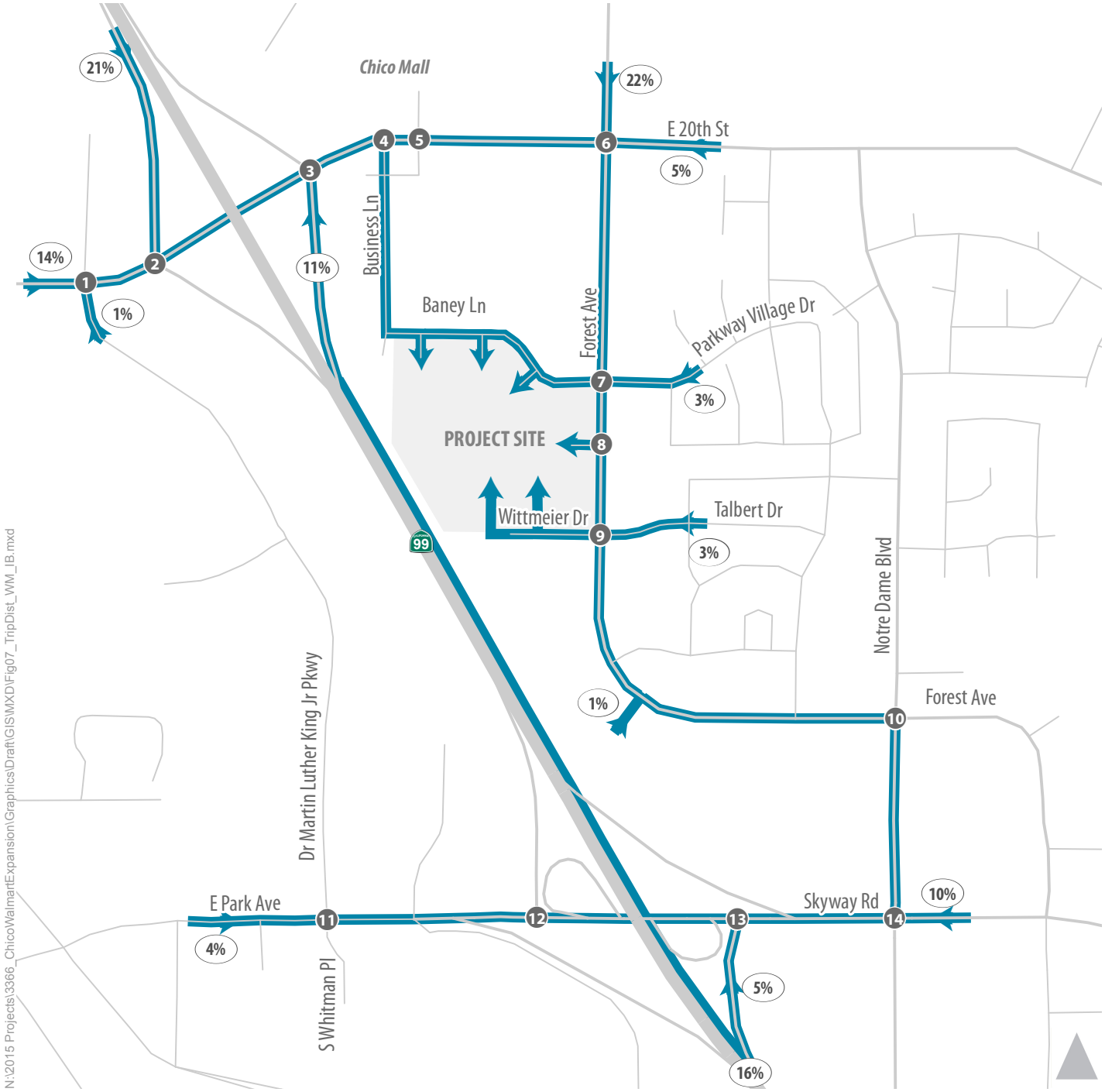
TABLE 13: TOTAL NEW PRIMARY PROJECT TRIPS										
Trip Type	**Land Use Description**	**Trips**								
		Weekday AM Peak Hour			**Weekday PM Peak Hour**			**Saturday Peak Hour**		
		Total	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**
Total External Project Trips		**321**	174	147	**696**	338	358	**869**	444	425
Pass-By Trip Reduction	Walmart Expansion	**-24**	-13	-11	**-61**	-29	-32	**-85**	-43	-42
	Fuel Station	**-16**	-8	-8	**-22**	-11	-11	**-22**	-11	-11
	Parcels 2 & 3 Commercial	**-8**	-5	-3	**-29**	-14	-15	**-38**	-20	-18
Total Pass-By Trip Reduction		**-48**	-26	-22	**-112**	-54	-58	**-145**	-74	-71
Diverted Trip Reduction	Walmart Expansion	**-32**	-18	-14	**-83**	-40	-43	**-115**	-59	-56
	Fuel Station	**-34**	-17	-17	**-69**	-35	-34	**-69**	-35	-34
	Parcels 2 & 3 Commercial	**-13**	-8	-5	**-48**	-23	-25	**-63**	-33	-30
Total Diverted Trip Reduction		**-79**	-43	-36	**-200**	-98	-102	**-247**	-127	-120
New Primary Trips	Walmart Expansion	**71**	40	31	**182**	87	95	**249**	127	122
	Fuel Station	**98**	50	48	**105**	52	53	**103**	51	52
	Parcels 2 & 3 Commercial	**25**	15	10	**97**	47	50	**125**	65	60
Total New Primary Trips		**194**	105	89	**384**	186	198	**477**	243	234

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution for the Walmart store was analyzed separately from the trip distribution for the fuel station and commercial parcels because of the different nature of the land uses.

The directional trip distribution and assignment for the proposed project reflects existing and projected future traffic flows and travel patterns within the vicinity of the project site. Due consideration was also given for the location of other similar facilities, as well as the location of local and regional housing and employment/commercial centers in relation to the proposed project site when deriving the trip distribution and trip assignment patterns for the proposed project.

Figures 7a and 7b shows the trip distribution for the Walmart expansion and commercial parcels and **Figure 8a and 8b** depicts the trip distribution for the fuel station.



Trip Distribution

Figure 7a

Walmart Expansion and Parcels 2 & 3
Trip Distribution
Inbound

Trip Distribution

Figure 7b

Walmart Expansion and Parcels 2 & 3
Trip Distribution
Outbound

Trip Distribution

Figure 8a

Fuel Station Trip Distribution Inbound

Trip Distribution

Figure 8b

Fuel Station Trip Distribution Outbound

REGULATORY SETTING

State

Caltrans owns, operates, and maintains SR 99 mainline, ramp, and ramp junction terminal facilities within the study area. Caltrans is also responsible for freeway ramp junction terminal intersections at E 20th Street and Skyway Road. As such, the following Caltrans planning and policy documents provide guidance on expectations for this route related to traffic operations relevant to this analysis and the potential effects of the proposed project.

District System Management Plan

The *District System Management Plan* (Caltrans, 2013) sets forth the long-term (20-year) policy direction for Caltrans District 3 related to system maintenance, system completion, and congestion relief. The plan identifies two improvement projects within the project study area:

- Construction of auxiliary lanes on SR 99 between Skyway Road and E 20th Street
- Construction of a Class I bike facility paralleling SR 99 between Business Lane and Cohasset Road

The plan supports complete streets development, but only includes performance expectations related to vehicle travel. In general, the plan establishes a LOS E threshold for urban areas but notes that individual transportation corridor concept reports (TCCRs) for each State route set final thresholds. The document notes that once facilities worsen to LOS F, it becomes difficult to measure further degradation to any degree of accuracy. Therefore, other performance measures can be used to define thresholds for system planning and CEQA purposes. These include vehicle travel time, vehicle hours of delay (VHD), travel reliability (i.e. the degree of variation in travel time due to congestion and non-recurring events), and lost productivity (i.e. ability of corridor to deliver travelers/good movement). The document mentions the need to develop thresholds of significance to use these measures for defining significant impacts for facilities not operating at the concept LOS, but does not identify specific thresholds.

Transportation Corridor Concept Report, State Route 99

A Transportation Corridor Concept Report (TCCR) is a long-term planning document that the District Transportation Planning Office prepares for each State highway, or portion thereof, in its jurisdiction. The purpose of a TCCR is to plan how a highway will be developed and managed so that it operates at the targeted level of service over a twenty-year period. The *Transportation Corridor Concept Report, State Route 99* (Caltrans, 2010) establishes the following concept LOS standards for SR 99 segments in the project study area:

- Southgate Avenue to Skyway Road/Park Avenue – LOS D
- Skyway Road/Park Avenue to End of Freeway (near Esplanade) – LOS E

Caltrans District 3 State Highways Bicycle Facility Plan

The *Caltrans District 3 State Highways Bicycle Facility Plan* (Caltrans, 2013) identifies the vision for bicycle use of State highways as well as a detailed inventory of existing facility and needed improvements. The plan does not include any major expansion or modification of bicycle facilities directly on SR 99 in the study area.

Local

The City of Chico maintains jurisdiction over local roadways, intersections, and non-motorized transportation facilities surrounding the project site.

City of Chico General Plan (2011)

The *City of Chico General Plan* provides long-range direction and policies for the use of land within Chico. The Circulation Element of the General Plan provides the framework for achieving the City's transportation system goals. The Circulation Element outlines the goals and policies necessary for the City to achieve its vision of a multimodal transportation network that accommodates vehicles, transit, bicycles, and pedestrians. For the purposes of this DEIR, the goals and policies of this document were used in developing the impact significance criteria.

The *City of Chico General Plan* establishes the following principles, policies, and actions related to transportation that are applicable to the proposed project:

- **Policy CIRC-1.1 (Transportation Improvements)** – Safely and efficiently accommodate traffic generated by development and redevelopment associated with build-out of the General Plan Land Use Diagram.
    - **Action CIRC-1.1.1 (Road Network)** – Enhance existing roadways and intersections and develop the roadway system shown in **Figure CIRC-1 (Roadway System Map)** over the life of the General Plan as needed to accommodate development.
- **Policy CIRC-1.2 (Project-Level Circulation Improvements)** – Require new development to finance and construct internal and adjacent roadway circulation improvements as necessary to mitigate project impacts, including roadway, transit, pedestrian, and bicycle facilities.
- **Policy CIRC-1.3 (Citywide Circulation Improvements)** – Collect the fair share cost of circulation improvements necessary to address cumulative transportation impacts, including those to state highways, local roadways, and transit, pedestrian and bicycle facilities, through the City's development impact fee program.
- **Policy CIRC-1.4 (Level of Service Standards)** – Until a Multimodal Level of Service (MMLOS) methodology is adopted by the City, maintain LOS D or better for roadways and intersections at the peak PM period, except as specified below:
    - LOS E is acceptable for City streets and intersections under the following circumstances:

        - Downtown streets within the boundaries identified in Figure DT-1 of the Downtown Element.
        - Arterials served by scheduled transit.
        - Arterials not served by scheduled transit, if bicycle and pedestrian facilities are provided within or adjacent to the roadway.
    - Utilize Caltrans LOS standards for Caltrans' facilities.
    - There are no LOS standards for private roads.

    Exceptions to the LOS standards above may be considered by the City Council where reducing the level of service would result in a clear public benefit. Such circumstances include, but are not limited to, the following

    - If improvements necessary to achieve the LOS standard results in impacts to a unique historical resource, a highly sensitive environmental area, requires infeasible right-of-way acquisition, or some other unusual physical constraint exists.
    - If the intersection is located within a corridor that utilizes coordinated signal timing, in which case, the operation of the corridor as a whole should be considered.

- **Policy CIRC-2.2 (Circulation Connectivity and Efficiency)** – Provide greater street connectivity and efficiency for all transportation modes.
    - **Action CIRC-2.2.2 (Traffic Management)** – Perform routine, ongoing evaluation of the street traffic control system, with emphasis on traffic management, such as signal timing and coordination or the use of roundabouts, to optimize traffic flow along arterial corridors and reduce vehicle emissions.
- **Policy CIRC-3.3 (New Development and Bikeway Connections)** – Ensure that new residential and non-residential development projects provide connections to the nearest bikeways.
    - **Action CIRC-3.3.1 (Bikeway Requirements)** – Require pedestrian and bicycle connections to the Citywide bikeway system every 500 feet, where feasible, as part of project approval and as identified in the Chico Urban Area Bicycle Plan.
- **Policy CIRC-4.2 (Continuous Network)** – Provide a pedestrian network in existing and new neighborhoods that facilitates convenient and continuous pedestrian travel free from major impediments and obstacles.
- **Policy CIRC-5.3 (Transit Connectivity in Projects)** – Ensure that new development supports public transit.

- **Action CIRC-5.3.2 (Transit Improvements for New Development)** – During project review, consult with BCAG to determine appropriate requirements for the installation of stops and streetscape improvements, if needed to accommodate transit.

Chico Urban Area Bicycle Plan

The *Chico Urban Area Bicycle Plan* (City of Chico, 2012) establishes goals and objectives for recreational and transportation-related bicycle use in Chico. The plan identifies several future on- and off-street bicycle facility improvements adjacent to the project site, including new routes along Wittmeier Drive and paralleling SR 99.

STANDARDS OF SIGNIFICANCE

Standards of significance are thresholds used to identify significant project impacts. Standards of significance were developed based on the applicable policies of the City of Chico, Caltrans, and criteria provided in the *California Environmental Quality Act (CEQA) Guidelines* (2014).

Local Intersections

Impacts to the local roadway system are considered significant if:

- The traffic generated by the project degrades LOS from acceptable (without the project) to unacceptable (with the project); or
- The LOS (without the project) is already (or projected to be) unacceptable and project generated traffic increases the average vehicle delay by five seconds or more.
- The project substantially increases hazards due to a design feature or incompatible use.

The *City of Chico General Plan* identifies LOS standards on local roadways in **Policy CIRC-1.4 (Level of Service Standards)**. Considering the roadway and intersection conditions throughout the study area, a PM peak hour LOS E is designated as the minimum acceptable LOS standard for study intersections.

Local intersection LOS standards apply to study intersections 1, 4 through 11, and 14.

Freeway Facilities

Impacts to freeway mainline, ramp, and weave segments are considered significant if:

- The traffic generated by the project degrades LOS from acceptable (without the project) to unacceptable (with the project); or
- The LOS (without the project) is already (or projected to be) unacceptable and project generated traffic increases the density by more than five percent.

The *Transportation Corridor Concept Report, State Route 99* establishes concept LOS standards for Caltrans facilities in the project study area. South of Skyway Road, LOS D is designated as the minimum acceptable LOS standard. North of Skyway Road, LOS E is designated as the minimum acceptable LOS standard.

Freeway facility LOS standards apply to all freeway mainline, ramp, weave, and ramp terminal facilities, including study intersections 2, 3, 12, and 13.

Bicycle Facilities

Impacts to bicycle facilities are considered significant if the proposed project would:

- Adversely affect existing or planned bicycle facilities; or
- Fail to adequately provide for access by bicycle.

Bicycle goals, policies, and existing and planned facilities are identified in the *City of Chico General Plan* and *Chico Urban Area Bicycle Plan*.

Pedestrian Facilities

Impacts to pedestrian facilities are considered significant if the proposed project would:

- Adversely affect existing or planned pedestrian facilities; or
- Fail to adequately provide for access by pedestrians.

Pedestrian goals, policies, and existing and planned facilities are identified in the *City of Chico General Plan*.

Public Transit Service and Facilities

Impacts to public transit service and facilities are considered significant if the proposed project would:

- Adversely affect public transit operations; or
- Fail to adequately provide for access to transit.

Public transit impacts are evaluated relative to existing Butte Regional Transit service and facilities and the future transit network identified in the *Butte County Association of Governments (BCAG) Transit and Non-Motorized Plan* (BCAG, 2015).

EXISTING PLUS PROJECT IMPACTS AND MITIGATION

Potential impacts of the proposed project upon the transportation system under Existing Plus Project conditions are evaluated in this section based on the standards of significance and analysis results. Each impact is followed by a recommended mitigation measure to reduce the significance of identified impacts, if needed.

Existing Plus Project intersection traffic operations were analyzed utilizing projected Existing Plus Project traffic volumes, as shown in **Figure 9**. **Table 14** displays Existing Plus Project weekday AM, weekday PM, and Saturday peak hour operations at study intersections.

TABLE 14:
STUDY INTERSECTION OPERATIONS – EXISTING PLUS PROJECT CONDITIONS

Intersection		Control Type	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS
1	E 20th St. / Dr. MLK Jr. Pkwy.	Signal	15	B	20	C	29	C
2	E 20th St. / SR 99 SB Ramps	Signal	10	A	17	B	20	C
3	E 20th St. / SR 99 NB Ramps	Signal	6	A	12	B	13	B
4	E 20th St. / Business Ln.	TWSC	13	B	17	C	19	C
5	E 20th St. / Chico Mall Access	Signal	10	A	20	C	29	C
6	E 20th St. / Forest Ave.	Signal	31	C	53	D	**93**	**F**
7	Forest Ave. / Baney Ln.	Signal	20	C	27	C	28	C
8	Forest Ave. / Walmart Driveway	TWSC	11	B	12	B	12	B
9	Forest Ave. / Wittmeier Dr. - Talbert	Signal	12	B	15	B	14	B
10	Forest Ave. / Notre Dame Blvd.	Signal	13	B	15	B	16	B
11	E Park Ave. / Dr. MLK Jr. Pkwy.	Signal	10	B	13	B	13	B
12	Skyway Road / SR 99 SB Ramps	Signal	11	B	14	B	8	A
13	Skyway Road / SR 99 NB Ramps	Signal	7	A	10	A	5	A
14	Skyway Road / Notre Dame Blvd.	Signal	24	C	31	C	27	C

Notes:

1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For side-street stop controlled intersections, the delay is reported in seconds per vehicle for the worst individual movement. All results are rounded to the nearest second.

Source: Fehr & Peers, 2015

As shown in **Table 14**, all but one of the study area intersections are projected to operate at acceptable LOS thresholds during the weekday AM, weekday PM, and Saturday peak hours under Existing Plus Project conditions.

> **Impact 1:** The proposed project could cause potentially significant impacts to local intersection operations at the intersection of E 20th Street / Forest Avenue under Existing Plus Project conditions. Based on the analysis below, the impact would be **less than significant** through continual monitoring and adjustment of signal timing by City Public Works staff.

Operations at this intersection are projected to degrade from an acceptable LOS D under Existing Conditions to an unacceptable LOS F under Existing Plus Project conditions during the Saturday peak hour. According to the City of Chico General Plan, intersection operations are considered acceptable at LOS E or better under the roadway conditions of E 20th Street and Forest Avenue.

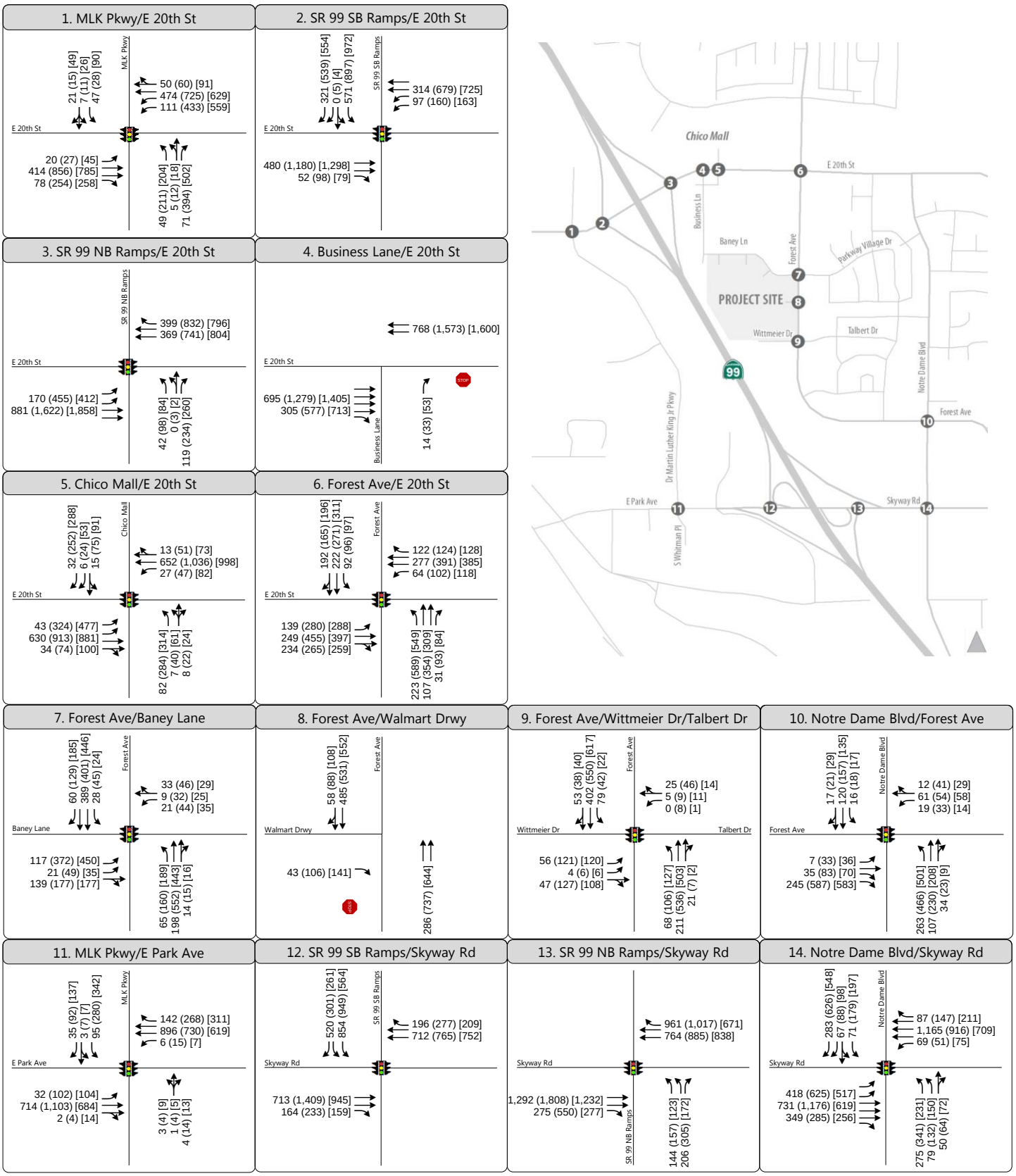
The increase in intersection volume and corresponding degradation of intersection operations can be attributed to a combination of a) additional trips generated by the proposed project and, b) additional trips rerouted to Forest Avenue as a result of the proposed turn restrictions at the Baney Lane Walmart driveways. Northbound left-turn volumes are particularly high during the Saturday peak hour time period under Existing Plus Project conditions. The current signal timing plan provides insufficient northbound left-turn green time to accommodate this projected volume without adversely impacting intersection operations.

Pursuant to City of Chico General Plan **Action CIRC 2.2.2**, City Public Works staff will continue to monitor operations and adjust signal timing as needed to optimize traffic flows and maintain an acceptable level of service at the E 20th Street / Forest Avenue intersection. According to a Synchro analysis of the E 20th Street / Forest Avenue intersection with signal optimization, it is estimated that signal timing modifications could improve operations to an average delay of 55 seconds and an acceptable LOS D can be maintained during the Saturday peak time period.

Since operation of the intersection will be maintained at an acceptable level of service by Public Works staff pursuant to existing General Plan policy, no mitigation is necessary to reduce project impacts.

Mitigation Measures

None required.



1	Study Intersection
	Turn Lane
AM (PM) [SAT]	Peak Hour Traffic Volume
	Traffic Signal
STOP	Stop Sign

Figure 9

Peak Hour Traffic Volumes and Lane Configurations Existing Plus Project

XX - AM Peak Hour Volumes

(XX) - PM Peak Hour Volumes

[XX] - Saturday Peak Hour Volumes

Figure 10

Existing Plus Project Freeway Mainline and Ramp Volumes

Impact 2: The proposed project could potentially increase hazards on local roadways due to design features. Based on the analysis below, the impact would be **less than significant** under the Existing Plus Project scenario.

According to the current site plan, the proposed roadway modifications on Wittmeier Drive could potentially affect access to the project site and adjacent parcels while increasing hazards along the roadway. First, the current lane configuration may impede vehicular access and truck loading from Wittmeier Drive into the adjacent property south of the roadway, particularly at its easternmost driveway. Second, vehicular conflicts may occur as drivers attempt to navigate the cul-de-sac in tandem with vehicles arriving and departing from the westernmost Walmart driveway. Finally, with the westernmost driveway directly aligned with the Wittmeier Drive travel lanes may cause vehicular conflicts for vehicles turning in and out of adjacent driveways.

Mitigation Measures

The following mitigation measure is recommended to reduce the potential for hazards and access issues on Wittmeier Drive.

Mitigation Measure 1. Modify the Wittmeier Drive lane configuration and roadway geometrics to improve operations for through and turning vehicular movements.

Two modifications could be made to reduce the opportunities for conflict between through and turning vehicles. First, the eastbound dual left-turn lanes on Wittmeier Drive could be modified to a single left-turn lane, providing an extra lane to facilitate westbound turning movements and truck loading and unloading. Based on estimated Plus Project peak hour left-turn movements from Wittmeier Drive to Forest Avenue, it is not anticipated that dual left-turn lanes are necessary to accommodate turning vehicle queues.

Second, a roundabout could be installed at the Wittmeier Drive cul-de-sac to address potential vehicular conflicts between vehicles turning in the cul-de-sac and vehicles entering and exiting the westernmost Walmart driveway on Wittmeier Drive.

In addition to these modifications, additional roadway configuration options could be explored to further facilitate vehicle movement on Wittmeier Drive, including:

- One left-turn lane and one through-right lane in the eastbound direction, and one through-left lane and one right-turn pocket in the westbound direction. Truck loading and unloading activity could occur on the curbside between the two driveways on the south side of Wittmeier Drive.
- One left-turn lane and one through-right lane in the eastbound direction, one through-right lane in the westbound direction, and one two-way center left-turn lane with a median extending 50 feet west of the Forest Avenue / Wittmeier Drive intersection. Truck loading and unloading activity could occur in the two-way center left-turn lane.

These options should be studied further to identify exact geometrics and to quantify the measureable tradeoffs associated with each roadway configuration option. Since these modifications would reduce potential hazards on Wittmeier Drive due to design features, it would mitigate the associated intersection impact to **less than significant** under the Existing Plus Project

scenario.

Impact 3: The proposed project could cause potentially significant impacts to freeway facilities. Based on the analysis below, the impact would be **less than significant** under the Existing Plus Project scenario.

Existing Plus Project peak hour freeway mainline and ramp operations were evaluated utilizing the peak hour traffic volumes shown on **Figure 10**. **Table 15** summarizes projected SR 99 freeway mainline and ramp operations within the study area under Existing Plus Project conditions.

TABLE 15:
FREEWAY LEVEL OF SERVICE – SR 99 EXISTING PLUS PROJECT CONDITIONS

Freeway Facility	Junction Type	Target LOS	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Density	LOS	Density	LOS	Density	LOS
Northbound State Route 99								
South of Skyway Road	Basic	D	14.2	B	17.3	B	11.2	B
Skyway Road Off-Ramp	Diverge	D	19.2	B	22.7	C	15.9	B
Skyway Road Loop On-Ramp	Merge	E	17.4	B	22.0	C	14.9	B
Skyway Road Slip On-Ramp	Merge	E	26.7	C	30.3	D	20.1	C
Skyway Road to E 20th Street	Basic	E	23.7	C	28.0	D	17.0	B
E 20th Street Off-Ramp	Diverge	E	29.4	D	31.5	D	21.3	C
E 20th Street On-Ramp	Merge	E	31.3	D	36.5	E	26.6	C
North of E 20th Street	Basic	E	28.5	D	37.8	E	23.3	C
Southbound State Route 99								
North of E 20th Street	Basic	E	34.5	D	37.8	E	24.3	C
E 20th Street Off-Ramp	Diverge	E	38.4	E	40.4	E	30.4	D
E 20th Street On-Ramp	Merge	E	27.6	C	25.8	C	16.7	B
E 20th Street to Skyway Road	Basic	E	24.5	C	22.7	C	13.6	B
Skyway Road Off-Ramp	Diverge	E	31.6	D	29.3	D	20.3	C
Skyway Road Loop On-Ramp	Merge	D	16.8	B	17.4	B	12.6	B
Skyway Road On-Ramp	Merge	D	18.4	B	19.6	B	14.0	B
South of Skyway Road	Basic	D	15.3	B	16.5	B	11.0	B

Source: Fehr & Peers, 2015

As shown in **Table 15**, all study freeway mainline and ramp facilities are projected to continue to operate at acceptable LOS (LOS E or better north of Skyway Road and LOS D or better south of Skyway Road, per Caltrans significance criteria for freeways) during weekday AM, weekday PM and Saturday peak hours under Existing Plus Project conditions. Therefore, all project impacts to freeway facilities are considered to be **less than significant** under the Existing Plus Project scenario.

Mitigation Measures

None required.

> **Impact 4:** The proposed project could cause potentially significant impacts to bicycle facilities. Based on the analysis below, the impact would be **less than significant with mitigation measures** under the Existing Plus Project scenario.

As previously documented, in the Existing Plus Project scenario, the proposed project includes a relocation of the existing Class I path to near the edge of the project site, paralleling Forest Avenue, Wittmeier Drive, and SR 99. Although the proposed project would impact the existing bicycle facility, the proposed relocated Class I path is largely consistent with both the *City of Chico General Plan* and the *Chico Urban Area Bicycle Plan*, the documents that guide the development and maintenance of bicycle facilities throughout the City.

The *City of Chico General Plan* includes **Policy CIRC-1.2 (Project-Level Circulation Improvements)**, which requires new development to finance and construct internal and adjacent roadway circulation improvements as necessary to mitigate project impacts, including roadway, transit, pedestrian, and bicycle facilities. The proposed project adheres to this policy by including a relocated Class I path as part of the project site plan. Bicycle travel is further supported by the provision of forty bicycle parking spaces as part of the proposed project.

The *City of Chico General Plan* also includes **Policy CIRC-3.3 (New Development and Bikeway Connections)**, which requires new residential and non-residential development projects to provide connections to the nearest bikeways. The proposed bicycle facility adheres to this policy by providing direct connections to the surrounding bicycle network and accommodating bicycle travel to and from the project site. Although the Class I path would be moved to a new location, it would continue to serve the same role in the citywide bicycle network by connecting the SR 99 Corridor Bikeway Facility with the Forest Avenue bike lanes.

The *Chico Urban Area Bicycle Plan* identifies future bicycle facilities in Chico, including the SR 99 Bikeway that the City plans to extend through the project site south to Skyway Road. While the proposed project includes a portion of the planned SR 99 Bikeway, approximately 75 feet of the bikeway located between the southwest corner of the proposed bicycle path and the southern edge of the project site are not included in the proposed project. Without an accommodation of a potential future extension of the City's planned SR 99 Bikeway to the southern edge of the project site, this is considered a **potentially significant impact** under the Existing Plus Project scenario.

Mitigation Measures

The following mitigation measure is recommended to reduce the potentially significant impact to planned bicycle facilities.

> **Mitigation Measure 2.** The proposed project shall be modified to include an easement for a potential future Class I bikeway connection that would extend south from the southwesterly corner of the project site. With the ability reserved by the City to establish a future connection to this planned bikeway facility, this potential impact would be reduced to **less than significant**.

> **Impact 5:** The proposed project could cause potentially significant impacts to pedestrian facilities. Based on the analysis below, the impact would be **less than significant** under the Existing Plus Project scenario.

In the *City of Chico General Plan,* **Policy CIRC-1.2 (Project-Level Circulation Improvements)** requires new development to finance and construct internal and adjacent roadway circulation improvements as necessary to mitigate project impacts, including roadway, transit, pedestrian, and bicycle facilities, and **Policy CIRC-4.2 (Continuous Network)** requires the provision of a pedestrian network in existing and new neighborhoods that facilitates convenient and continuous pedestrian travel free from major impediments and obstacles.

As previously documented, the Existing Plus Project scenario includes a new on-site pedestrian walkway through the central portion of the parking lot to provide pedestrian access between Forest Avenue and the southeast store entrance. Pedestrians would also be able to utilize the relocated Class I bike path to traverse the project site. The project does not include any modifications to the surrounding public sidewalk network. New crosswalks are proposed for each leg of the modified Forest Avenue / Wittmeier Intersection.

Altogether, the pedestrian facility modifications included in the proposed project facilitate pedestrian access to and within the project site and do not require the removal of existing pedestrian facilities on public roadways. Therefore, all project impacts to pedestrian facilities adhere to *City of Chico General Plan* policies and are considered to be **less than significant** under the Existing Plus Project scenario.

Mitigation Measures

None required.

> **Impact 6:** The proposed project could cause potentially significant impacts to transit service and facilities. Based on the analysis below, the impact would be **less than significant** under the Existing Plus Project scenario.

Policy CIRC-5.3 (Transit Connectivity in Projects) – Ensure that new development supports public transit.

The City addresses local public transit priorities with *City of Chico General Plan* **Policy CIRC-5.3 (Transit Connectivity in Projects)**, which requires new development to support public transit. The proposed project does not include any modifications to existing transit service or facilities within the vicinity of the project site. The proposed on-site pedestrian walkway provides a direct connection between the southeast store entrance and existing BCAG bus stops on Forest Avenue. Although the proposed project is expected to generate additional transit trips, any increases in transit ridership are expected to be small and capable of

being served by existing B-Line services and facilities. Therefore, all project impacts to public transit service and facilities are considered to be **less than significant** under the Existing Plus Project scenario.

Mitigation Measures

None required.

4. SHORT TERM CONDITIONS

The Short Term scenario is the analysis scenario in which traffic impacts are analyzed assuming the development of several approved projects in the vicinity of the project and addition of study intersections which may be developed over the next five years. City of Chico staff provided a list of development projects to be assumed to be developed under Short Term conditions. Projected Short Term traffic conditions are derived from applying land use assumptions associated with the City-identified planned development projects to 2010 base year land use information from the 2009 BCAG travel demand model. While a City of Chico travel demand model is available, the BCAG travel demand model was utilized for this study because it includes more recent existing and future land use and roadway network inputs that reflect the recessionary impacts within the City of Chico and throughout the BCAG region. To ensure that the BCAG model was sensitive and accurate for this application, it was tested and validated against benchmarks specified by the modeling guidelines contained in the 2010 California Regional Transportation Plan Guidelines (CTC, 2010) and the Travel Model Validation and Reasonableness Checking Manual, Second Edition (FHWA, 2010).

Short Term No Project conditions assume no development or transportation modifications associated with the Walmart Expansion Project. The Short Term Plus Project scenario is the analysis scenario in which traffic impacts associated with the proposed project are analyzed in comparison to the Short Term No Project scenario. Project-related impacts expected to occur under the Short Term Plus Project scenario are presented at the end of this chapter.

SHORT TERM DEVELOPMENT PROJECTS

Development projects assumed to be completed within the next five years under Short Term No Project conditions are presented in **Table 16**.

TABLE 16:
SHORT TERM DEVELOPMENT PROJECTS

Project Name	Commercial Square Footage	Residential Units
Residential Subdivisions		
Sierra Gardens Townhouses	-	79
Belvedere Heights 2	-	92
Meriam Park	-	105
Oak Valley	-	265
Multi-Family Projects		
Oakdale Apartments	-	36
Chico Senior Living Complex	-	77
Carriage Park Apartments	-	141
Oakdale Apartments	-	26
Oak Valley Apartments	-	98
Retail Projects		
Ulta Beauty	10,000	-
Other Projects		
Southeast Chico Primary Care Clinic	44,000	-
Mechoopda Tribal (Office)	14,000	-

Source: City of Chico Staff

SHORT TERM NO PROJECT TRAFFIC OPERATIONS

Local Intersections

Short Term No Project peak hour intersection traffic operations were analyzed utilizing projected traffic volumes and existing intersection lane geometrics and control (shown on **Figure 11**). **Table 17** provides a summary of the projected peak hour intersection LOS under Short Term No Project conditions. As shown, all of the study area intersections are projected to operate with an average of LOS D or better during the weekday AM, weekday PM, and Saturday peak hours under Short Term No Project conditions.

TABLE 17:
STUDY INTERSECTION OPERATIONS – SHORT TERM NO PROJECT CONDITIONS

Intersection		Control Type	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS
1	E 20th St. / Dr. MLK Jr. Pkwy.	Signal	15	B	21	C	30	C
2	E 20th St. / SR 99 SB Ramps	Signal	10	A	17	B	19	B
3	E 20th St. / SR 99 NB Ramps	Signal	5	A	11	B	12	B
4	E 20th St. / Business Ln.	TWSC	13	B	17	C	19	C
5	E 20th St. / Chico Mall Access	Signal	10	B	22	C	28	C
6	E 20th St. / Forest Ave.	Signal	27	C	46	D	52	D
7	Forest Ave. / Baney Ln.	Signal	20	B	25	C	24	C
8	Forest Ave. / Walmart Driveway	TWSC	11	B	11	B	11	B
9	Forest Ave. / Wittmeier Dr. - Talbert	TWSC	16	C	22	C	19	C
10	Forest Ave. / Notre Dame Blvd.	Signal	13	B	15	B	15	B
11	E Park Ave. / Dr. MLK Jr. Pkwy.	Signal	10	B	13	B	13	B
12	Skyway Road / SR 99 SB Ramps	Signal	11	B	14	B	8	A
13	Skyway Road / SR 99 NB Ramps	Signal	6	A	9	A	5	A
14	Skyway Road / Notre Dame Blvd.	Signal	24	C	29	C	25	C

Notes:

1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For side-street stop controlled intersections, the delay is reported in seconds per vehicle for the worst individual movement. All results are rounded to the nearest second.

Source: Fehr & Peers, 2015

Freeway Facilities

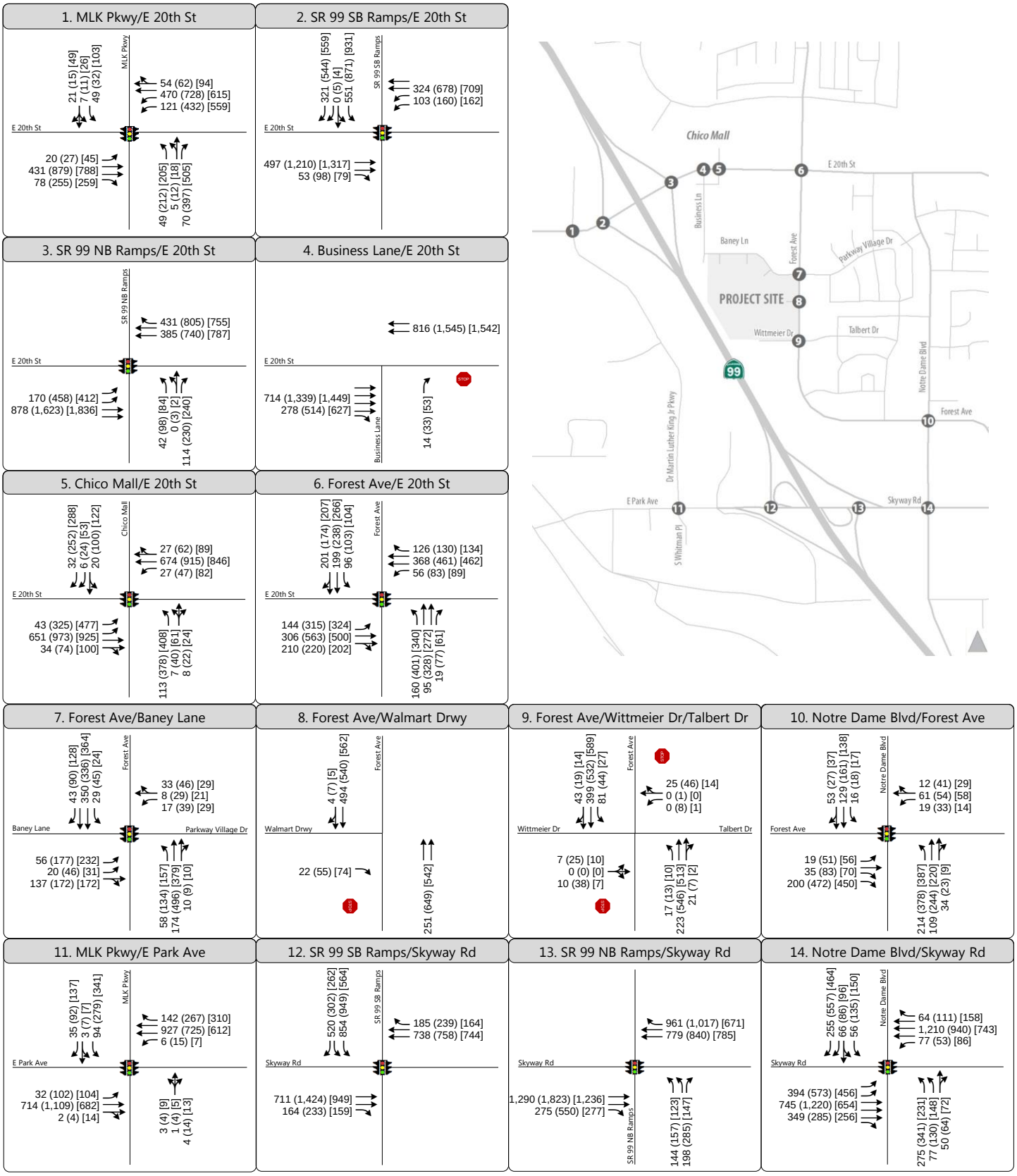
Short Term No Project peak hour mainline and ramp operations were evaluated utilizing the projected peak hour traffic volumes shown on **Figure 12**. **Table 18** summarizes projected SR 99 freeway mainline and ramp operations under Short Term No Project conditions. As shown, all mainline and ramp segments are

projected to operate with an average of LOS E or better during the weekday AM, weekday PM, and Saturday peak hours under Short Term No Project conditions.

TABLE 18:
FREEWAY LEVEL OF SERVICE – SR 99 SHORT TERM NO PROJECT CONDITIONS

Freeway Facility	Junction Type	Target LOS	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Density	LOS	Density	LOS	Density	LOS
Northbound State Route 99								
South of Skyway Road	Basic	D	14.1	B	17.2	B	10.9	A
Skyway Road Off-Ramp	Diverge	D	19.1	B	22.5	C	15.5	B
Skyway Road Loop On-Ramp	Merge	E	17.3	B	22.0	C	14.9	B
Skyway Road Slip On-Ramp	Merge	E	26.7	C	30.3	D	20.0	C
Skyway Road to E 20th Street	Basic	E	23.6	C	28.0	D	16.9	B
E 20th Street Off-Ramp	Diverge	E	29.3	D	31.5	D	21.2	C
E 20th Street On-Ramp	Merge	E	31.6	D	36.4	E	26.4	C
North of E 20th Street	Basic	E	28.9	D	37.4	E	23.1	C
Southbound State Route 99								
North of E 20th Street	Basic	E	34.5	D	36.9	E	23.7	C
E 20th Street Off-Ramp	Diverge	E	38.5	E	39.9	E	29.8	D
E 20th Street On-Ramp	Merge	E	27.9	C	25.6	C	16.4	B
E 20th Street to Skyway Road	Basic	E	24.9	C	22.5	C	13.4	B
Skyway Road Off-Ramp	Diverge	E	31.9	D	29.0	D	20.0	C
Skyway Road Loop On-Ramp	Merge	D	17.0	B	16.9	B	11.9	B
Skyway Road On-Ramp	Merge	D	18.6	B	19.0	B	13.4	B
South of Skyway Road	Basic	D	15.5	B	15.9	B	10.3	A

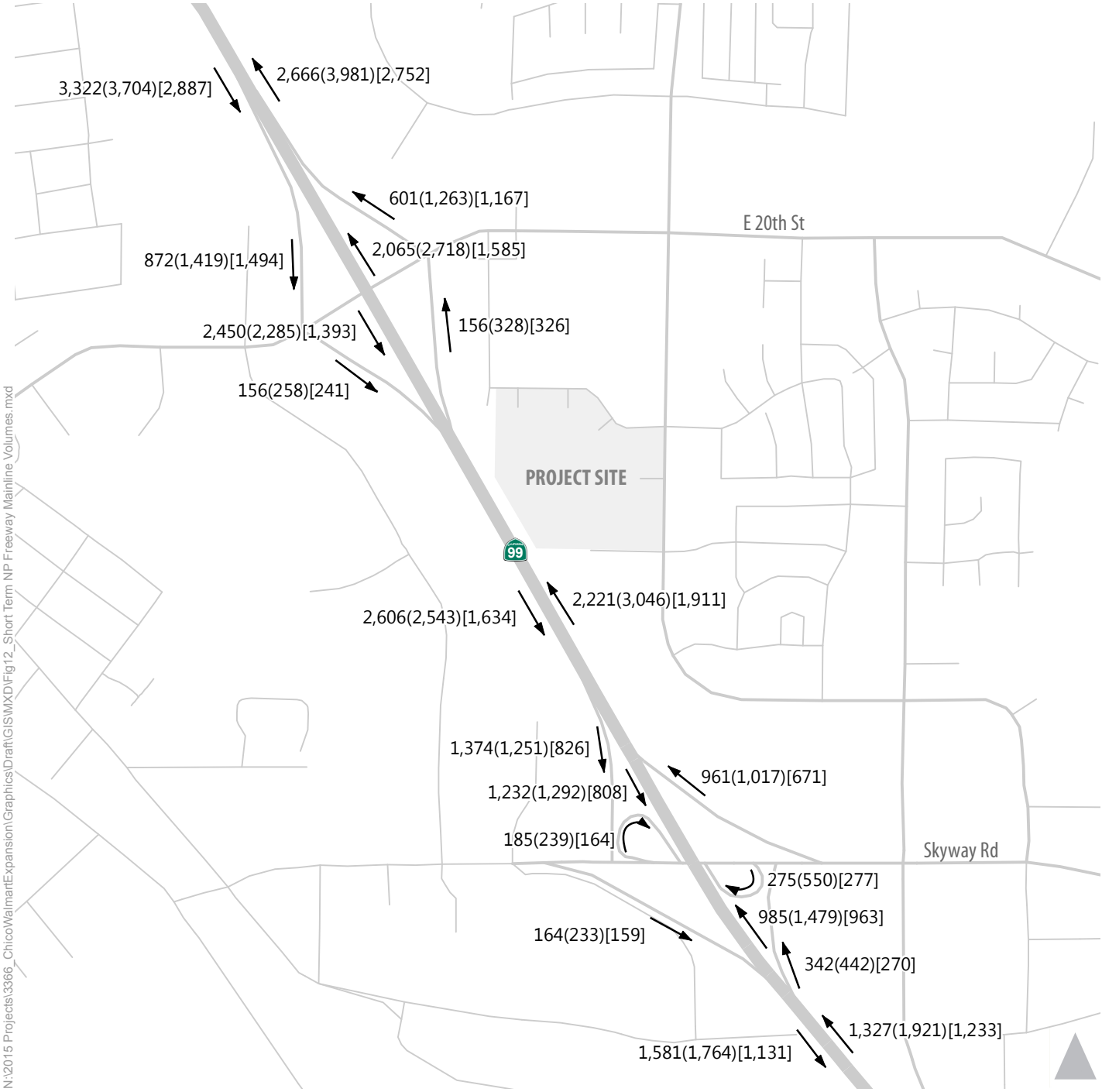
Source: Fehr & Peers, 2015



1	Study Intersection
	Turn Lane
AM (PM) [SAT]	Peak Hour Traffic Volume
	Traffic Signal
STOP	Stop Sign

Figure 11

Peak Hour Traffic Volumes and Lane Configurations Short-Term No Project



XX - AM Peak Hour Volumes

(XX) - PM Peak Hour Volumes

[XX] - Saturday Peak Hour Volumes

Figure 12

Short Term No Project Freeway Mainline and Ramp Volumes

SHORT TERM NO PROJECT BICYCLE FACILITIES

According to the *Chico Urban Area Bicycle Plan*, bicycle facilities in the study area are not anticipated to change from Existing conditions under Short Term conditions.

SHORT TERM NO PROJECT PEDESTRIAN FACILITIES

Pedestrian facilities in the study area are not anticipated to change from Existing conditions under Short Term conditions.

SHORT TERM NO PROJECT PUBLIC TRANSIT SERVICE AND FACILITIES

According to the *BCAG Transit & Non-Motorized Plan*, minor changes are planned for transit service and facilities within the vicinity of the project site under Short Term conditions. According to the Short Term transit service plan outlined in the document, Route 5 is identified for deletion. However, transit service coverage currently provided by Route 5 is expected to be available via alternative B-Line routes serving the area.

SHORT TERM PLUS PROJECT IMPACTS AND MITIGATION

The Short Term Plus Project scenario is the analysis scenario in which traffic impacts associated with the proposed project are analyzed in comparison to the Short Term No Project scenario. Trips associated with the proposed project were layered on top of the Short Term No Project scenario volumes to establish Short Term Plus Project volumes. The Short Term Plus Project scenario assumes the completion of the planned roadway modifications included in the proposed project, as well as the completion of approved development projects expected to be constructed within the next five years.

Potential impacts of the proposed project upon the transportation system under Short Term Plus Project conditions are evaluated in this section based on the standards of significance and analysis results. Each impact is followed by a recommended mitigation measure to reduce the significance of identified impacts, if needed.

Short Term Plus Project intersection traffic operations were analyzed utilizing projected Short Term Plus Project traffic volumes, as shown in **Figure 13**. **Table 19** displays Short Term Plus Project weekday AM, weekday PM, and Saturday peak hour operations at study intersections.

TABLE 19:
STUDY INTERSECTION OPERATIONS – SHORT TERM PLUS PROJECT CONDITIONS

Intersection		Control Type	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS
1	E 20th St. / Dr. MLK Jr. Pkwy.	Signal	15	B	21	C	30	C
2	E 20th St. / SR 99 SB Ramps	Signal	10	B	18	B	23	C
3	E 20th St. / SR 99 NB Ramps	Signal	6	A	12	B	13	B
4	E 20th St. / Business Ln.	TWSC	13	B	18	C	20	C
5	E 20th St. / Chico Mall Access	Signal	10	A	22	C	34	C
6	E 20th St. / Forest Ave.	Signal	30	C	56	E	**100**	**F**
7	Forest Ave. / Baney Ln.	Signal	20	C	27	C	28	C
8	Forest Ave. / Walmart Driveway	TWSC	11	B	12	B	12	B
9	Forest Ave. / Wittmeier Dr. - Talbert	Signal	12	B	15	B	14	B
10	Forest Ave. / Notre Dame Blvd.	Signal	13	B	16	B	18	B
11	E Park Ave. / Dr. MLK Jr. Pkwy.	Signal	10	B	13	B	13	B
12	Skyway Road / SR 99 SB Ramps	Signal	11	B	14	B	8	A
13	Skyway Road / SR 99 NB Ramps	Signal	6	A	10	B	5	A
14	Skyway Road / Notre Dame Blvd.	Signal	24	C	31	C	27	C

Notes:

1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For side-street stop controlled intersections, the delay is reported in seconds per vehicle for the worst individual movement. All results are rounded to the nearest second.

Source: Fehr & Peers, 2015

As shown in **Table 19**, all but one of the study area intersections are projected to operate at acceptable LOS thresholds during the weekday AM, weekday PM, and Saturday peak hours under Short Term Plus Project conditions.

Impact 7: The proposed project could cause potentially significant impacts to local intersection operations at the intersection of E 20th Street / Forest Avenue under Short Term Plus Project conditions. Based on the analysis below, the impact would be **less than significant** through continual monitoring and adjustment of signal timing by City Public Works staff.

Operations at this intersection are projected to degrade from an acceptable LOS D under Short Term Conditions to an unacceptable LOS F under Short Term Plus Project conditions during the Saturday peak hour. According to the City of Chico General Plan, intersection operations are considered acceptable at LOS E or better under the roadway conditions of E 20th Street and Forest Avenue.

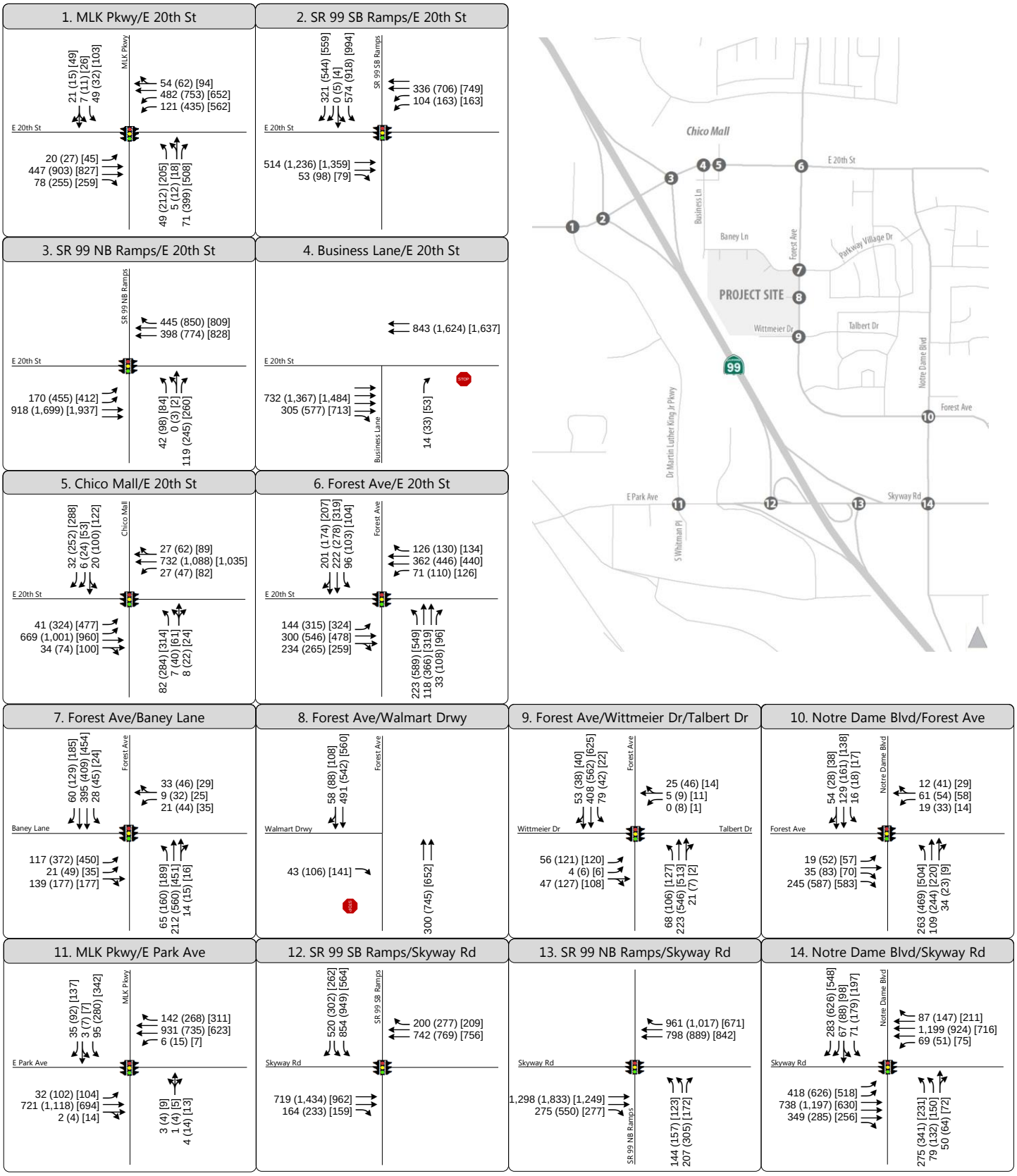
The increase in intersection volume and corresponding degradation of intersection operations can be attributed to a combination of a) additional trips generated by the proposed project and, b) additional trips rerouted to Forest Avenue as a result of the proposed turn restrictions at the Baney Lane Walmart driveways. Northbound left-turn volumes are particularly high during the Saturday peak hour time period under Short Term Plus Project conditions. The current signal timing plan provides insufficient northbound left-turn green time to accommodate this projected volume without adversely impacting intersection operations.

Pursuant to City of Chico General Plan **Action CIRC 2.2.2**, City Public Works staff will continue to monitor operations and adjust signal timing as needed to optimize traffic flows and maintain an acceptable level of service at the E 20th Street / Forest Avenue intersection. According to a Synchro analysis of the E 20th Street / Forest Avenue intersection with signal optimization, it is estimated that signal timing modifications could improve operations to an average delay of 55 seconds and an acceptable LOS D can be maintained during the Saturday peak time period.

Since operation of the intersection will be maintained at an acceptable level of service by Public Works staff pursuant to existing General Plan policy, no mitigation is necessary to reduce project impacts.

Mitigation Measures

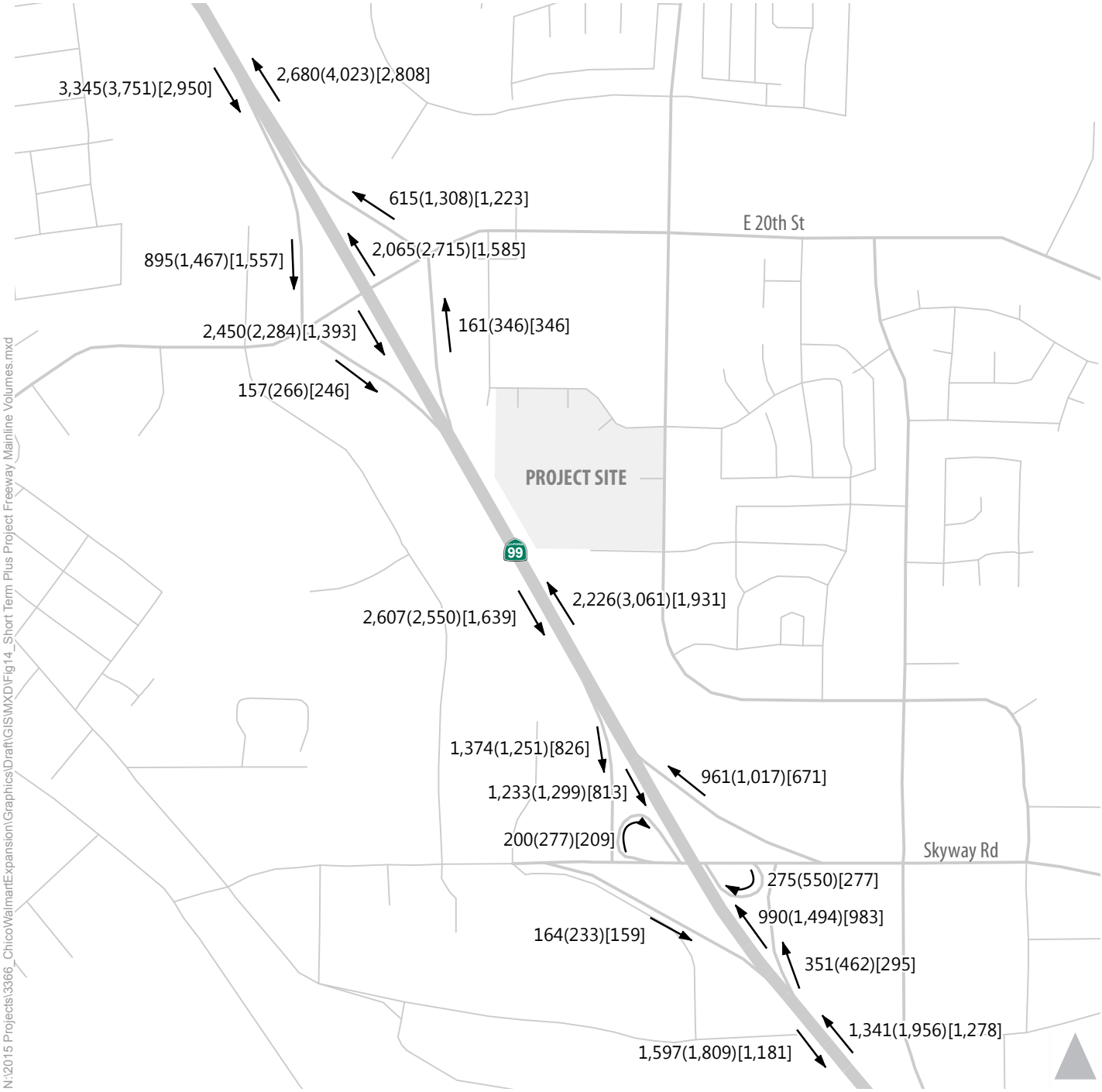
None required.



1	Study Intersection
	Turn Lane
AM (PM) [SAT]	Peak Hour Traffic Volume
	Traffic Signal
STOP	Stop Sign

Figure 13

Peak Hour Traffic Volumes and Lane Configurations Short-Term Plus Project



XX - AM Peak Hour Volumes

(XX) - PM Peak Hour Volumes

[XX] - Saturday Peak Hour Volumes

Figure 14

Short Term Plus Project Freeway Mainline and Ramp Volumes

Impact 8: The proposed project could potentially increase hazards on local roadways due to design features. Based on the analysis below, the impact would be **less than significant** under the Short Term Plus Project scenario.

According to the current site plan, the proposed roadway modifications on Wittmeier Drive could potentially affect access to the project site and adjacent parcels while increasing hazards along the roadway. First, the current lane configuration may impede vehicular access and truck loading from Wittmeier Drive into the adjacent property south of the roadway, particularly at its easternmost driveway. Second, vehicular conflicts may occur as drivers attempt to navigate the cul-de-sac in tandem with vehicles arriving and departing from the westernmost Walmart driveway. Finally, with the westernmost driveway directly aligned with the Wittmeier Drive travel lanes may cause vehicular conflicts for vehicles turning in and out of adjacent driveways.

Mitigation Measures

The following mitigation measure is recommended to reduce the potential for hazards and access issues on Wittmeier Drive.

Mitigation Measure 1. Modify the Wittmeier Drive lane configuration and roadway geometrics to improve operations for through and turning vehicular movements (same as Mitigation Measure 2 for Existing Plus Project conditions).

Two modifications could be made to reduce the opportunities for conflict between through and turning vehicles. First, the eastbound dual left-turn lanes on Wittmeier Drive could be modified to a single left-turn lane, providing an extra lane to facilitate westbound turning movements and truck loading and unloading. Based on estimated Plus Project peak hour left-turn movements from Wittmeier Drive to Forest Avenue, it is not anticipated that dual left-turn lanes are necessary to accommodate turning vehicle queues.

Second, a roundabout could be installed at the Wittmeier Drive cul-de-sac to address potential vehicular conflicts between vehicles turning in the cul-de-sac and vehicles entering and exiting the westernmost Walmart driveway on Wittmeier Drive.

In addition to these modifications, additional roadway configuration options could be explored to further facilitate vehicle movement on Wittmeier Drive, including:

- One left-turn lane and one through-right lane in the eastbound direction, and one through-left lane and one right-turn pocket in the westbound direction. Truck loading and unloading activity could occur on the curbside between the two driveways on the south side of Wittmeier Drive.
- One left-turn lane and one through-right lane in the eastbound direction, one through-right lane in the westbound direction, and one two-way center left-turn lane with a median extending 50 feet west of the Forest Avenue / Wittmeier Drive intersection. Truck loading and unloading activity could occur in the two-way center left-turn lane.

These options should be studied further to identify exact geometrics and to quantify the measureable tradeoffs associated with each roadway configuration option. Since these modifications would reduce potential hazards on Wittmeier Drive due to design features, it would

mitigate the associated intersection impact to **less than significant** under the Short Term Plus Project scenario.

Impact 9: The proposed project could cause potentially significant impacts to freeway facilities under Short Term conditions. Based on the analysis below, the impact would be **less than significant** under the Short Term Plus Project scenario.

Short Term Plus Project peak hour freeway mainline and ramp operations were evaluated utilizing the peak hour traffic volumes shown on **Figure 14**. **Table 20** summarizes projected SR 99 freeway mainline and ramp operations within the study area under Short Term Plus Project conditions.

TABLE 20:
FREEWAY LEVEL OF SERVICE – SR 99 SHORT TERM PLUS PROJECT CONDITIONS

Freeway Facility	Junction Type	Target LOS	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Density	LOS	Density	LOS	Density	LOS
Northbound State Route 99								
South of Skyway Road	Basic	D	14.2	B	17.5	B	11.3	B
Skyway Road Off-Ramp	Diverge	D	19.2	B	22.9	C	16.0	B
Skyway Road Loop On-Ramp	Merge	E	17.4	B	22.1	C	15.0	B
Skyway Road Slip On-Ramp	Merge	E	26.7	C	30.5	D	20.2	C
Skyway Road to E 20th Street	Basic	E	23.7	C	28.2	D	17.0	B
E 20th Street Off-Ramp	Diverge	E	29.4	D	31.7	D	21.4	C
E 20th Street On-Ramp	Merge	E	31.7	D	36.7	E	26.8	C
North of E 20th Street	Basic	E	29.1	D	38.2	E	23.6	C
Southbound State Route 99								
North of E 20th Street	Basic	E	34.9	D	37.8	E	24.3	C
E 20th Street Off-Ramp	Diverge	E	38.7	E	40.4	E	30.4	D
E 20th Street On-Ramp	Merge	E	27.9	C	25.7	C	16.5	B
E 20th Street to Skyway Road	Basic	E	24.9	C	22.5	C	13.4	B
Skyway Road Off-Ramp	Diverge	E	31.9	D	29.1	D	20.1	C
Skyway Road Loop On-Ramp	Merge	D	17.1	B	17.3	B	12.3	B
Skyway Road On-Ramp	Merge	D	18.8	B	19.4	B	13.8	B
South of Skyway Road	Basic	D	15.7	B	16.3	B	10.8	A

Source: Fehr & Peers, 2015

As shown in **Table 20**, all study freeway mainline and ramp facilities are projected to continue to operate at acceptable LOS (LOS E or better north of Skyway Road and LOS D or better south of Skyway Road, per Caltrans significance criteria for freeways) during weekday AM, weekday PM and Saturday peak hours under Short Term Plus Project conditions. Therefore, all project impacts to freeway facilities are considered to be **less than significant** under the Short Term Plus Project scenario.

Mitigation Measures

None required.

> **Impact 10:** The proposed project could cause potentially significant impacts to bicycle facilities. Based on the analysis below, the impact would be **less than significant with mitigation measures** under the Short Term Plus Project scenario.

As previously documented, in the Short Term Plus Project scenario, the proposed project includes a relocation of the existing Class I path to near the edge of the project site, paralleling Forest Avenue, Wittmeier Drive, and SR 99. Although the proposed project would impact the existing bicycle facility, the proposed relocated Class I path is largely consistent with both the *City of Chico General Plan* and the *Chico Urban Area Bicycle Plan*, the documents that guide the development and maintenance of bicycle facilities throughout the City.

The *City of Chico General Plan* includes **Policy CIRC-1.2 (Project-Level Circulation Improvements)**, which requires new development to finance and construct internal and adjacent roadway circulation improvements as necessary to mitigate project impacts, including roadway, transit, pedestrian, and bicycle facilities. The proposed project adheres to this policy by including a relocated Class I path as part of the project site plan. Bicycle travel is further supported by the provision of forty bicycle parking spaces as part of the proposed project.

The *City of Chico General Plan* also includes **Policy CIRC-3.3 (New Development and Bikeway Connections)**, which requires new residential and non-residential development projects to provide connections to the nearest bikeways. The proposed bicycle facility adheres to this policy by providing direct connections to the surrounding bicycle network and accommodating bicycle travel to and from the project site. Although the Class I path would be moved to a new location, it would continue to serve the same role in the citywide bicycle network by connecting the SR 99 Corridor Bikeway Facility with the Forest Avenue bike lanes.

The *Chico Urban Area Bicycle Plan* identifies future bicycle facilities in Chico, including the SR 99 Bikeway that the City plans to extend through the project site south to Skyway Road. While the proposed project includes a portion of the planned SR 99 Bikeway, approximately 75 feet of the bikeway located between the southwest corner of the proposed bicycle path and the southern edge of the project site are not included in the proposed project. Without an accommodation of a potential future extension of the City's planned SR 99 Bikeway to the southern edge of the project site, this is considered a **potentially significant impact** under the Short Term Plus Project scenario.

Mitigation Measures

The following mitigation measure is recommended to reduce the potentially significant impact to planned bicycle facilities.

> **Mitigation Measure 2.** The proposed project shall be modified to include an easement for a potential future Class I bikeway connection that would extend south from the southwesterly corner of the project site. With the ability reserved by the City to establish a future connection to this planned bikeway facility, this potential impact would be reduced to **less than significant**.

> **Impact 11:** The proposed project could cause potentially significant impacts to pedestrian facilities under Short Term conditions. Based on the analysis below, the impact would be **less than significant** under the Short Term Plus Project scenario.

In the *City of Chico General Plan,* **Policy CIRC-1.2 (Project-Level Circulation Improvements)** requires new development to finance and construct internal and adjacent roadway circulation improvements as necessary to mitigate project impacts, including roadway, transit, pedestrian, and bicycle facilities, and **Policy CIRC-4.2 (Continuous Network)** requires the provision of a pedestrian network in existing and new neighborhoods that facilitates convenient and continuous pedestrian travel free from major impediments and obstacles.

As previously documented, the Short Term Plus Project scenario includes a new on-site pedestrian walkway through the central portion of the parking lot to provide pedestrian access between Forest Avenue and the southeast store entrance. Pedestrians would also be able to utilize the relocated Class I bike path to traverse the project site. The project does not include any modifications to the surrounding public sidewalk network. New crosswalks are proposed for each leg of the modified Forest Avenue / Wittmeier Intersection.

Altogether, the pedestrian facility modifications included in the proposed project facilitate pedestrian access to and within the project site and do not require the removal of existing pedestrian facilities on public roadways. Therefore, all project impacts to pedestrian facilities adhere to *City of Chico General Plan* policies and are considered to be **less than significant** under the Short Term Plus Project scenario.

Mitigation Measures

None required.

> **Impact 12:** The proposed project could cause potentially significant impacts to transit service and facilities under Short Term conditions. Based on the analysis below, the impact would be **less than significant** under the Short Term Plus Project scenario.

The City addresses local public transit priorities with *City of Chico General Plan* **Policy CIRC-5.3 (Transit Connectivity in Projects)**, which requires new development to support public transit. The proposed project does not include any modifications to existing transit service or facilities within the vicinity of the project site. The proposed on-site pedestrian walkway provides a direct connection between the southeast store entrance and existing BCAG bus stops on Forest Avenue.

The *BCAG Transit and Non-Motorized Plan* outlines future transit service and facilities within the study area. Although the proposed project is expected to generate additional transit trips, any increases in transit ridership are expected to be small and capable of being served by planned future B-Line services and

facilities. Therefore, all project impacts to public transit service and facilities are considered to be **less than significant** under the Short Term Plus Project scenario.

Mitigation Measures

None required.

5. CUMULATIVE CONDITIONS

The Cumulative scenario is the analysis scenario in which traffic impacts are analyzed assuming the development of numerous reasonable and foreseeable land uses expected in 2035. This analysis utilizes the 2009 BCAG travel demand model, developed as part of the 2012 BCAG MTP/SCS, to establish future land use and traffic assumptions for 2035. While a City of Chico travel demand model is available, the BCAG travel demand model was utilized for this study because it includes more recent existing and future land use and roadway network inputs that reflect the recessionary impacts within the City of Chico and throughout the BCAG region. To ensure that the BCAG model was sensitive and accurate for this application, it was tested and validated against benchmarks specified by the modeling guidelines contained in the 2010 California Regional Transportation Plan Guidelines (CTC, 2010) and the Travel Model Validation and Reasonableness Checking Manual, Second Edition (FHWA, 2010). For Cumulative conditions, 2035 land use inputs were updated to incorporate new development projects that may have been omitted from the original version of the BCAG travel demand model.

Cumulative No Project conditions assume no development or transportation modifications associated with the Walmart Expansion Project. The Cumulative Plus Project scenario is the analysis scenario in which traffic impacts associated with the proposed project are analyzed in comparison to the Cumulative No Project scenario. Project-related impacts expected to occur under the Cumulative Plus Project scenario are presented at the end of this chapter.

CUMULATIVE ROADWAY IMPROVEMENTS

Roadway improvement projects assumed to be completed under Cumulative conditions are presented below. These include the future local roadway conditions as identified in the *City of Chico General Plan* as well as future freeway improvements identified in the *Transportation Corridor Concept Report, State Route 99*. Under Cumulative conditions, these improvements are added to the roadway improvements assumed under Short Term conditions.

Current long-term plans for the E 20th Street corridor include roadway widening to three lanes in each direction and extended and/or additional turn lanes at intersections to accommodate future traffic growth. The City is currently contemplating modifying these plans to include roundabouts instead of roadway widening along E 20th Street, however, the roundabout alternative has not been formally incorporated into the City's Capital Improvement Program. The *Transportation Corridor Concept Report, State Route 99* identifies the following improvements to SR 99 required within the next twenty years:

- Auxiliary lanes in both directions on SR 99 between the Skyway Road and E 20th Street interchanges.
- Auxiliary lanes in both directions on SR 99 between the E 20th Street and SR 32 interchanges.

Given the distant time horizon for the Cumulative scenarios, it is assumed that the City and Caltrans will update signalized intersections with optimized signal timing plans to reflect changes in local roadway volumes, where necessary.

CUMULATIVE NO PROJECT TRAFFIC OPERATIONS

Local Intersections

Cumulative No Project peak hour intersection traffic operations were analyzed utilizing projected traffic volumes and intersection lane geometrics and control (shown on **Figure 15**). **Table 21** provides a summary of the projected peak hour intersection LOS under Cumulative No Project conditions. As shown, all of the study area intersections are projected to operate with an average of LOS E or better during the weekday AM, weekday PM, and Saturday peak hours under Cumulative No Project conditions.

TABLE 21:
STUDY INTERSECTION OPERATIONS – CUMULATIVE NO PROJECT CONDITIONS

Intersection		Control Type	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS
1	E 20th St. / Dr. MLK Jr. Pkwy.	Signal	17	B	27	C	38	D
2	E 20th St. / SR 99 SB Ramps	Signal	13	B	27	C	35	D
3	E 20th St. / SR 99 NB Ramps	Signal	11	B	18	B	21	C
4	E 20th St. / Business Ln.	TWSC	18	C	20	C	24	C
5	E 20th St. / Chico Mall Access	Signal	12	B	32	C	45	D
6	E 20th St. / Forest Ave.	Signal	37	D	66	E	58	E
7	Forest Ave. / Baney Ln.	Signal	19	B	24	C	23	C
8	Forest Ave. / Walmart Driveway	TWSC	11	B	11	B	11	B
9	Forest Ave. / Wittmeier Dr. - Talbert	TWSC	19	C	24	C	20	C
10	Forest Ave. / Notre Dame Blvd.	Signal	15	B	15	B	15	B
11	E Park Ave. / Dr. MLK Jr. Pkwy.	Signal	10	B	14	B	15	B
12	Skyway Road / SR 99 SB Ramps	Signal	12	B	14	B	8	A
13	Skyway Road / SR 99 NB Ramps	Signal	7	A	10	A	5	A
14	Skyway Road / Notre Dame Blvd.	Signal	27	C	31	C	26	C

Notes:

1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For side-street stop controlled intersections, the delay is reported in seconds per vehicle for the worst individual movement. All results are rounded to the nearest second.

Source: Fehr & Peers, 2015

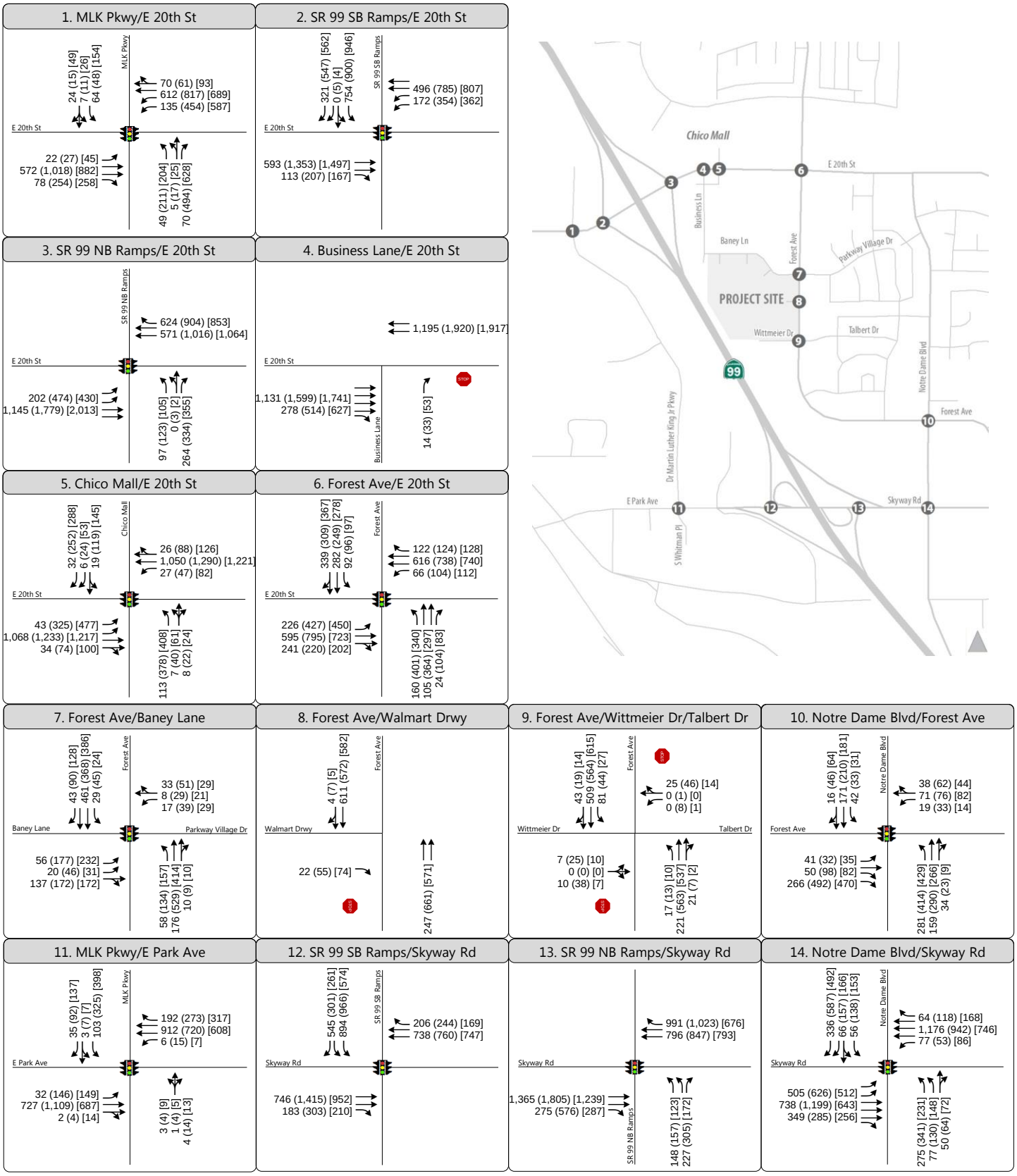
Freeway Facilities

Cumulative No Project peak hour mainline, ramp, and weave segment operations were evaluated utilizing the projected peak hour traffic volumes shown on **Figure 16**. **Table 22** summarizes projected SR 99 freeway mainline and ramp operations under Short Term No Project conditions. As shown, all mainline, ramp, and weave segments are projected to operate with an average of LOS E or better during the weekday AM, weekday PM, and Saturday peak hours under Cumulative No Project conditions.

TABLE 22:
FREEWAY LEVEL OF SERVICE – SR 99 CUMULATIVE NO PROJECT CONDITIONS

Freeway Facility	Junction Type	Target LOS	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Density	LOS	Density	LOS	Density	LOS
Northbound State Route 99								
South of Skyway Road	Basic	D	29.0	D	17.2	B	10.9	A
Skyway Road Off-Ramp	Diverge	D	34.5	D	22.5	C	15.5	B
Skyway Road Loop On-Ramp	Merge	E	31.0	D	22.0	C	14.9	B
Skyway Road On Ramp to E 20th Street Off Ramp	Weave	E	-	C	-	D	-	B
E 20th Street On Ramp to SR 32 Off Ramp	Weave	E	-	D	-	E	-	C
Southbound State Route 99								
SR 32 On Ramp to E 20th Street Off Ramp	Weave	E	-	D	-	E	-	D
E 20th Street On Ramp to Skyway Road Off Ramp	Weave	E	-	D	-	D	-	B
Skyway Road Loop On-Ramp	Merge	D	17.0	B	16.9	B	11.9	B
Skyway Road On-Ramp	Merge	D	18.6	B	19.0	B	13.4	B
South of Skyway Road	Basic	D	15.5	B	15.9	B	10.3	A

Source: Fehr & Peers, 2015



1	Study Intersection
	Turn Lane
AM (PM) [SAT]	Peak Hour Traffic Volume
	Traffic Signal
STOP	Stop Sign

Figure 15

Peak Hour Traffic Volumes and Lane Configurations
Cumulative No Project

XX - AM Peak Hour Volumes

(XX) - PM Peak Hour Volumes

[XX] - Saturday Peak Hour Volumes

Figure 16

Cumulative No Project Freeway Mainline and Ramp Volumes

CUMULATIVE NO PROJECT BICYCLE FACILITIES

The *Chico Urban Area Bicycle Plan* identifies the following planned improvements to the bikeway network within the study area. It is assumed that these improvements will be completed by the City under Cumulative conditions:

- Completion of the SR 99 Corridor Bikeway Facility, with a new Class II bike lane from Chico Mall to Business Lane and a new Class I path from the project site to Skyway Road.
- A new Class II bike lane on Notre Dame Boulevard north of E 20th Street.
- A new Class II bike lane on Martin Luther King Jr. Parkway north of E Park Avenue.
- A new Class II bike lane on Fair Street south of E Park Avenue.

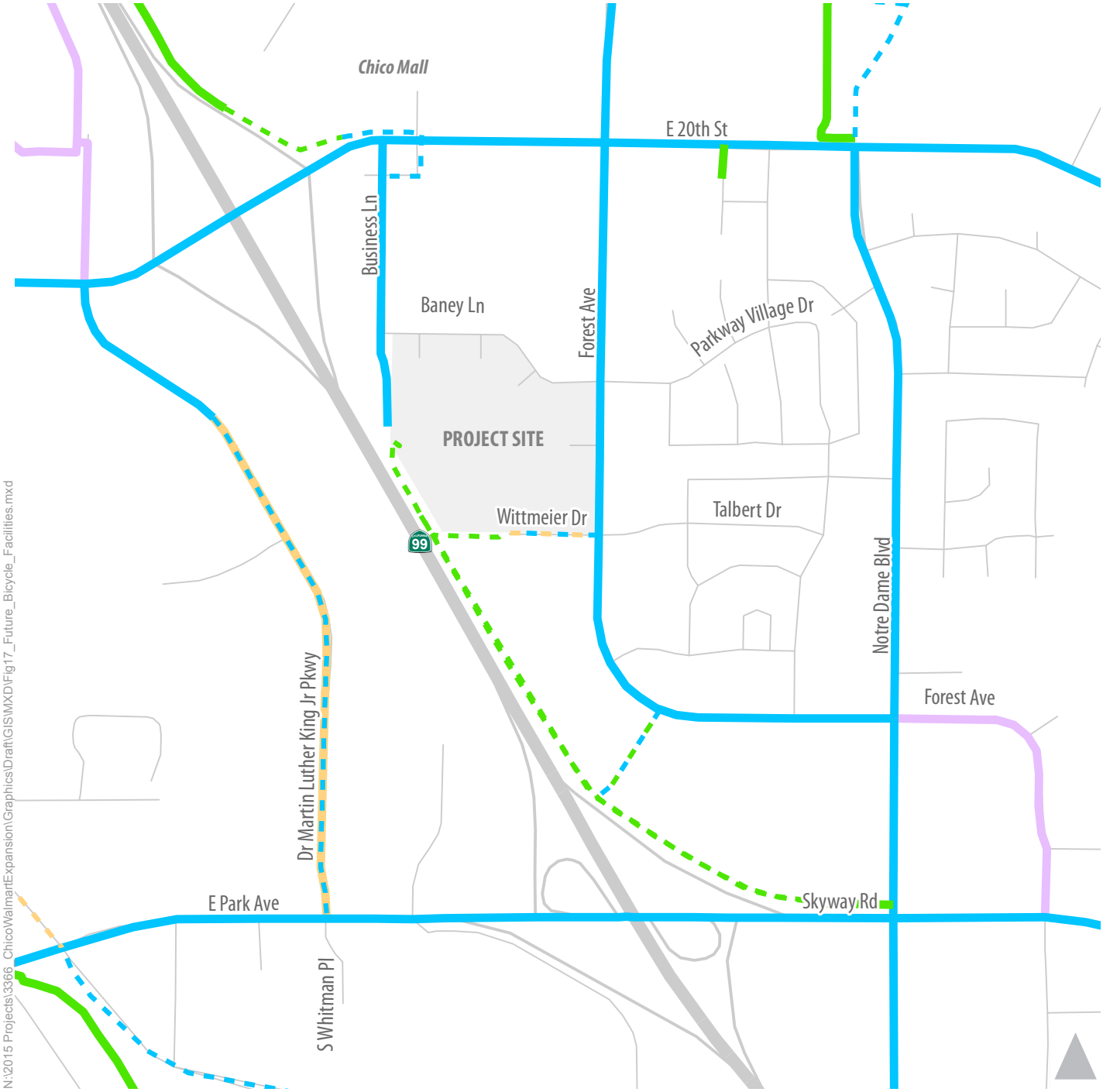
The planned future study area bikeway network as identified in the *Chico Urban Area Bicycle* is presented in **Figure 17**.

CUMULATIVE NO PROJECT PEDESTRIAN FACILITIES

Pedestrian facilities in the study area are not anticipated to change from Existing and Short Term conditions under Cumulative conditions.

CUMULATIVE NO PROJECT PUBLIC TRANSIT SERVICE AND FACILITIES

According to the Mid and Long Term transit service plans identified in the *BCAG Transit and Non-Motorized Plan*, public transit service and facilities in the study area are not anticipated to change from Short Term conditions under Cumulative conditions.



Existing Bicycle Facilities

- Class I Bike Path
- Class II Bike Lane
- Class III Bike Route
- Connector Route

Planned Bicycle Facilities

- Class I Bike Path
- Class I or II
- Class II Bike Lane
- Class II or III
- Class III Bike Route

Figure 17

Planned Future Bicycle Facilities

CUMULATIVE PLUS PROJECT IMPACTS AND MITIGATION

The Cumulative Plus Project scenario is the analysis scenario in which traffic impacts associated with the proposed project are analyzed in comparison to the Cumulative No Project scenario. Trips associated with the proposed project were layered on top of the Cumulative No Project scenario volumes to establish Cumulative Plus Project volumes. The Cumulative Plus Project scenario assumes the completion of the planned roadway modifications included in the proposed project, as well as the completion of numerous reasonable and foreseeable land uses expected in 2035. This analysis utilizes the 2009 BCAG travel demand model to establish future land use and traffic assumptions for 2035

Potential impacts of the proposed project upon the transportation system under Cumulative Plus Project conditions are evaluated in this section based on the standards of significance and analysis results. Each impact is followed by a recommended mitigation measure to reduce the significance of identified impacts, if needed.

Cumulative Plus Project intersection traffic operations were analyzed utilizing projected Cumulative Plus Project traffic volumes, as shown in **Figures 18**. **Table 23** displays Cumulative Plus Project weekday AM, weekday PM, and Saturday peak hour operations at study intersections.

TABLE 23:
STUDY INTERSECTION OPERATIONS – CUMULATIVE PLUS PROJECT CONDITIONS

Intersection		Control Type	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS
1	E 20th St. / Dr. MLK Jr. Pkwy.	Signal	17	B	27	C	39	D
2	E 20th St. / SR 99 SB Ramps	Signal	14	B	31	C	41	D
3	E 20th St. / SR 99 NB Ramps	Signal	11	B	20	C	27	C
4	E 20th St. / Business Ln.	TWSC	18	C	21	C	25	C
5	E 20th St. / Chico Mall Access	Signal	12	B	34	C	61	E
6	E 20th St. / Forest Ave.	Signal	40	D	**94**	**F**	**89**	**F**
7	Forest Ave. / Baney Ln.	Signal	20	C	27	C	27	C
8	Forest Ave. / Walmart Driveway	TWSC	12	B	12	B	13	B
9	Forest Ave. / Wittmeier Dr. - Talbert	Signal	12	B	15	B	14	B
10	Forest Ave. / Notre Dame Blvd.	Signal	15	B	17	B	19	B
11	E Park Ave. / Dr. MLK Jr. Pkwy.	Signal	10	B	14	B	15	B
12	Skyway Road / SR 99 SB Ramps	Signal	12	B	14	B	8	A
13	Skyway Road / SR 99 NB Ramps	Signal	7	A	11	B	5	A
14	Skyway Road / Notre Dame Blvd.	Signal	27	C	33	C	29	C

Notes:

1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For side-street stop controlled intersections, the delay is reported in seconds per vehicle for the worst individual movement. All results are rounded to the nearest second.

TABLE 23: STUDY INTERSECTION OPERATIONS – CUMULATIVE PLUS PROJECT CONDITIONS							
Intersection	**Control Type**	**AM Peak Hour**		**PM Peak Hour**		**Saturday Peak Hour**	
		Avg. Delay	**LOS**	**Avg. Delay**	**LOS**	**Avg. Delay**	**LOS**
Source: Fehr & Peers, 2015							

As shown in **Table 23**, all but one of the study area intersections are projected to operate at acceptable LOS thresholds during the weekday AM, weekday PM, and Saturday peak hours under Cumulative Plus Project conditions:

> **Impact 13:** The proposed project could cause potentially significant impacts to local intersection operations at the intersection of E 20th Street / Forest Avenue under Cumulative Plus Project conditions. During the weekday PM and Saturday peak hours, this intersection is projected to degrade from an acceptable LOS E under Cumulative No Project conditions to an unacceptable LOS F under Cumulative Plus Project conditions. According to the City of Chico General Plan, intersection operations are considered acceptable at LOS E or better under the roadway conditions of E 20th Street and Forest Avenue. Based on the analysis below, the impact would be offset with mitigation measures, reducing the impact to **less than significant**.

The increase in intersection volume and corresponding degradation of intersection operations can be attributed to a combination of a) additional trips generated by the proposed project and, b) additional trips rerouted to Forest Avenue as a result of the proposed turn restrictions at the Baney Lane Walmart driveways. Northbound left-turn volumes are particularly high during the weekday PM and Saturday peak hour time periods under Cumulative Plus Project conditions.

Mitigation Measures

The following mitigation measures are recommended to mitigate Cumulative Plus Project impacts at the E 20th Street / Forest Avenue intersection during weekday PM and Saturday peak hour periods.

> **Mitigation Measure 3a:** Prior to issuance of the first building permit for the proposed project, the applicant shall provide the City of Chico the requisite cost for improving the intersection of E 20th Street / Forest Avenue. The improvements shall consist of a) restriping the northbound approach (Forest Avenue) to provide a left-turn lane, a shared left-turn/through lane, a through lane, and a right-turn lane, and b) modifying the signal operation to provide split phasing on the northbound and southbound approaches. The City of Chico shall implement the improvements when monitoring determines that the intersection operation is approaching unacceptable levels.
>
> According to a Synchro analysis of the E 20th Street / Forest Avenue intersection with the restriping and split-phase signal timing, operations would improve to an average delay of 68 seconds during the weekday PM peak time period and 65 seconds during the Saturday peak time period, both of which would be at an acceptable LOS E. This would mitigate the associated intersection impact to **less than significant** under the Cumulative Plus Project scenario.

Mitigation Measure 3b: Pursuant to General Plan **Policy CIRC-1.3 (Citywide Circulation Improvements)**, the applicant shall pay the fair share cost of circulation improvements necessary to address cumulative transportation impacts through the City's development impact fee program.

Current long-term plans for the E 20th Street corridor include roadway widening to three lanes in each direction and extended and/or additional turn lanes at intersections to accommodate future traffic growth. Consistent with these plans, a modification of the lane configuration on the northbound approach of the E 20th Street / Forest Avenue intersection to include dual left-turn lanes could sufficiently accommodate Cumulative Plus Project traffic volumes. This improvement would require the construction of an additional left-turn lane with 225 feet of storage on the northbound approach of the intersection. This would be the same distance as the existing single left-turn lane. This improvement may require roadway widening in order to accommodate the additional turn lane. Whereas Mitigation Measure 1 adequately addresses unacceptable traffic operations under Existing Plus Project and Short Term Plus Project conditions with signal timing modifications, increased automobile volumes under Cumulative Plus Project conditions cannot be sufficiently mitigated with signal timing modifications alone. With an estimated peak hour left-turn volume of more than 550 vehicles, a second left-turn lane is warranted. According to a Synchro analysis of the E 20th Street / Forest Avenue intersection with northbound dual left-turn lanes, it is estimated that this modification would improve operations to an average delay of 55 seconds and an acceptable LOS E during the weekday PM peak time period and an average delay of 54 seconds and an acceptable LOS D during the Saturday peak time period.

Alternatively, the City is currently contemplating modifying existing long-term plans to include roundabouts in place of roadway widening along E 20th Street. A potential roundabout at E 20th Street / Forest Avenue is one of four along the E 20th Street corridor identified as improvement alternatives in the *East 20th Street Circulation Study* (City of Chico, 2011). However, the roundabout alternative has not been formally incorporated into the City's Capital Improvement Program.

For either alternative, the project will pay its fair share cost of circulation improvements necessary to partially mitigate cumulative roadway impacts.

Impact 14: The proposed project could potentially increase hazards on local roadways due to design features. Based on the analysis below, the impact would be **less than significant** under the Cumulative Plus Project scenario.

According to the current site plan, the proposed roadway modifications on Wittmeier Drive could potentially affect access to the project site and adjacent parcels while increasing hazards along the roadway. First, the current lane configuration may impede vehicular access and truck loading from Wittmeier Drive into the adjacent property south of the roadway, particularly at its easternmost driveway. Second, vehicular conflicts may occur as drivers attempt to navigate the cul-de-sac in tandem with vehicles arriving and departing from the westernmost Walmart driveway. Finally, with the westernmost driveway directly aligned with the Wittmeier Drive travel lanes may cause vehicular conflicts for vehicles turning in and out of adjacent driveways.

Mitigation Measures

The following mitigation measure is recommended to reduce the potential for hazards and access issues on Wittmeier Drive.

Mitigation Measure 4. Modify the Wittmeier Drive lane configuration and roadway geometrics to improve operations for through and turning vehicular movements (same as Mitigation Measure 2 for Existing Plus Project and Short Term Plus Project conditions).

Two modifications could be made to reduce the opportunities for conflict between through and turning vehicles. First, the eastbound dual left-turn lanes on Wittmeier Drive could be modified to a single left-turn lane, providing an extra lane to facilitate westbound turning movements and truck loading and unloading. Based on estimated Plus Project peak hour left-turn movements from Wittmeier Drive to Forest Avenue, it is not anticipated that dual left-turn lanes are necessary to accommodate turning vehicle queues.

Second, a roundabout could be installed at the Wittmeier Drive cul-de-sac to address potential vehicular conflicts between vehicles turning in the cul-de-sac and vehicles entering and exiting the westernmost Walmart driveway on Wittmeier Drive.

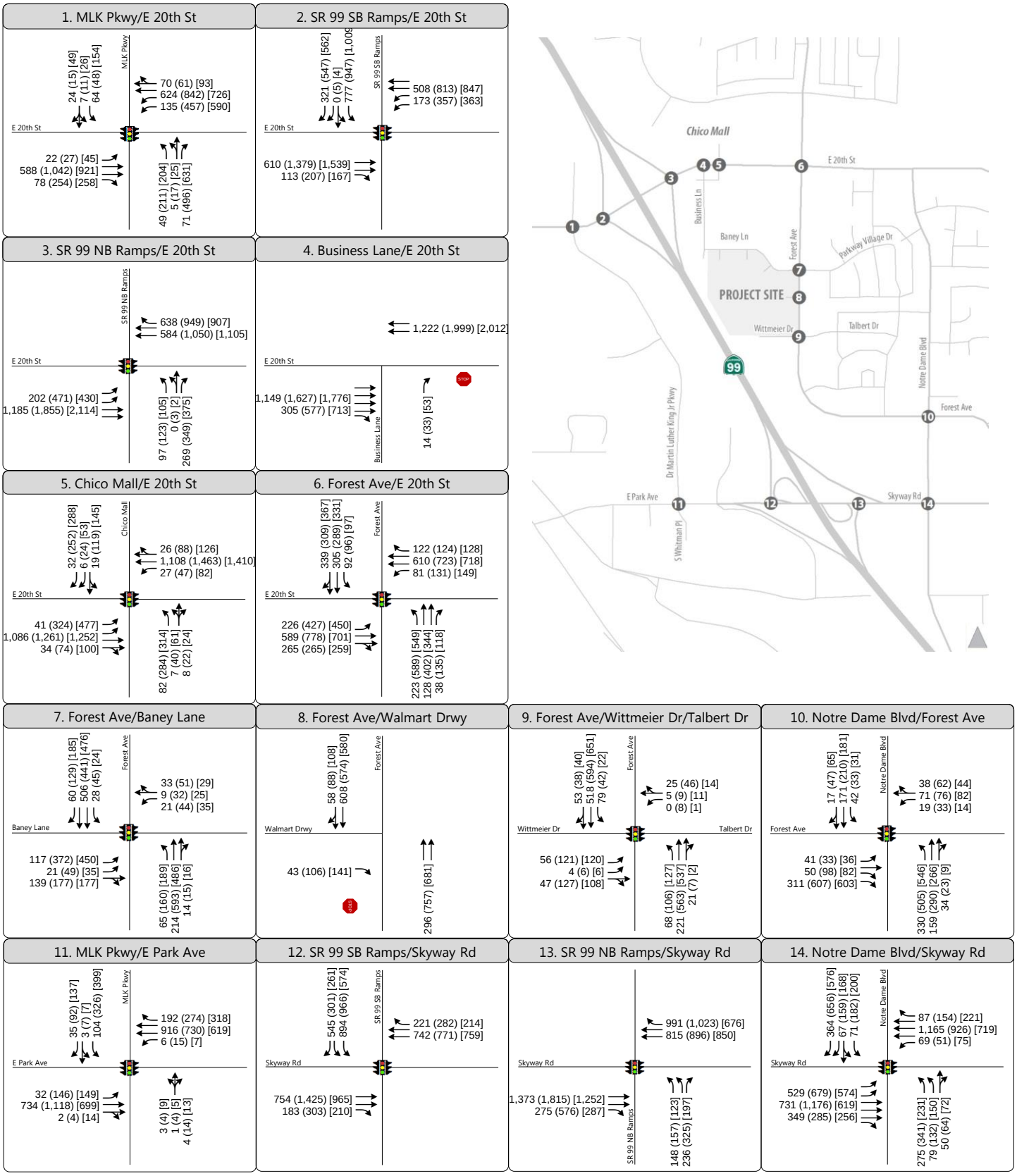
In addition to these modifications, additional roadway configuration options could be explored to further facilitate vehicle movement on Wittmeier Drive, including:

- One left-turn lane and one through-right lane in the eastbound direction, and one through-left lane and one right-turn pocket in the westbound direction. Truck loading and unloading activity could occur on the curbside between the two driveways on the south side of Wittmeier Drive.
- One left-turn lane and one through-right lane in the eastbound direction, one through-right lane in the westbound direction, and one two-way center left-turn lane with a median extending 50 feet west of the Forest Avenue / Wittmeier Drive intersection. Truck loading and unloading activity could occur in the two-way center left-turn lane.

These options should be studied further to identify exact geometrics and to quantify the measureable tradeoffs associated with each roadway configuration option. Since these modifications would reduce potential hazards on Wittmeier Drive due to design features, it would mitigate the associated intersection impact to **less than significant** under the Cumulative Plus Project scenario.

Impact 15: The proposed project could cause potentially significant impacts to freeway facilities under Cumulative conditions. Based on the analysis below, the impact would be **significant**.

Cumulative Plus Project peak hour freeway mainline, ramp, and weave segment operations were evaluated utilizing the peak hour traffic volumes shown on **Figure 19**. **Table 24** summarizes projected SR 99 freeway mainline, ramp, and weave segment operations within the study area under Cumulative Plus Project conditions.



1	Study Intersection
	Turn Lane
AM (PM) [SAT]	Peak Hour Traffic Volume
	Traffic Signal
STOP	Stop Sign

Figure 18

Peak Hour Traffic Volumes and Lane Configurations Cumulative Plus Project

XX - AM Peak Hour Volumes

(XX) - PM Peak Hour Volumes

[XX] - Saturday Peak Hour Volumes

Figure 19

Cumulative Plus Project Freeway Mainline and Ramp Volumes

TABLE 24: FREEWAY LEVEL OF SERVICE – SR 99 CUMULATIVE PLUS PROJECT CONDITIONS								
Freeway Facility	**Junction Type**	**Target LOS**	**AM Peak Hour**		**PM Peak Hour**		**Saturday Peak Hour**	
			Density	**LOS**	**Density**	**LOS**	**Density**	**LOS**
Northbound State Route 99								
South of Skyway Road	Weave	D	14.2	B	17.5	B	11.3	B
Skyway Road Off-Ramp	Diverge	D	19.2	B	22.9	C	16.0	B
Skyway Road Loop On-Ramp	Merge	E	17.4	B	22.1	C	15.0	B
Skyway Road On Ramp to E 20th Street Off Ramp	Weave	E	-	C	-	D	-	B
E 20th Street On Ramp to SR 32 Off Ramp	Weave	E	-	D	-	D	-	C
Southbound State Route 99								
SR 32 On Ramp to E 20th Street Off Ramp	Weave	E	-	D	**-**	**F**	-	D
E 20th Street On Ramp to Skyway Road Off Ramp	Weave	E	-	D	-	D	-	B
Skyway Road Loop On-Ramp	Merge	D	17.1	B	17.3	B	12.3	B
Skyway Road On-Ramp	Merge	D	18.8	B	19.4	B	13.8	B
South of Skyway Road	Weave	D	15.7	B	16.3	B	10.8	A
Source: Fehr & Peers, 2015								

As shown in **Table 16**, all but one study freeway mainline, ramp, and weave segment facilities are projected to continue to operate at acceptable LOS (LOS E or better north of Skyway Road and LOS D or better south of Skyway Road, per Caltrans significance criteria for freeways) during weekday AM, weekday PM and Saturday peak hours under Cumulative Plus Project conditions:

- Southbound SR 99 – SR 32 On Ramp to E 20th Street Off Ramp

Operations on southbound SR 99 north of E 20th Street are projected to degrade from an acceptable LOS E under Cumulative No Project conditions to an unacceptable LOS F under Cumulative Plus Project conditions during the weekday PM peak hour. According to Caltrans, freeway operations are considered acceptable at LOS E or better on SR 99 north of Skyway Road.

Mitigation Measures

The following mitigation measure is recommended to reduce the identified project impacts on southbound SR 99 north of E 20th Street.

> **Mitigation Measure 5:** Pursuant to General Plan **Policy CIRC-1.3 (Citywide Circulation Improvements)**, the applicant shall pay the fair share cost of circulation improvements necessary to address cumulative transportation impacts through the City's development impact fee program. Paying fair share fees would partially mitigate the impact, but the impact would remain potentially significant and unavoidable because the timing of physical roadway improvements cannot be guaranteed to occur prior to the future traffic volumes that would cause the freeway segment to operate at an unacceptable level of service.

> **Impact 17:** The proposed project could cause potentially significant impacts to bicycle facilities. Based on the analysis below, the impact would be **less than significant with mitigation measures** under the Cumulative Plus Project scenario.

As previously documented, in the Cumulative Plus Project scenario, the proposed project includes a relocation of the existing Class I path to near the edge of the project site, paralleling Forest Avenue, Wittmeier Drive, and SR 99. Although the proposed project would impact the existing bicycle facility, the proposed relocated Class I path is largely consistent with both the *City of Chico General Plan* and the *Chico Urban Area Bicycle Plan*, the documents that guide the development and maintenance of bicycle facilities throughout the City.

The *City of Chico General Plan* includes **Policy CIRC-1.2 (Project-Level Circulation Improvements)**, which requires new development to finance and construct internal and adjacent roadway circulation improvements as necessary to mitigate project impacts, including roadway, transit, pedestrian, and bicycle facilities. The proposed project adheres to this policy by including a relocated Class I path as part of the project site plan. Bicycle travel is further supported by the provision of forty bicycle parking spaces as part of the proposed project.

The *City of Chico General Plan* also includes **Policy CIRC-3.3 (New Development and Bikeway Connections)**, which requires new residential and non-residential development projects to provide connections to the nearest bikeways. The proposed bicycle facility adheres to this policy by providing direct connections to the surrounding bicycle network and accommodating bicycle travel to and from the project site. Although the Class I path would be moved to a new location, it would continue to serve the same role in the citywide bicycle network by connecting the SR 99 Corridor Bikeway Facility with the Forest Avenue bike lanes.

The *Chico Urban Area Bicycle Plan* identifies future bicycle facilities in Chico, including the SR 99 Bikeway that the City plans to extend through the project site south to Skyway Road. While the proposed project includes a portion of the planned SR 99 Bikeway, approximately 75 feet of the bikeway located between the southwest corner of the proposed bicycle path and the southern edge of the project site are not included in the proposed project. Without an accommodation of a potential future extension of the City's planned SR 99 Bikeway to the southern edge of the project site, this is considered a **potentially significant impact** under the Cumulative Plus Project scenario.

Mitigation Measures

The following mitigation measure is recommended to reduce the potentially significant impact to planned bicycle facilities.

> **Mitigation Measure 2.** The proposed project shall be modified to include an easement for a potential future Class I bikeway connection that would extend south from the southwesterly corner of the project site. With the ability reserved by the City to establish a future connection to this planned bikeway facility, this potential impact would be reduced to **less than significant**.

> **Impact 18:** The proposed project could cause potentially significant impacts to pedestrian facilities under Cumulative conditions. Based on the analysis below, the impact would be **less than significant** under the Cumulative Plus Project scenario.

In the *City of Chico General Plan,* **Policy CIRC-1.2 (Project-Level Circulation Improvements)** requires new development to finance and construct internal and adjacent roadway circulation improvements as necessary to mitigate project impacts, including roadway, transit, pedestrian, and bicycle facilities, and **Policy CIRC-4.2 (Continuous Network)** requires the provision of a pedestrian network in existing and new neighborhoods that facilitates convenient and continuous pedestrian travel free from major impediments and obstacles.

As previously documented, the Cumulative Plus Project scenario includes a new on-site pedestrian walkway through the central portion of the parking lot to provide pedestrian access between Forest Avenue and the southeast store entrance. Pedestrians would also be able to utilize the relocated Class I bike path to traverse the project site. The project does not include any modifications to the surrounding public sidewalk network. New crosswalks are proposed for each leg of the modified Forest Avenue / Wittmeier Intersection.

Altogether, the pedestrian facility modifications included in the proposed project facilitate pedestrian access to and within the project site and do not require the removal of existing pedestrian facilities on public roadways. Therefore, all project impacts to pedestrian facilities adhere to *City of Chico General Plan* policies and are considered to be **less than significant** under the Cumulative Plus Project scenario.

Mitigation Measures

None required.

> **Impact 19:** The proposed project could cause potentially significant impacts to transit service and facilities under Cumulative conditions. Based on the analysis below, the impact would be **less than significant** under the Cumulative Plus Project scenario.

The City addresses local public transit priorities with *City of Chico General Plan* **Policy CIRC-5.3 (Transit Connectivity in Projects)**, which requires new development to support public transit. The proposed project does not include any modifications to existing transit service or facilities within the vicinity of the project site. The proposed on-site pedestrian walkway provides a direct connection between the southeast store entrance and existing BCAG bus stops on Forest Avenue.

The *BCAG Transit and Non-Motorized Plan* outlines future transit service and facilities within the study area. Although the proposed project is expected to generate additional transit trips, any increases in transit ridership are expected to be small and capable of being served by planned future B-Line services and

facilities. Therefore, all project impacts to public transit service and facilities are considered to be **less than significant** under the Cumulative Plus Project scenario.

Mitigation Measures

None required.

6. PROJECT SITE ACCESS AND CIRCULATION

This section provides a qualitative evaluation of the proposed project site access and internal circulation system as detailed in the project description and site plan. An overview of the proposed project site access and internal circulation system is provided in **Chapter 3** of this document.

AUTOMOBILE

Driveways at Business Lane, Baney Lane, Forest Avenue, and Wittmeier Drive accommodate automobile access from the surrounding roadway network into the project site. Driveways are aligned with internal drive aisles, allowing for convenient access to on-site parking areas. While automobile egress is restricted via Business Lane and limited to right-turns only at the Baney Lane and Forest Avenue driveways, full-access signalized intersections at Forest Avenue / Baney Lane and Forest Avenue / Wittmeier Drive facilitate outbound vehicular movements in all directions.

According to the current site plan, potential access issues may occur at Wittmeier Drive. First, the current lane configuration may impede vehicular access and truck loading from Wittmeier Drive into the adjacent property south of the roadway, particularly at its easternmost driveway. Second, vehicular conflicts may occur as drivers attempt to navigate the cul-de-sac in tandem with vehicles arriving and departing from the westernmost driveway into the project site. Finally, with the westernmost driveway directly aligned with the Wittmeier Drive travel lanes, drivers may be encouraged to travel at a higher rate of speed when accessing the project site, potentially causing vehicular conflicts for vehicles turning in and out of adjacent driveways.

A review of the project site plan did not reveal any significant on-site circulation concerns. Internal drive aisles and stop signs placed at key internal junctions facilitate automobile circulation within the project site. The parking drive aisles are appropriately aligned and sized. Openings in the main north-south drive aisle fronting the store are provided at several points in the parking field to enable efficient circulation.

BICYCLE

Visitors traveling by bicycle may access the project site from adjacent on-street bicycle facilities, including the Class II bike lanes on Forest Avenue and Business Lane. Once on the project site, bicyclists may utilize the relocated Class I path to traverse the project site and access the southeast entrance to the Walmart store, as well as the southern commercial parcels. Once bicyclists arrive at the Walmart store, bicycle storage is available at forty parking spaces.

PEDESTRIAN

Visitors traveling by foot may access the project site via the existing system of sidewalks and crosswalks available on the surrounding roadway system. New crosswalks at the Forest Avenue / Wittmeier Drive intersection facilitate pedestrian travel from locations east of Forest Avenue. The new on-site pedestrian walkway bisecting the project site provides a direct walkway to the southeast store entrance. Pedestrians utilizing the on-site ADA parking are assisted by yield markings located on the drive aisles between ADA parking areas and store entrances.

PUBLIC TRANSIT

With B-Line stops located immediately east of the project site on Forest Avenue, visitors traveling by public transit may utilize several bus routes available within a short walk of the Walmart store. Existing sidewalks and crosswalks at the Forest Avenue / Baney Lane intersection facilitate access for visitors utilizing both the northbound and southbound bus stops, while the proposed on-site pedestrian walkway connects bus riders directly to the southeast entrance of the Walmart store.

TRUCKS AND DELIVERIES

As previously documented, trucks are expected to access the project site via Business Lane, while departing via Business Lane, Baney Lane, or Wittmeier Drive. While Wittmeier Drive has been identified as a potential outbound truck route, truck turning templates suggest that roadway geometrics may prohibit truck movements at several locations along this route, including the right-turn from the truck loading area to the primary north-south on-site drive aisle and the left-turn from eastbound Wittmeier Drive to northbound Forest Avenue.

APPENDIX A: SYNCHRO INTERSECTION REPORTS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	398	78	111	462	50	49	5	70	47	7	21
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		0.98	1.00		0.97	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	25	504	19	141	585	57	66	0	4	66	0	0
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	2	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	984	432	301	1092	106	493	0	353	475	249	0
Arrive On Green	0.03	0.28	0.28	0.09	0.34	0.34	0.14	0.00	0.14	0.14	0.00	0.00
Sat Flow, veh/h	1757	3505	1538	3408	3218	313	3514	0	1535	3514	1845	0
Grp Volume(v), veh/h	25	504	19	141	318	324	66	0	4	66	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1538	1704	1752	1778	1757	0	1535	1757	1845	0
Q Serve(g_s), s	0.7	5.8	0.4	1.9	7.0	7.1	0.8	0.0	0.1	0.8	0.0	0.0
Cycle Q Clear(g_c), s	0.7	5.8	0.4	1.9	7.0	7.1	0.8	0.0	0.1	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	52	984	432	301	595	604	493	0	353	475	249	0
V/C Ratio(X)	0.48	0.51	0.04	0.47	0.53	0.54	0.13	0.00	0.01	0.14	0.00	0.00
Avail Cap(c_a), veh/h	731	2916	1280	2127	1458	1480	2193	0	1096	1827	959	0
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.0	14.5	12.6	20.8	12.8	12.8	18.1	0.0	14.3	18.3	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.2	0.0	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0	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	0.4	2.8	0.2	0.9	3.4	3.5	0.4	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	25.5	14.7	12.6	21.3	13.1	13.1	18.2	0.0	14.4	18.4	0.0	0.0
LnGrp LOS	C	B	B	C	B	B	B		B	B		
Approach Vol, veh/h		548			783			70			66	
Approach Delay, s/veh		15.1			14.6			17.9			18.4	
Approach LOS		B			B			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	7.2	18.1		11.0	4.4	20.9		11.7
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	3.9	7.8		2.8	2.7	9.1		2.8
Green Ext Time (p_c), s	0.2	5.2		0.1	0.0	5.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	463	52	96	302	0	0	0	0	548	0	321
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	586	10	122	382	0				694	0	67
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79				0.79	0.79	0.79
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1001	448	225	1621	0				917	0	819
Arrive On Green	0.00	0.29	0.29	0.07	0.46	0.00				0.26	0.00	0.26
Sat Flow, veh/h	0	3597	1568	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	586	10	122	382	0				694	0	67
Grp Sat Flow(s),veh/h/ln	0	1752	1568	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	4.5	0.1	1.1	2.1	0.0				5.7	0.0	0.5
Cycle Q Clear(g_c), s	0.0	4.5	0.1	1.1	2.1	0.0				5.7	0.0	0.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1001	448	225	1621	0				917	0	819
V/C Ratio(X)	0.00	0.59	0.02	0.54	0.24	0.00				0.76	0.00	0.08
Avail Cap(c_a), veh/h	0	3841	1719	2707	3841	0				3349	0	2989
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.6	8.1	14.2	5.1	0.0				10.7	0.0	8.8
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.8	0.0	0.0				0.5	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	2.1	0.1	0.5	1.0	0.0				2.8	0.0	0.2
LnGrp Delay(d),s/veh	0.0	9.9	8.1	15.0	5.1	0.0				11.2	0.0	8.8
LnGrp LOS		A	A	B	A					B		A
Approach Vol, veh/h		596			504						761	
Approach Delay, s/veh		9.8			7.5						11.0	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	5.6	13.6		12.3		19.2		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	3.1	6.5		7.7		4.1		
Green Ext Time (p_c), s	0.1	2.5		0.5		2.5		

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
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)	170	841	0	0	356	385	42	0	114	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	215	1065	0	0	451	55	53	0	26			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	403	2100	0	0	1212	542	176	0	79			
Arrive On Green	0.12	0.60	0.00	0.00	0.35	0.35	0.05	0.00	0.05			
Sat Flow, veh/h	3408	3597	0	0	3597	1568	3514	0	1568			
Grp Volume(v), veh/h	215	1065	0	0	451	55	53	0	26			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	1.5	4.5	0.0	0.0	2.5	0.6	0.4	0.0	0.4			
Cycle Q Clear(g_c), s	1.5	4.5	0.0	0.0	2.5	0.6	0.4	0.0	0.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	403	2100	0	0	1212	542	176	0	79			
V/C Ratio(X)	0.53	0.51	0.00	0.00	0.37	0.10	0.30	0.00	0.33			
Avail Cap(c_a), veh/h	3284	4729	0	0	4729	2115	4063	0	1813			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	10.8	3.0	0.0	0.0	6.4	5.8	11.9	0.0	11.9			
Incr Delay (d2), s/veh	0.4	0.1	0.0	0.0	0.1	0.0	0.4	0.0	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			
%ile BackOfQ(50%),veh/ln	0.7	2.1	0.0	0.0	1.2	0.3	0.2	0.0	0.2			
LnGrp Delay(d),s/veh	11.2	3.1	0.0	0.0	6.4	5.8	12.2	0.0	12.8			
LnGrp LOS	B	A			A	A	B		B			
Approach Vol, veh/h		1280			506			79				
Approach Delay, s/veh		4.4			6.4			12.4				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		20.5			6.6	14.0		5.4
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		6.5			3.5	4.5		2.4
Green Ext Time (p_c), s		4.4			0.4	4.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.3
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.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	677	278	0	741	0	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	891	366	0	975	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	892	0	1380	446
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	438	-	163	477
Stage 1	-	0	-	-	286	-
Stage 2	-	0	-	-	561	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	438	-	163	477
Mov Cap-2 Maneuver	-	-	-	-	163	-
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	561	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	477	-	438	-
HCM Lane V/C Ratio	0.039	-	-	-
HCM Control Delay (s)	12.9	-	0	-
HCM Lane LOS	B	-	A	-
HCM 95th %tile Q(veh)	0.1	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	45	612	34	27	594	13	113	7	8	15	6	32
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		0.99	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	57	775	39	34	752	15	154	0	0	19	8	0
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	198	1550	78	69	1495	30	386	203	0	40	17	89
Arrive On Green	0.06	0.46	0.46	0.04	0.43	0.43	0.11	0.00	0.00	0.03	0.03	0.00
Sat Flow, veh/h	3408	3396	171	1757	3514	70	3514	1845	0	1254	528	2760
Grp Volume(v), veh/h	57	400	414	34	375	392	154	0	0	27	0	0
Grp Sat Flow(s),veh/h/ln	1704	1752	1814	1757	1752	1831	1757	1845	0	1782	0	1380
Q Serve(g_s), s	0.7	6.7	6.7	0.8	6.5	6.5	1.7	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	0.7	6.7	6.7	0.8	6.5	6.5	1.7	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.04	1.00		0.00	0.70		1.00
Lane Grp Cap(c), veh/h	198	800	828	69	746	779	386	203	0	57	0	89
V/C Ratio(X)	0.29	0.50	0.50	0.50	0.50	0.50	0.40	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	1636	1472	1524	843	1472	1538	2108	1107	0	1069	0	1656
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.8	8.0	8.0	19.6	8.7	8.7	17.3	0.0	0.0	19.8	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.4	0.3	2.1	0.4	0.4	0.2	0.0	0.0	2.2	0.0	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	0.3	3.3	3.4	0.4	3.2	3.3	0.8	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	19.1	8.3	8.3	21.7	9.1	9.1	17.5	0.0	0.0	22.0	0.0	0.0
LnGrp LOS	B	A	A	C	A	A	B			C		
Approach Vol, veh/h		871			801			154			27	
Approach Delay, s/veh		9.0			9.7			17.5			22.0	
Approach LOS		A			A			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	4.6	23.1		5.3	5.9	21.8		8.6
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	2.8	8.7		2.6	2.7	8.5		3.7
Green Ext Time (p_c), s	0.0	9.2		0.1	0.1	9.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
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)	139	255	210	49	283	122	160	84	17	92	199	192
Number	1	6	16	5	2	12	7	4	14	3	8	18
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	176	323	15	62	358	27	203	106	0	116	252	0
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	212	1162	54	340	1513	676	243	617	276	147	426	0
Arrive On Green	0.12	0.34	0.34	0.19	0.43	0.43	0.14	0.18	0.00	0.08	0.12	0.00
Sat Flow, veh/h	1757	3411	158	1757	3505	1565	1757	3505	1568	1757	3597	0
Grp Volume(v), veh/h	176	165	173	62	358	27	203	106	0	116	252	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1816	1757	1752	1565	1757	1752	1568	1757	1752	0
Q Serve(g_s), s	7.8	5.5	5.5	2.4	5.2	0.8	9.0	2.1	0.0	5.2	5.4	0.0
Cycle Q Clear(g_c), s	7.8	5.5	5.5	2.4	5.2	0.8	9.0	2.1	0.0	5.2	5.4	0.0
Prop In Lane	1.00		0.09	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	212	597	619	340	1513	676	243	617	276	147	426	0
V/C Ratio(X)	0.83	0.28	0.28	0.18	0.24	0.04	0.84	0.17	0.00	0.79	0.59	0.00
Avail Cap(c_a), veh/h	253	597	619	340	1513	676	439	1051	470	275	745	0
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)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.4	19.2	19.2	27.0	14.4	13.1	33.6	28.0	0.0	36.0	33.3	0.0
Incr Delay (d2), s/veh	13.9	0.1	0.1	0.1	0.4	0.1	2.9	0.0	0.0	3.6	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	4.6	2.7	2.8	1.1	2.6	0.4	4.5	1.0	0.0	2.7	2.7	0.0
LnGrp Delay(d),s/veh	48.2	19.3	19.3	27.1	14.8	13.3	36.5	28.0	0.0	39.5	33.8	0.0
LnGrp LOS	D	B	B	C	B	B	D	C		D	C	
Approach Vol, veh/h		514			447			309			368	
Approach Delay, s/veh		29.2			16.4			33.6			35.6	
Approach LOS		C			B			C			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	12.7	39.0	9.7	18.6	20.0	31.7	14.1	14.2
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	4.5	* 4.5	3.0	4.5
Max Green Setting (Gmax), s	11.5	16.5	12.5	24.0	8.5	* 19	20.0	17.0
Max Q Clear Time (g_c+I1), s	9.8	7.2	7.2	4.1	4.4	7.5	11.0	7.4
Green Ext Time (p_c), s	0.0	1.1	0.1	1.4	0.7	0.9	0.2	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* 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)	56	20	137	17	8	33	58	160	10	29	344	43
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		0.99	1.00		1.00	1.00		0.98	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	69	25	23	21	10	0	72	198	8	36	425	13
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	790	204	188	94	99	0	117	1658	67	82	1625	702
Arrive On Green	0.23	0.23	0.23	0.05	0.05	0.00	0.07	0.48	0.48	0.05	0.46	0.46
Sat Flow, veh/h	3408	881	811	1757	1845	0	1757	3431	138	1757	3505	1515
Grp Volume(v), veh/h	69	0	48	21	10	0	72	101	105	36	425	13
Grp Sat Flow(s),veh/h/ln	1704	0	1692	1757	1845	0	1757	1752	1816	1757	1752	1515
Q Serve(g_s), s	1.4	0.0	1.9	1.0	0.4	0.0	3.4	2.7	2.7	1.7	6.4	0.4
Cycle Q Clear(g_c), s	1.4	0.0	1.9	1.0	0.4	0.0	3.4	2.7	2.7	1.7	6.4	0.4
Prop In Lane	1.00		0.48	1.00		0.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	790	0	392	94	99	0	117	847	878	82	1625	702
V/C Ratio(X)	0.09	0.00	0.12	0.22	0.10	0.00	0.61	0.12	0.12	0.44	0.26	0.02
Avail Cap(c_a), veh/h	790	0	392	407	428	0	407	847	878	305	1625	702
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	0.0	26.2	39.1	38.8	0.0	39.2	12.2	12.2	40.0	14.1	12.5
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.4	0.2	0.0	1.9	0.3	0.3	1.3	0.4	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	0.7	0.0	1.0	0.5	0.2	0.0	1.7	1.4	1.4	0.9	3.2	0.2
LnGrp Delay(d),s/veh	26.2	0.0	26.8	39.5	39.0	0.0	41.1	12.5	12.5	41.4	14.5	12.6
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		117			31			278			474	
Approach Delay, s/veh		26.5			39.4			19.9			16.5	
Approach LOS		C			D			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	7.5	45.9		24.1	9.3	44.2		8.7
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.7	4.7		3.9	5.4	8.4		3.0
Green Ext Time (p_c), s	0.0	8.6		0.2	0.0	8.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	22	0	237	488	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	28	0	296	610	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	761	308	615	0	-	0
Stage 1	613	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	339	685	954	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	861	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	339	685	954	-	-	-
Mov Cap-2 Maneuver	339	-	-	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	861	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	954	-	685	-	-
HCM Lane V/C Ratio	-	-	0.04	-	-
HCM Control Delay (s)	0	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	0	10	0	0	25	17	211	21	81	393	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	9	0	13	0	0	32	22	267	27	103	497	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	907	1067	279	777	1080	148	552	0	0	294	0	0
Stage 1	730	730	-	323	323	-	-	-	-	-	-	-
Stage 2	177	337	-	454	757	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	229	219	715	285	215	869	1007	-	-	1257	-	-
Stage 1	378	423	-	660	646	-	-	-	-	-	-	-
Stage 2	805	637	-	552	411	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	203	197	713	257	193	868	1004	-	-	1256	-	-
Mov Cap-2 Maneuver	203	197	-	257	193	-	-	-	-	-	-	-
Stage 1	370	388	-	646	632	-	-	-	-	-	-	-
Stage 2	758	623	-	496	377	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16	9.3	0.6	1.3
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1004	-	-	350	-	868	1256	-	-
HCM Lane V/C Ratio	0.021	-	-	0.061	-	0.036	0.082	-	-
HCM Control Delay (s)	8.7	-	-	16	0	9.3	8.1	-	-
HCM Lane LOS	A	-	-	C	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0.1	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	35	200	19	61	12	214	107	34	16	120	16
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	8	42	14	23	73	7	255	127	14	19	143	7
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	26	301	443	70	311	30	345	1178	128	59	706	34
Arrive On Green	0.01	0.16	0.16	0.04	0.19	0.19	0.20	0.37	0.37	0.03	0.21	0.21
Sat Flow, veh/h	1757	1845	2719	1757	1657	159	1757	3179	345	1757	3399	165
Grp Volume(v), veh/h	8	42	14	23	0	80	255	69	72	19	73	77
Grp Sat Flow(s),veh/h/ln	1757	1845	1360	1757	0	1815	1757	1752	1771	1757	1752	1812
Q Serve(g_s), s	0.2	0.7	0.2	0.5	0.0	1.3	4.9	0.9	0.9	0.4	1.2	1.2
Cycle Q Clear(g_c), s	0.2	0.7	0.2	0.5	0.0	1.3	4.9	0.9	0.9	0.4	1.2	1.2
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.19	1.00		0.09
Lane Grp Cap(c), veh/h	26	301	443	70	0	341	345	649	656	59	364	376
V/C Ratio(X)	0.30	0.14	0.03	0.33	0.00	0.23	0.74	0.11	0.11	0.32	0.20	0.20
Avail Cap(c_a), veh/h	1085	1398	2060	838	0	1223	1331	1574	1591	838	1328	1373
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	12.8	12.5	16.6	0.0	12.3	13.5	7.4	7.4	16.8	11.7	11.7
Incr Delay (d2), s/veh	2.4	0.1	0.0	1.0	0.0	0.1	1.2	0.0	0.0	1.1	0.1	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	0.1	0.4	0.1	0.2	0.0	0.7	2.4	0.4	0.5	0.2	0.6	0.6
LnGrp Delay(d),s/veh	19.7	12.9	12.6	17.6	0.0	12.4	14.6	7.4	7.4	18.0	11.8	11.8
LnGrp LOS	B	B	B	B		B	B	A	A	B	B	B
Approach Vol, veh/h		64			103			396			169	
Approach Delay, s/veh		13.6			13.6			12.0			12.5	
Approach LOS		B			B			B			B	

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	3.5	10.7	4.2	17.2	4.4	9.8	10.0	11.4
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.2	3.3	2.4	2.9	2.5	2.7	6.9	3.2
Green Ext Time (p_c), s	0.0	0.4	0.0	1.1	0.0	0.4	0.1	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	707	2	6	892	142	3	1	4	94	3	35
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	38	842	2	7	1062	0	4	1	0	115	0	0
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	1.00
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	70	1971	5	23	1832	820	13	3	0	439	0	196
Arrive On Green	0.04	0.55	0.55	0.01	0.52	0.00	0.01	0.01	0.00	0.12	0.00	0.00
Sat Flow, veh/h	1757	3587	9	1757	3505	1568	1419	355	0	3514	0	1568
Grp Volume(v), veh/h	38	411	433	7	1062	0	5	0	0	115	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1843	1757	1752	1568	1774	0	0	1757	0	1568
Q Serve(g_s), s	1.2	7.7	7.7	0.2	11.6	0.0	0.2	0.0	0.0	1.7	0.0	0.0
Cycle Q Clear(g_c), s	1.2	7.7	7.7	0.2	11.6	0.0	0.2	0.0	0.0	1.7	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	0.80		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	963	1013	23	1832	820	17	0	0	439	0	196
V/C Ratio(X)	0.54	0.43	0.43	0.31	0.58	0.00	0.30	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	627	1313	1381	846	2501	1119	601	0	0	1567	0	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)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.4	7.4	7.4	27.4	9.2	0.0	27.6	0.0	0.0	22.2	0.0	0.0
Incr Delay (d2), s/veh	2.4	0.4	0.3	2.8	0.3	0.0	3.7	0.0	0.0	0.1	0.0	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	0.6	3.8	3.9	0.1	5.7	0.0	0.1	0.0	0.0	0.8	0.0	0.0
LnGrp Delay(d),s/veh	28.8	7.8	7.8	30.2	9.5	0.0	31.3	0.0	0.0	22.3	0.0	0.0
LnGrp LOS	C	A	A	C	A		C			C		
Approach Vol, veh/h		882			1069			5			115	
Approach Delay, s/veh		8.7			9.6			31.3			22.3	
Approach LOS		A			A			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	4.2	35.8		4.5	5.7	34.3		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	9.7		2.2	3.2	13.6		3.7
Green Ext Time (p_c), s	0.0	17.6		0.0	0.0	15.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.0
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)	0	705	164	0	708	181	0	0	0	854	0	520
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	839	0	0	843	0				1017	0	538
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1196	535	0	1196	535				1347	0	620
Arrive On Green	0.00	0.34	0.00	0.00	0.34	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	839	0	0	843	0				1017	0	538
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	7.9	0.0	0.0	7.9	0.0				9.8	0.0	12.0
Cycle Q Clear(g_c), s	0.0	7.9	0.0	0.0	7.9	0.0				9.8	0.0	12.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1196	535	0	1196	535				1347	0	620
V/C Ratio(X)	0.00	0.70	0.00	0.00	0.70	0.00				0.76	0.00	0.87
Avail Cap(c_a), veh/h	0	4617	2065	0	4617	2065				3143	0	1446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.8	0.0	0.0	10.8	0.0				9.9	0.0	10.6
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0				0.3	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	3.8	0.0	0.0	3.8	0.0				4.6	0.0	5.3
LnGrp Delay(d),s/veh	0.0	11.1	0.0	0.0	11.1	0.0				10.2	0.0	12.1
LnGrp LOS		B			B					B		B
Approach Vol, veh/h		839			843						1555	
Approach Delay, s/veh		11.1			11.1						10.9	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		18.0		20.0		18.0		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		9.9		14.0		9.9		
Green Ext Time (p_c), s		3.0		1.0		3.0		

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

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)	0	1284	275	0	745	961	144	0	197	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1529	0	0	887	0	171	0	0			
Adj No. of Lanes	0	2	1	0	2	1	2	0	1			
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2177	974	0	2177	974	333	0	153			
Arrive On Green	0.00	0.62	0.00	0.00	0.62	0.00	0.10	0.00	0.00			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1529	0	0	887	0	171	0	0			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	9.4	0.0	0.0	4.1	0.0	1.5	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	9.4	0.0	0.0	4.1	0.0	1.5	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2177	974	0	2177	974	333	0	153			
V/C Ratio(X)	0.00	0.70	0.00	0.00	0.41	0.00	0.51	0.00	0.00			
Avail Cap(c_a), veh/h	0	5476	2450	0	5476	2450	2662	0	1225			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	4.1	0.0	0.0	3.1	0.0	13.7	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.0	0.5	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	4.3	0.0	0.0	1.9	0.0	0.7	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	4.2	0.0	0.0	3.1	0.0	14.2	0.0	0.0			
LnGrp LOS		A			A		B					
Approach Vol, veh/h		1529			887			171				
Approach Delay, s/veh		4.2			3.1			14.2				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		24.9				24.9		7.1
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		11.4				6.1		3.5
Green Ext Time (p_c), s		8.5				8.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.5
HCM 2010 LOS	A

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)	394	738	349	77	1176	64	275	77	50	56	66	255
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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	469	879	223	92	1400	28	327	92	39	67	79	210
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	586	2529	1004	129	2050	637	471	170	72	165	173	834
Arrive On Green	0.17	0.50	0.50	0.07	0.41	0.41	0.14	0.14	0.14	0.09	0.09	0.09
Sat Flow, veh/h	3408	5036	1568	1757	5036	1566	3408	1229	521	1757	1845	3136
Grp Volume(v), veh/h	469	879	223	92	1400	28	327	0	131	67	79	210
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1757	1679	1566	1704	0	1750	1757	1845	1568
Q Serve(g_s), s	11.1	8.9	5.0	4.3	19.2	0.9	7.7	0.0	5.9	3.0	3.4	4.4
Cycle Q Clear(g_c), s	11.1	8.9	5.0	4.3	19.2	0.9	7.7	0.0	5.9	3.0	3.4	4.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	586	2529	1004	129	2050	637	471	0	242	165	173	834
V/C Ratio(X)	0.80	0.35	0.22	0.71	0.68	0.04	0.69	0.00	0.54	0.41	0.46	0.25
Avail Cap(c_a), veh/h	1011	2529	1004	521	2390	743	1213	0	623	625	657	1656
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	12.6	6.4	38.2	20.5	15.1	34.6	0.0	33.8	36.0	36.1	24.3
Incr Delay (d2), s/veh	2.6	0.1	0.1	7.1	0.7	0.0	1.9	0.0	1.9	1.6	1.9	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	5.4	4.1	3.0	2.4	8.9	0.4	3.8	0.0	3.0	1.5	1.8	1.9
LnGrp Delay(d),s/veh	36.1	12.7	6.5	45.3	21.2	15.1	36.5	0.0	35.7	37.6	38.0	24.5
LnGrp LOS	D	B	A	D	C	B	D		D	D	D	C
Approach Vol, veh/h		1571			1520			458			356	
Approach Delay, s/veh		18.8			22.5			36.3			29.9	
Approach LOS		B			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.2	47.1		11.6	18.2	39.1		15.3
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	6.3	10.9		6.4	13.1	21.2		9.7
Green Ext Time (p_c), s	0.2	20.8		1.5	1.4	13.1		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	832	254	430	700	60	211	12	392	28	11	15
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	858	167	443	722	58	227	0	173	20	23	1
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	1237	544	559	1597	128	528	0	487	166	166	7
Arrive On Green	0.03	0.35	0.35	0.16	0.49	0.49	0.15	0.00	0.15	0.09	0.09	0.09
Sat Flow, veh/h	1757	3505	1541	3408	3279	263	3514	0	1529	1757	1753	76
Grp Volume(v), veh/h	28	858	167	443	386	394	227	0	173	20	0	24
Grp Sat Flow(s),veh/h/ln	1757	1752	1541	1704	1752	1790	1757	0	1529	1757	0	1829
Q Serve(g_s), s	1.1	15.1	5.6	9.0	10.4	10.4	4.2	0.0	6.3	0.7	0.0	0.9
Cycle Q Clear(g_c), s	1.1	15.1	5.6	9.0	10.4	10.4	4.2	0.0	6.3	0.7	0.0	0.9
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	52	1237	544	559	853	871	528	0	487	166	0	173
V/C Ratio(X)	0.53	0.69	0.31	0.79	0.45	0.45	0.43	0.00	0.36	0.12	0.00	0.14
Avail Cap(c_a), veh/h	490	1954	859	1425	977	998	1469	0	896	612	0	637
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.3	19.9	16.9	28.8	12.1	12.1	27.7	0.0	19.0	29.7	0.0	29.8
Incr Delay (d2), s/veh	3.1	0.3	0.1	1.0	0.1	0.1	0.2	0.0	0.2	0.1	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	0.6	7.3	2.4	4.3	5.1	5.2	2.1	0.0	2.7	0.4	0.0	0.4
LnGrp Delay(d),s/veh	37.4	20.2	17.0	29.8	12.3	12.3	27.9	0.0	19.2	29.9	0.0	29.9
LnGrp LOS	D	C	B	C	B	B	C		B	C		C
Approach Vol, veh/h		1053			1223			400			44	
Approach Delay, s/veh		20.1			18.6			24.1			29.9	
Approach LOS		C			B			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	14.8	29.9		11.3	5.1	39.5		15.8
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	11.0	17.1		2.9	3.1	12.4		8.3
Green Ext Time (p_c), s	0.8	8.3		0.1	0.0	8.8		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1154	98	157	651	0	0	0	0	850	5	539
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1190	72	162	671	0				880	0	242
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1480	662	261	1963	0				1009	0	900
Arrive On Green	0.00	0.42	0.42	0.08	0.56	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3597	1567	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1190	72	162	671	0				880	0	242
Grp Sat Flow(s),veh/h/ln	0	1752	1567	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	16.9	1.6	2.6	5.9	0.0				13.6	0.0	3.4
Cycle Q Clear(g_c), s	0.0	16.9	1.6	2.6	5.9	0.0				13.6	0.0	3.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1480	662	261	1963	0				1009	0	900
V/C Ratio(X)	0.00	0.80	0.11	0.62	0.34	0.00				0.87	0.00	0.27
Avail Cap(c_a), veh/h	0	2123	949	1496	2123	0				1851	0	1652
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.4	10.0	25.5	6.8	0.0				19.3	0.0	15.7
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.9	0.0	0.0				1.0	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
%ile BackOfQ(50%),veh/ln	0.0	8.3	0.7	1.3	2.8	0.0				6.6	0.0	1.5
LnGrp Delay(d),s/veh	0.0	15.3	10.0	26.4	6.9	0.0				20.3	0.0	15.7
LnGrp LOS		B	A	C	A					C		B
Approach Vol, veh/h		1262			833						1122	
Approach Delay, s/veh		15.0			10.7						19.3	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	7.9	28.7		20.5		36.5		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	4.6	18.9		15.6		7.9		
Green Ext Time (p_c), s	0.1	5.1		0.8		5.8		

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
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)	458	1546	0	0	707	787	98	3	219	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	472	1594	0	0	729	400	103	0	179			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	636	2334	0	0	1437	641	542	0	242			
Arrive On Green	0.19	0.67	0.00	0.00	0.41	0.41	0.15	0.00	0.15			
Sat Flow, veh/h	3408	3597	0	0	3597	1562	3514	0	1568			
Grp Volume(v), veh/h	472	1594	0	0	729	400	103	0	179			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1562	1757	0	1568			
Q Serve(g_s), s	6.6	14.1	0.0	0.0	7.8	10.3	1.3	0.0	5.5			
Cycle Q Clear(g_c), s	6.6	14.1	0.0	0.0	7.8	10.3	1.3	0.0	5.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	636	2334	0	0	1437	641	542	0	242			
V/C Ratio(X)	0.74	0.68	0.00	0.00	0.51	0.62	0.19	0.00	0.74			
Avail Cap(c_a), veh/h	1685	2425	0	0	2425	1081	2084	0	930			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.4	5.2	0.0	0.0	11.1	11.8	18.6	0.0	20.4			
Incr Delay (d2), s/veh	0.7	0.6	0.0	0.0	0.1	0.4	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	3.1	6.8	0.0	0.0	3.8	4.4	0.6	0.0	2.5			
LnGrp Delay(d),s/veh	20.1	5.8	0.0	0.0	11.2	12.2	18.7	0.0	22.1			
LnGrp LOS	C	A			B	B	B		C			
Approach Vol, veh/h		2066			1129			282				
Approach Delay, s/veh		9.1			11.6			20.9				
Approach LOS		A			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		38.7			12.9	25.7		11.9
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		16.1			8.6	12.3		7.5
Green Ext Time (p_c), s		7.8			0.8	8.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
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.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1251	514	0	1494	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1290	530	0	1540	0	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1290	0	2060	645
Stage 1	-	-	-	-	1290	-
Stage 2	-	-	-	-	770	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	280	-	63	354
Stage 1	-	0	-	-	162	-
Stage 2	-	0	-	-	404	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	280	-	63	354
Mov Cap-2 Maneuver	-	-	-	-	63	-
Stage 1	-	-	-	-	162	-
Stage 2	-	-	-	-	404	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	354	-	280	-
HCM Lane V/C Ratio	0.096	-	-	-
HCM Control Delay (s)	16.2	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.3	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	325	885	74	47	863	51	378	40	22	75	24	252
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		0.98	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	335	912	72	48	890	50	438	0	0	77	25	26
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	445	1589	125	76	1313	74	608	319	0	111	36	222
Arrive On Green	0.13	0.48	0.48	0.04	0.39	0.39	0.17	0.00	0.00	0.08	0.08	0.08
Sat Flow, veh/h	3408	3284	259	1757	3371	189	3514	1845	0	1342	436	2692
Grp Volume(v), veh/h	335	487	497	48	463	477	438	0	0	102	0	26
Grp Sat Flow(s),veh/h/ln	1704	1752	1791	1757	1752	1808	1757	1845	0	1778	0	1346
Q Serve(g_s), s	6.6	13.8	13.8	1.9	15.2	15.2	8.2	0.0	0.0	3.9	0.0	0.6
Cycle Q Clear(g_c), s	6.6	13.8	13.8	1.9	15.2	15.2	8.2	0.0	0.0	3.9	0.0	0.6
Prop In Lane	1.00		0.14	1.00		0.10	1.00		0.00	0.75		1.00
Lane Grp Cap(c), veh/h	445	848	867	76	682	704	608	319	0	146	0	222
V/C Ratio(X)	0.75	0.57	0.57	0.63	0.68	0.68	0.72	0.00	0.00	0.70	0.00	0.12
Avail Cap(c_a), veh/h	982	883	903	506	883	911	1265	664	0	640	0	969
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.1	12.8	12.8	32.7	17.6	17.6	27.1	0.0	0.0	31.0	0.0	29.5
Incr Delay (d2), s/veh	1.0	0.7	0.7	3.1	1.1	1.1	0.6	0.0	0.0	2.2	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	3.1	6.8	6.9	1.0	7.5	7.8	4.0	0.0	0.0	2.0	0.0	0.2
LnGrp Delay(d),s/veh	30.1	13.5	13.5	35.8	18.7	18.7	27.7	0.0	0.0	33.2	0.0	29.6
LnGrp LOS	C	B	B	D	B	B	C			C		C
Approach Vol, veh/h		1319			988			438			128	
Approach Delay, s/veh		17.7			19.5			27.7			32.5	
Approach LOS		B			B			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	6.0	37.7		9.7	12.6	31.1		16.0
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	3.9	15.8		5.9	8.6	17.2		10.2
Green Ext Time (p_c), s	0.0	10.3		0.4	0.5	9.8		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
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)	280	472	220	75	406	124	401	316	62	96	231	165
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		1.00	1.00		0.94
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	298	502	179	80	432	28	427	336	17	102	246	44
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	325	776	275	303	1036	461	458	1078	480	128	354	62
Arrive On Green	0.19	0.31	0.31	0.17	0.30	0.30	0.26	0.31	0.31	0.07	0.12	0.12
Sat Flow, veh/h	1757	2519	892	1757	3505	1560	1757	3505	1560	1757	2948	516
Grp Volume(v), veh/h	298	348	333	80	432	28	427	336	17	102	144	146
Grp Sat Flow(s),veh/h/ln	1757	1752	1659	1757	1752	1560	1757	1752	1560	1757	1752	1712
Q Serve(g_s), s	18.0	18.5	18.7	4.3	10.7	1.4	25.6	7.9	0.8	6.2	8.5	8.9
Cycle Q Clear(g_c), s	18.0	18.5	18.7	4.3	10.7	1.4	25.6	7.9	0.8	6.2	8.5	8.9
Prop In Lane	1.00		0.54	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	325	540	511	303	1036	461	458	1078	480	128	210	205
V/C Ratio(X)	0.92	0.65	0.65	0.26	0.42	0.06	0.93	0.31	0.04	0.80	0.69	0.71
Avail Cap(c_a), veh/h	333	540	511	303	1036	461	594	1078	480	350	276	270
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)	0.77	0.77	0.77	1.00	1.00	1.00	0.96	0.96	0.96	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.2	32.3	32.3	38.7	30.6	27.3	39.0	28.6	26.2	49.3	45.6	45.7
Incr Delay (d2), s/veh	23.0	1.6	1.8	0.2	1.2	0.3	16.5	0.1	0.0	4.2	2.2	3.3
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	10.8	9.2	8.8	2.1	5.3	0.6	14.5	3.8	0.4	3.2	4.3	4.4
LnGrp Delay(d),s/veh	66.2	33.9	34.1	38.9	31.8	27.5	55.5	28.7	26.2	53.5	47.8	49.0
LnGrp LOS	E	C	C	D	C	C	E	C	C	D	D	D
Approach Vol, veh/h		979			540			780			392	
Approach Delay, s/veh		43.8			32.6			43.3			49.7	
Approach LOS		D			C			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	23.0	36.4	10.9	37.7	21.6	37.8	31.1	17.5
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	20.5	19.0	21.5	32.0	11.5	28.0	36.5	17.0
Max Q Clear Time (g_c+I1), s	20.0	12.7	8.2	9.9	6.3	20.7	27.6	10.9
Green Ext Time (p_c), s	0.0	2.7	0.1	2.5	0.0	2.9	0.5	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	42.3
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	177	46	172	39	29	46	134	488	9	45	328	90
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		0.98	1.00		1.00	1.00		0.97	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	192	50	78	42	32	0	146	530	9	49	357	32
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	733	138	215	145	153	0	177	1681	29	95	1508	651
Arrive On Green	0.22	0.22	0.22	0.08	0.08	0.00	0.10	0.48	0.48	0.05	0.43	0.43
Sat Flow, veh/h	3408	640	999	1757	1845	0	1757	3525	60	1757	3505	1513
Grp Volume(v), veh/h	192	0	128	42	32	0	146	263	276	49	357	32
Grp Sat Flow(s),veh/h/ln	1704	0	1640	1757	1845	0	1757	1752	1832	1757	1752	1513
Q Serve(g_s), s	4.4	0.0	6.2	2.1	1.5	0.0	7.6	8.6	8.6	2.5	6.0	1.1
Cycle Q Clear(g_c), s	4.4	0.0	6.2	2.1	1.5	0.0	7.6	8.6	8.6	2.5	6.0	1.1
Prop In Lane	1.00		0.61	1.00		0.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	733	0	353	145	153	0	177	836	874	95	1508	651
V/C Ratio(X)	0.26	0.00	0.36	0.29	0.21	0.00	0.82	0.31	0.32	0.52	0.24	0.05
Avail Cap(c_a), veh/h	733	0	353	378	397	0	378	836	874	283	1508	651
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	31.1	40.1	39.8	0.0	41.0	15.0	15.0	42.8	16.8	15.4
Incr Delay (d2), s/veh	0.9	0.0	2.9	0.4	0.3	0.0	3.6	1.0	0.9	1.6	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	2.1	0.0	3.1	1.0	0.8	0.0	3.9	4.4	4.6	1.3	3.0	0.5
LnGrp Delay(d),s/veh	31.2	0.0	33.9	40.5	40.1	0.0	44.6	15.9	15.9	44.4	17.2	15.6
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		320			74			685			438	
Approach Delay, s/veh		32.3			40.3			22.0			20.1	
Approach LOS		C			D			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	8.5	48.6		24.1	12.9	44.2		11.8
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	4.5	10.6		8.2	9.6	8.0		4.1
Green Ext Time (p_c), s	0.0	11.9		0.7	0.0	12.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.5
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	55	0	641	529	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	62	0	720	594	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	958	301	602	0	-	0
Stage 1	598	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	253	692	965	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	253	692	965	-	-	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	674	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	965	-	692	-	-
HCM Lane V/C Ratio	-	-	0.089	-	-
HCM Control Delay (s)	0	-	10.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	0	38	8	1	46	13	536	7	44	520	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	29	0	44	9	1	53	15	616	8	51	598	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1049	1364	310	1050	1371	321	620	0	0	624	0	0
Stage 1	710	710	-	650	650	-	-	-	-	-	-	-
Stage 2	339	654	-	400	721	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	180	145	683	180	144	672	950	-	-	946	-	-
Stage 1	388	433	-	422	461	-	-	-	-	-	-	-
Stage 2	646	459	-	595	427	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	155	135	683	160	134	667	950	-	-	939	-	-
Mov Cap-2 Maneuver	155	135	-	160	134	-	-	-	-	-	-	-
Stage 1	382	409	-	415	454	-	-	-	-	-	-	-
Stage 2	580	452	-	527	404	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.5	13.9	0.2	0.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	950	-	-	290	160	615	939	-	-
HCM Lane V/C Ratio	0.016	-	-	0.25	0.057	0.088	0.054	-	-
HCM Control Delay (s)	8.8	-	-	21.5	28.9	11.4	9.1	-	-
HCM Lane LOS	A	-	-	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1	0.2	0.3	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	83	472	33	54	41	375	230	23	18	157	20
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	34	88	74	35	57	16	399	245	18	19	167	10
Adj No. of Lanes	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	96	311	460	98	235	66	468	1361	99	58	597	35
Arrive On Green	0.05	0.17	0.17	0.06	0.17	0.17	0.27	0.41	0.41	0.03	0.18	0.18
Sat Flow, veh/h	1757	1845	2723	1757	1380	387	1757	3311	242	1757	3361	200
Grp Volume(v), veh/h	34	88	74	35	0	73	399	129	134	19	87	90
Grp Sat Flow(s),veh/h/ln	1757	1845	1361	1757	0	1767	1757	1752	1801	1757	1752	1809
Q Serve(g_s), s	0.8	1.8	1.0	0.8	0.0	1.5	9.1	2.0	2.0	0.4	1.8	1.8
Cycle Q Clear(g_c), s	0.8	1.8	1.0	0.8	0.0	1.5	9.1	2.0	2.0	0.4	1.8	1.8
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.13	1.00		0.11
Lane Grp Cap(c), veh/h	96	311	460	98	0	301	468	720	740	58	311	321
V/C Ratio(X)	0.36	0.28	0.16	0.36	0.00	0.24	0.85	0.18	0.18	0.33	0.28	0.28
Avail Cap(c_a), veh/h	915	1179	1740	707	0	1004	1123	1327	1364	707	1120	1156
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	15.3	15.0	19.2	0.0	15.2	14.7	7.9	7.9	20.0	15.0	15.0
Incr Delay (d2), s/veh	0.8	0.2	0.1	0.8	0.0	0.2	1.7	0.0	0.0	1.2	0.2	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	0.4	0.9	0.4	0.4	0.0	0.7	4.5	0.9	1.0	0.2	0.9	0.9
LnGrp Delay(d),s/veh	20.1	15.5	15.1	20.0	0.0	15.3	16.4	8.0	8.0	21.2	15.2	15.2
LnGrp LOS	C	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		196			108			662			196	
Approach Delay, s/veh		16.1			16.9			13.1			15.8	
Approach LOS		B			B			B			B	

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	5.3	11.2	4.4	21.4	5.4	11.1	14.3	11.5
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.8	3.5	2.4	4.0	2.8	3.8	11.1	3.8
Green Ext Time (p_c), s	0.0	0.7	0.0	1.7	0.0	0.7	0.2	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	102	1094	4	15	720	267	4	4	14	279	7	92
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	107	1152	4	16	758	0	4	4	0	299	0	13
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	137	1935	7	48	1716	768	13	13	0	428	0	191
Arrive On Green	0.08	0.54	0.54	0.03	0.49	0.00	0.01	0.01	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1757	3582	12	1757	3505	1568	900	900	0	3514	0	1568
Grp Volume(v), veh/h	107	564	592	16	758	0	8	0	0	299	0	13
Grp Sat Flow(s),veh/h/ln	1757	1752	1842	1757	1752	1568	1800	0	0	1757	0	1568
Q Serve(g_s), s	3.4	12.5	12.5	0.5	8.1	0.0	0.3	0.0	0.0	4.7	0.0	0.4
Cycle Q Clear(g_c), s	3.4	12.5	12.5	0.5	8.1	0.0	0.3	0.0	0.0	4.7	0.0	0.4
Prop In Lane	1.00		0.01	1.00		1.00	0.50		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	137	946	995	48	1716	768	26	0	0	428	0	191
V/C Ratio(X)	0.78	0.60	0.60	0.33	0.44	0.00	0.30	0.00	0.00	0.70	0.00	0.07
Avail Cap(c_a), veh/h	612	1282	1347	826	2441	1092	595	0	0	1529	0	683
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.0	9.0	9.0	27.4	9.5	0.0	28.0	0.0	0.0	24.2	0.0	22.3
Incr Delay (d2), s/veh	3.6	0.7	0.7	1.5	0.2	0.0	2.4	0.0	0.0	0.8	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	1.8	6.1	6.4	0.3	3.9	0.0	0.1	0.0	0.0	2.3	0.0	0.2
LnGrp Delay(d),s/veh	29.6	9.7	9.6	28.9	9.7	0.0	30.4	0.0	0.0	25.0	0.0	22.4
LnGrp LOS	C	A	A	C	A		C			C		C
Approach Vol, veh/h		1263			774			8			312	
Approach Delay, s/veh		11.4			10.1			30.4			24.9	
Approach LOS		B			B			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	5.1	36.0		4.8	8.0	33.1		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.0	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.5	14.5		2.3	5.4	10.1		6.7
Green Ext Time (p_c), s	0.0	16.5		0.0	0.0	17.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
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)	0	1399	233	0	754	239	0	0	0	949	0	301
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	1473	0	0	794	0				999	0	216
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1717	768	0	1717	768				1121	0	516
Arrive On Green	0.00	0.49	0.00	0.00	0.49	0.00				0.33	0.00	0.33
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	1473	0	0	794	0				999	0	216
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	20.4	0.0	0.0	8.2	0.0				15.4	0.0	5.9
Cycle Q Clear(g_c), s	0.0	20.4	0.0	0.0	8.2	0.0				15.4	0.0	5.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1717	768	0	1717	768				1121	0	516
V/C Ratio(X)	0.00	0.86	0.00	0.00	0.46	0.00				0.89	0.00	0.42
Avail Cap(c_a), veh/h	0	3174	1420	0	3174	1420				2161	0	994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.4	0.0	0.0	9.3	0.0				17.6	0.0	14.4
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.1	0.0				1.0	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	9.7	0.0	0.0	4.0	0.0				7.4	0.0	2.5
LnGrp Delay(d),s/veh	0.0	12.9	0.0	0.0	9.4	0.0				18.6	0.0	14.6
LnGrp LOS		B			A					B		B
Approach Vol, veh/h		1473			794						1215	
Approach Delay, s/veh		12.9			9.4						17.9	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		32.1		23.2		32.1		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		22.4		17.4		10.2		
Green Ext Time (p_c), s		4.6		0.8		4.7		

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

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)	0	1798	550	0	836	1017	157	0	285	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1893	0	0	880	0	165	0	19			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2414	1080	0	2414	1080	296	0	136			
Arrive On Green	0.00	0.69	0.00	0.00	0.69	0.00	0.09	0.00	0.09			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1893	0	0	880	0	165	0	19			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	14.7	0.0	0.0	4.2	0.0	1.9	0.0	0.4			
Cycle Q Clear(g_c), s	0.0	14.7	0.0	0.0	4.2	0.0	1.9	0.0	0.4			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2414	1080	0	2414	1080	296	0	136			
V/C Ratio(X)	0.00	0.78	0.00	0.00	0.36	0.00	0.56	0.00	0.14			
Avail Cap(c_a), veh/h	0	4367	1954	0	4367	1954	2123	0	977			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.2	0.0	0.0	2.6	0.0	17.6	0.0	16.9			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	6.9	0.0	0.0	2.0	0.0	0.9	0.0	0.2			
LnGrp Delay(d),s/veh	0.0	4.4	0.0	0.0	2.6	0.0	18.2	0.0	17.1			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1893			880			184				
Approach Delay, s/veh		4.4			2.6			18.1				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		32.6				32.6		7.5
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		16.7				6.2		3.9
Green Ext Time (p_c), s		11.0				11.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

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)	572	1199	285	53	932	111	341	130	64	135	86	557
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		0.97	1.00		0.98	1.00		0.98	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	602	1262	209	56	981	44	359	137	53	116	127	522
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	699	2270	923	99	1537	471	509	188	73	310	325	1196
Arrive On Green	0.20	0.45	0.45	0.06	0.31	0.31	0.15	0.15	0.15	0.18	0.18	0.18
Sat Flow, veh/h	3408	5036	1528	1757	5036	1542	3408	1259	487	1757	1845	3136
Grp Volume(v), veh/h	602	1262	209	56	981	44	359	0	190	116	127	522
Grp Sat Flow(s),veh/h/ln	1704	1679	1528	1757	1679	1542	1704	0	1745	1757	1845	1568
Q Serve(g_s), s	16.5	17.8	6.1	3.0	16.3	2.0	9.7	0.0	10.1	5.6	5.9	12.0
Cycle Q Clear(g_c), s	16.5	17.8	6.1	3.0	16.3	2.0	9.7	0.0	10.1	5.6	5.9	12.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	699	2270	923	99	1537	471	509	0	260	310	325	1196
V/C Ratio(X)	0.86	0.56	0.23	0.57	0.64	0.09	0.71	0.00	0.73	0.37	0.39	0.44
Avail Cap(c_a), veh/h	880	2270	923	454	2081	637	1057	0	541	545	572	1615
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	19.5	9.0	44.5	29.0	24.1	39.1	0.0	39.3	35.1	35.3	22.2
Incr Delay (d2), s/veh	7.3	0.3	0.1	5.0	0.4	0.1	1.8	0.0	3.9	0.7	0.8	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	8.5	8.2	3.6	1.6	7.6	0.9	4.7	0.0	5.1	2.8	3.1	5.2
LnGrp Delay(d),s/veh	44.4	19.8	9.1	49.5	29.5	24.1	41.0	0.0	43.2	35.9	36.0	22.5
LnGrp LOS	D	B	A	D	C	C	D		D	D	D	C
Approach Vol, veh/h		2073			1081			549			765	
Approach Delay, s/veh		25.9			30.3			41.7			26.8	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.4	48.4		20.8	23.5	34.3		18.1
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.0	19.8		14.0	18.5	18.3		12.1
Green Ext Time (p_c), s	0.1	15.6		3.1	1.3	11.3		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	29.0
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)	45	746	258	556	592	91	204	18	499	90	26	49
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	46	761	151	567	604	86	221	0	361	66	64	12
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	66	1006	442	659	1359	193	764	0	637	204	175	33
Arrive On Green	0.04	0.29	0.29	0.19	0.44	0.44	0.22	0.00	0.22	0.12	0.12	0.12
Sat Flow, veh/h	1757	3505	1539	3408	3070	436	3514	0	1535	1757	1503	282
Grp Volume(v), veh/h	46	761	151	567	344	346	221	0	361	66	0	76
Grp Sat Flow(s),veh/h/ln	1757	1752	1539	1704	1752	1753	1757	0	1535	1757	0	1785
Q Serve(g_s), s	2.4	18.2	7.1	14.8	12.5	12.6	4.8	0.0	16.7	3.2	0.0	3.6
Cycle Q Clear(g_c), s	2.4	18.2	7.1	14.8	12.5	12.6	4.8	0.0	16.7	3.2	0.0	3.6
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	66	1006	442	659	776	776	764	0	637	204	0	208
V/C Ratio(X)	0.70	0.76	0.34	0.86	0.44	0.45	0.29	0.00	0.57	0.32	0.00	0.37
Avail Cap(c_a), veh/h	382	1524	669	1112	776	776	1146	0	804	478	0	485
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.7	29.9	25.9	35.9	17.8	17.8	30.1	0.0	20.9	37.3	0.0	37.5
Incr Delay (d2), s/veh	4.9	0.4	0.2	1.6	0.1	0.1	0.1	0.0	0.3	0.3	0.0	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	1.2	8.8	3.0	7.1	6.1	6.1	2.3	0.0	7.1	1.6	0.0	1.8
LnGrp Delay(d),s/veh	48.6	30.3	26.1	37.5	17.9	17.9	30.1	0.0	21.2	37.6	0.0	37.9
LnGrp LOS	D	C	C	D	B	B	C		C	D		D
Approach Vol, veh/h		958			1257			582			142	
Approach Delay, s/veh		30.5			26.8			24.6			37.8	
Approach LOS		C			C			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	20.8	31.0		15.2	6.5	45.3		25.0
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	16.8	20.2		5.6	4.4	14.6		18.7
Green Ext Time (p_c), s	1.0	6.2		0.3	0.0	7.3		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	28.1
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1256	79	162	685	0	0	0	0	909	4	554
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1282	52	165	699	0				931	0	276
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1513	671	259	1974	0				1048	0	935
Arrive On Green	0.00	0.43	0.43	0.08	0.56	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	3597	1554	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1282	52	165	699	0				931	0	276
Grp Sat Flow(s),veh/h/ln	0	1752	1554	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	20.6	1.2	3.0	6.8	0.0				15.9	0.0	4.3
Cycle Q Clear(g_c), s	0.0	20.6	1.2	3.0	6.8	0.0				15.9	0.0	4.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1513	671	259	1974	0				1048	0	935
V/C Ratio(X)	0.00	0.85	0.08	0.64	0.35	0.00				0.89	0.00	0.30
Avail Cap(c_a), veh/h	0	1925	854	1357	1974	0				1678	0	1498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.0	10.5	28.2	7.5	0.0				21.0	0.0	17.0
Incr Delay (d2), s/veh	0.0	2.5	0.0	1.0	0.0	0.0				2.4	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
%ile BackOfQ(50%),veh/ln	0.0	10.3	0.5	1.4	3.3	0.0				8.0	0.0	1.8
LnGrp Delay(d),s/veh	0.0	18.5	10.5	29.2	7.5	0.0				23.4	0.0	17.0
LnGrp LOS		B	B	C	A					C		B
Approach Vol, veh/h		1334			864						1207	
Approach Delay, s/veh		18.1			11.7						21.9	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.3	31.7		22.8		40.0		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	5.0	22.6		17.9		8.8		
Green Ext Time (p_c), s	0.1	4.5		0.8		6.4		

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
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)	412	1757	0	0	763	742	84	2	240	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	420	1793	0	0	779	328	87	0	199			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	582	2282	0	0	1437	642	586	0	262			
Arrive On Green	0.17	0.65	0.00	0.00	0.41	0.41	0.17	0.00	0.17			
Sat Flow, veh/h	3408	3597	0	0	3597	1565	3514	0	1568			
Grp Volume(v), veh/h	420	1793	0	0	779	328	87	0	199			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1565	1757	0	1568			
Q Serve(g_s), s	5.8	18.3	0.0	0.0	8.4	7.8	1.1	0.0	6.0			
Cycle Q Clear(g_c), s	5.8	18.3	0.0	0.0	8.4	7.8	1.1	0.0	6.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	582	2282	0	0	1437	642	586	0	262			
V/C Ratio(X)	0.72	0.79	0.00	0.00	0.54	0.51	0.15	0.00	0.76			
Avail Cap(c_a), veh/h	1706	2456	0	0	2456	1096	2110	0	942			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.6	6.2	0.0	0.0	11.2	11.0	17.8	0.0	19.9			
Incr Delay (d2), s/veh	0.6	1.4	0.0	0.0	0.1	0.2	0.0	0.0	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			
%ile BackOfQ(50%),veh/ln	2.8	8.9	0.0	0.0	4.0	3.4	0.5	0.0	2.7			
LnGrp Delay(d),s/veh	20.2	7.7	0.0	0.0	11.3	11.2	17.8	0.0	21.6			
LnGrp LOS	C	A			B	B	B		C			
Approach Vol, veh/h		2213			1107			286				
Approach Delay, s/veh		10.0			11.3			20.4				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		37.5			12.0	25.5		12.4
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		20.3			7.8	10.4		8.0
Green Ext Time (p_c), s		7.9			0.7	10.0		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.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1370	627	0	1505	0	53
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1398	640	0	1536	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1403	0	2171	704
Stage 1	-	-	-	-	1403	-
Stage 2	-	-	-	-	768	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	247	-	54	324
Stage 1	-	0	-	-	137	-
Stage 2	-	0	-	-	404	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	247	-	54	323
Mov Cap-2 Maneuver	-	-	-	-	54	-
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	404	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	323	-	247	-
HCM Lane V/C Ratio	0.167	-	-	-
HCM Control Delay (s)	18.4	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.6	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	477	846	100	82	809	73	408	61	24	91	53	288
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		0.97	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	487	863	96	84	826	69	480	0	0	93	54	30
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	585	1458	162	108	1125	94	620	325	0	124	72	296
Arrive On Green	0.17	0.46	0.46	0.06	0.34	0.34	0.18	0.00	0.00	0.11	0.11	0.11
Sat Flow, veh/h	3408	3171	353	1757	3274	273	3514	1845	0	1131	657	2695
Grp Volume(v), veh/h	487	477	482	84	442	453	480	0	0	147	0	30
Grp Sat Flow(s),veh/h/ln	1704	1752	1771	1757	1752	1795	1757	1845	0	1788	0	1348
Q Serve(g_s), s	10.8	15.9	15.9	3.7	17.4	17.4	10.2	0.0	0.0	6.3	0.0	0.8
Cycle Q Clear(g_c), s	10.8	15.9	15.9	3.7	17.4	17.4	10.2	0.0	0.0	6.3	0.0	0.8
Prop In Lane	1.00		0.20	1.00		0.15	1.00		0.00	0.63		1.00
Lane Grp Cap(c), veh/h	585	806	814	108	602	617	620	325	0	196	0	296
V/C Ratio(X)	0.83	0.59	0.59	0.77	0.73	0.73	0.77	0.00	0.00	0.75	0.00	0.10
Avail Cap(c_a), veh/h	869	806	814	448	782	801	1119	588	0	570	0	859
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.4	15.7	15.7	36.3	22.6	22.6	30.8	0.0	0.0	33.9	0.0	31.5
Incr Delay (d2), s/veh	2.8	1.0	1.0	4.4	2.2	2.1	0.8	0.0	0.0	2.2	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	5.3	7.8	7.9	1.9	8.7	8.9	5.0	0.0	0.0	3.2	0.0	0.3
LnGrp Delay(d),s/veh	34.2	16.7	16.7	40.7	24.8	24.8	31.6	0.0	0.0	36.1	0.0	31.5
LnGrp LOS	C	B	B	D	C	C	C			D		C
Approach Vol, veh/h		1446			979			480			177	
Approach Delay, s/veh		22.6			26.2			31.6			35.3	
Approach LOS		C			C			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	7.8	40.2		12.6	17.0	31.1		17.8
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	5.7	17.9		8.3	12.8	19.4		12.2
Green Ext Time (p_c), s	0.1	9.3		0.5	0.6	7.6		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
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)	288	419	202	81	407	128	340	262	49	97	258	196
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	291	423	160	82	411	38	343	265	13	98	261	100
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	319	508	190	536	1149	508	369	1015	451	123	372	138
Arrive On Green	0.18	0.20	0.20	0.31	0.33	0.33	0.21	0.29	0.29	0.07	0.15	0.15
Sat Flow, veh/h	1757	2485	929	1757	3505	1548	1757	3505	1557	1757	2479	921
Grp Volume(v), veh/h	291	297	286	82	411	38	343	265	13	98	182	179
Grp Sat Flow(s),veh/h/ln	1757	1752	1661	1757	1752	1548	1757	1752	1557	1757	1752	1647
Q Serve(g_s), s	18.6	18.6	19.0	3.9	10.2	1.9	22.0	6.7	0.7	6.3	11.3	11.9
Cycle Q Clear(g_c), s	18.6	18.6	19.0	3.9	10.2	1.9	22.0	6.7	0.7	6.3	11.3	11.9
Prop In Lane	1.00		0.56	1.00		1.00	1.00		1.00	1.00		0.56
Lane Grp Cap(c), veh/h	319	358	340	536	1149	508	369	1015	451	123	263	247
V/C Ratio(X)	0.91	0.83	0.84	0.15	0.36	0.07	0.93	0.26	0.03	0.80	0.69	0.72
Avail Cap(c_a), veh/h	383	687	652	536	1149	508	383	1015	451	383	458	431
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	43.7	43.9	29.1	29.3	26.6	44.5	31.3	29.2	52.5	46.3	46.5
Incr Delay (d2), s/veh	21.3	1.9	2.2	0.6	0.1	0.0	28.0	0.1	0.0	4.4	1.2	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	10.9	9.2	8.9	2.0	5.0	0.8	13.5	3.2	0.3	3.2	5.6	5.5
LnGrp Delay(d),s/veh	67.3	45.6	46.1	29.7	29.4	26.6	72.5	31.4	29.2	56.9	47.5	48.0
LnGrp LOS	E	D	D	C	C	C	E	C	C	E	D	D
Approach Vol, veh/h		874			531			621			459	
Approach Delay, s/veh		53.0			29.3			54.0			49.7	
Approach LOS		D			C			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	23.8	42.1	11.0	37.7	38.0	28.0	27.1	21.7
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	25.0	35.0	25.0	20.0	35.0	45.0	25.0	30.0
Max Q Clear Time (g_c+I1), s	20.6	12.2	8.3	8.7	5.9	21.0	24.0	13.9
Green Ext Time (p_c), s	0.2	4.3	0.1	2.0	0.1	2.5	0.1	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	47.6
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	232	31	172	29	21	29	157	371	10	24	356	128
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		0.97	1.00		1.00	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	255	34	40	32	23	0	173	408	9	26	391	44
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	741	165	194	101	106	0	206	1805	40	65	1525	666
Arrive On Green	0.22	0.22	0.22	0.06	0.06	0.00	0.12	0.52	0.52	0.04	0.44	0.44
Sat Flow, veh/h	3408	760	894	1757	1845	0	1757	3504	77	1757	3505	1530
Grp Volume(v), veh/h	255	0	74	32	23	0	173	204	213	26	391	44
Grp Sat Flow(s),veh/h/ln	1704	0	1654	1757	1845	0	1757	1752	1829	1757	1752	1530
Q Serve(g_s), s	5.8	0.0	3.4	1.6	1.1	0.0	8.9	5.9	5.9	1.3	6.5	1.5
Cycle Q Clear(g_c), s	5.8	0.0	3.4	1.6	1.1	0.0	8.9	5.9	5.9	1.3	6.5	1.5
Prop In Lane	1.00		0.54	1.00		0.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	741	0	360	101	106	0	206	903	942	65	1525	666
V/C Ratio(X)	0.34	0.00	0.21	0.32	0.22	0.00	0.84	0.23	0.23	0.40	0.26	0.07
Avail Cap(c_a), veh/h	741	0	360	382	401	0	382	903	942	287	1525	666
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	0.0	29.5	41.6	41.4	0.0	39.8	12.2	12.2	43.3	16.5	15.1
Incr Delay (d2), s/veh	1.3	0.0	1.3	0.7	0.4	0.0	3.5	0.6	0.6	1.5	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	2.9	0.0	1.7	0.8	0.6	0.0	4.5	3.0	3.1	0.7	3.2	0.7
LnGrp Delay(d),s/veh	31.7	0.0	30.8	42.3	41.7	0.0	43.3	12.8	12.8	44.8	16.9	15.3
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		329			55			590			461	
Approach Delay, s/veh		31.5			42.0			21.7			18.3	
Approach LOS		C			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	6.9	51.6		24.1	14.3	44.2		9.4
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.3	7.9		7.8	10.9	8.5		3.6
Green Ext Time (p_c), s	0.0	11.1		0.6	0.0	11.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.7
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	74	0	534	554	5
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	80	0	574	596	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	885	301	601	0	-	0
Stage 1	598	-	-	-	-	-
Stage 2	287	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	283	692	965	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	283	692	965	-	-	-
Mov Cap-2 Maneuver	283	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	733	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	965	-	692	-	-
HCM Lane V/C Ratio	-	-	0.115	-	-
HCM Control Delay (s)	0	-	10.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	0	7	1	0	14	10	503	2	27	581	14
Conflicting Peds, #/hr	0	0	2	0	0	0	0	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	0	7	1	0	15	11	535	2	29	618	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	974	1244	318	925	1249	270	635	0	0	537	0	0
Stage 1	685	685	-	557	557	-	-	-	-	-	-	-
Stage 2	289	559	-	368	692	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	205	172	675	222	170	725	937	-	-	1020	-	-
Stage 1	402	444	-	480	508	-	-	-	-	-	-	-
Stage 2	692	507	-	621	441	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	194	165	674	213	163	724	937	-	-	1019	-	-
Mov Cap-2 Maneuver	194	165	-	213	163	-	-	-	-	-	-	-
Stage 1	397	431	-	474	502	-	-	-	-	-	-	-
Stage 2	669	501	-	597	428	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.1	10.9	0.2	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	937	-	-	274	213	724	1019	-	-
HCM Lane V/C Ratio	0.011	-	-	0.066	0.005	0.021	0.028	-	-
HCM Control Delay (s)	8.9	-	-	19.1	22	10.1	8.6	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0.1	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	70	450	14	58	29	384	208	9	17	135	28
Number	1	6	16	5	2	12	7	4	14	3	8	18
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		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	38	76	73	15	63	12	417	226	7	18	147	10
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	105	361	538	47	245	47	486	1432	44	55	558	38
Arrive On Green	0.06	0.20	0.20	0.03	0.16	0.16	0.28	0.41	0.41	0.03	0.17	0.17
Sat Flow, veh/h	1757	1845	2747	1757	1507	287	1757	3468	107	1757	3329	225
Grp Volume(v), veh/h	38	76	73	15	0	75	417	114	119	18	77	80
Grp Sat Flow(s),veh/h/ln	1757	1845	1373	1757	0	1794	1757	1752	1823	1757	1752	1801
Q Serve(g_s), s	0.9	1.5	0.9	0.4	0.0	1.5	9.5	1.7	1.7	0.4	1.6	1.6
Cycle Q Clear(g_c), s	0.9	1.5	0.9	0.4	0.0	1.5	9.5	1.7	1.7	0.4	1.6	1.6
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.06	1.00		0.12
Lane Grp Cap(c), veh/h	105	361	538	47	0	292	486	723	752	55	294	302
V/C Ratio(X)	0.36	0.21	0.14	0.32	0.00	0.26	0.86	0.16	0.16	0.32	0.26	0.27
Avail Cap(c_a), veh/h	920	1185	1765	711	0	1452	1129	1335	1388	711	1126	1158
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	14.2	14.0	20.1	0.0	15.4	14.4	7.7	7.8	19.9	15.2	15.2
Incr Delay (d2), s/veh	0.8	0.1	0.0	1.4	0.0	0.2	1.7	0.0	0.0	1.2	0.2	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	0.4	0.7	0.3	0.2	0.0	0.8	4.8	0.8	0.9	0.2	0.8	0.8
LnGrp Delay(d),s/veh	19.8	14.3	14.0	21.5	0.0	15.5	16.2	7.8	7.8	21.2	15.4	15.4
LnGrp LOS	B	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		187			90			650			175	
Approach Delay, s/veh		15.3			16.5			13.2			16.0	
Approach LOS		B			B			B			B	

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	5.5	10.8	4.3	21.3	4.1	12.2	14.6	11.0
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	34.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.9	3.5	2.4	3.7	2.4	3.5	11.5	3.6
Green Ext Time (p_c), s	0.0	0.7	0.0	1.4	0.0	0.7	0.2	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	104	672	14	7	608	310	9	5	13	341	7	137
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	108	700	14	7	633	0	9	5	0	360	0	23
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	139	1644	33	23	1409	630	29	16	0	506	0	226
Arrive On Green	0.08	0.47	0.47	0.01	0.40	0.00	0.02	0.02	0.00	0.14	0.00	0.14
Sat Flow, veh/h	1757	3513	70	1757	3505	1568	1149	638	0	3514	0	1568
Grp Volume(v), veh/h	108	349	365	7	633	0	14	0	0	360	0	23
Grp Sat Flow(s),veh/h/ln	1757	1752	1831	1757	1752	1568	1787	0	0	1757	0	1568
Q Serve(g_s), s	2.9	6.4	6.4	0.2	6.4	0.0	0.4	0.0	0.0	4.7	0.0	0.6
Cycle Q Clear(g_c), s	2.9	6.4	6.4	0.2	6.4	0.0	0.4	0.0	0.0	4.7	0.0	0.6
Prop In Lane	1.00		0.04	1.00		1.00	0.64		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	139	820	857	23	1409	630	44	0	0	506	0	226
V/C Ratio(X)	0.78	0.43	0.43	0.31	0.45	0.00	0.32	0.00	0.00	0.71	0.00	0.10
Avail Cap(c_a), veh/h	724	1516	1584	977	2887	1292	699	0	0	1809	0	807
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.9	8.6	8.6	23.7	10.6	0.0	23.3	0.0	0.0	19.8	0.0	18.1
Incr Delay (d2), s/veh	3.5	0.4	0.4	2.8	0.2	0.0	1.5	0.0	0.0	0.7	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	1.5	3.2	3.3	0.1	3.1	0.0	0.2	0.0	0.0	2.3	0.0	0.3
LnGrp Delay(d),s/veh	25.5	9.0	9.0	26.5	10.8	0.0	24.8	0.0	0.0	20.5	0.0	18.1
LnGrp LOS	C	A	A	C	B		C			C		B
Approach Vol, veh/h		822			640			14			383	
Approach Delay, s/veh		11.2			11.0			24.8			20.4	
Approach LOS		B			B			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	4.1	27.7		5.2	7.3	24.5		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.9	8.4		2.4	4.9	8.4		6.7
Green Ext Time (p_c), s	0.0	11.3		0.0	0.0	11.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
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)	0	932	159	0	740	164	0	0	0	564	0	261
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	971	0	0	771	0				588	0	160
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1425	638	0	1425	638				829	0	381
Arrive On Green	0.00	0.41	0.00	0.00	0.41	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	971	0	0	771	0				588	0	160
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	6.5	0.0	0.0	4.8	0.0				4.5	0.0	2.5
Cycle Q Clear(g_c), s	0.0	6.5	0.0	0.0	4.8	0.0				4.5	0.0	2.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1425	638	0	1425	638				829	0	381
V/C Ratio(X)	0.00	0.68	0.00	0.00	0.54	0.00				0.71	0.00	0.42
Avail Cap(c_a), veh/h	0	6137	2746	0	6137	2746				4178	0	1922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.0	0.0	0.0	6.4	0.0				9.9	0.0	9.1
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0				0.4	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	3.1	0.0	0.0	2.3	0.0				2.2	0.0	1.1
LnGrp Delay(d),s/veh	0.0	7.2	0.0	0.0	6.6	0.0				10.3	0.0	9.4
LnGrp LOS		A			A					B		A
Approach Vol, veh/h		971			771						748	
Approach Delay, s/veh		7.2			6.6						10.1	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		16.6		11.9		16.6		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		8.5		6.5		6.8		
Green Ext Time (p_c), s		3.1		0.5		3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	7.9
HCM 2010 LOS	A

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)	0	1219	277	0	781	671	123	0	147	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1270	0	0	814	0	128	0	6			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	1988	889	0	1988	889	322	0	148			
Arrive On Green	0.00	0.57	0.00	0.00	0.57	0.00	0.09	0.00	0.09			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1270	0	0	814	0	128	0	6			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	6.5	0.0	0.0	3.5	0.0	0.9	0.0	0.1			
Cycle Q Clear(g_c), s	0.0	6.5	0.0	0.0	3.5	0.0	0.9	0.0	0.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1988	889	0	1988	889	322	0	148			
V/C Ratio(X)	0.00	0.64	0.00	0.00	0.41	0.00	0.40	0.00	0.04			
Avail Cap(c_a), veh/h	0	6587	2947	0	6587	2947	3202	0	1473			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	3.9	0.0	0.0	3.2	0.0	11.3	0.0	10.9			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0	0.3	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	3.0	0.0	0.0	1.6	0.0	0.5	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	4.0	0.0	0.0	3.3	0.0	11.6	0.0	11.0			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1270			814			134				
Approach Delay, s/veh		4.0			3.3			11.6				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		20.1				20.1		6.5
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		8.5				5.5		2.9
Green Ext Time (p_c), s		6.5				6.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.2
HCM 2010 LOS	A

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)	455	643	256	86	736	158	231	148	72	150	96	464
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		0.97	1.00		1.00	1.00		0.97	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	474	670	146	90	767	38	241	154	61	128	139	337
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	603	2037	881	135	1553	483	579	212	84	248	260	997
Arrive On Green	0.18	0.40	0.40	0.08	0.31	0.31	0.17	0.17	0.17	0.14	0.14	0.14
Sat Flow, veh/h	3408	5036	1520	1757	5036	1566	3408	1247	494	1757	1845	3136
Grp Volume(v), veh/h	474	670	146	90	767	38	241	0	215	128	139	337
Grp Sat Flow(s),veh/h/ln	1704	1679	1520	1757	1679	1566	1704	0	1740	1757	1845	1568
Q Serve(g_s), s	10.4	7.1	3.5	3.9	9.7	1.3	4.9	0.0	9.1	5.3	5.5	6.4
Cycle Q Clear(g_c), s	10.4	7.1	3.5	3.9	9.7	1.3	4.9	0.0	9.1	5.3	5.5	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	603	2037	881	135	1553	483	579	0	296	248	260	997
V/C Ratio(X)	0.79	0.33	0.17	0.67	0.49	0.08	0.42	0.00	0.73	0.52	0.53	0.34
Avail Cap(c_a), veh/h	1092	2582	1045	563	2582	803	1310	0	669	676	709	1760
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.7	16.0	7.8	35.0	22.0	19.1	28.9	0.0	30.7	31.0	31.1	20.3
Incr Delay (d2), s/veh	2.3	0.1	0.1	5.5	0.2	0.1	0.5	0.0	3.4	1.7	1.7	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	5.1	3.3	2.1	2.1	4.5	0.6	2.3	0.0	4.6	2.7	2.9	2.8
LnGrp Delay(d),s/veh	33.0	16.1	7.9	40.6	22.3	19.2	29.4	0.0	34.1	32.7	32.8	20.5
LnGrp LOS	C	B	A	D	C	B	C		C	C	C	C
Approach Vol, veh/h		1290			895			456			604	
Approach Delay, s/veh		21.4			24.0			31.6			25.9	
Approach LOS		C			C			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	10.0	36.4		14.7	17.5	28.9		16.9
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.3	9.1		8.4	12.4	11.7		11.1
Green Ext Time (p_c), s	0.2	12.8		2.6	1.4	12.4		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
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)	20	414	78	111	474	50	49	5	71	47	7	21
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		0.98	1.00		0.97	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	25	524	19	141	600	57	66	0	3	66	0	0
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	2	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	1006	442	298	1114	106	487	0	350	473	248	0
Arrive On Green	0.03	0.29	0.29	0.09	0.35	0.35	0.14	0.00	0.14	0.13	0.00	0.00
Sat Flow, veh/h	1757	3505	1539	3408	3226	306	3514	0	1535	3514	1845	0
Grp Volume(v), veh/h	25	524	19	141	325	332	66	0	3	66	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1539	1704	1752	1780	1757	0	1535	1757	1845	0
Q Serve(g_s), s	0.7	6.1	0.4	1.9	7.3	7.3	0.8	0.0	0.1	0.8	0.0	0.0
Cycle Q Clear(g_c), s	0.7	6.1	0.4	1.9	7.3	7.3	0.8	0.0	0.1	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	52	1006	442	298	605	615	487	0	350	473	248	0
V/C Ratio(X)	0.48	0.52	0.04	0.47	0.54	0.54	0.14	0.00	0.01	0.14	0.00	0.00
Avail Cap(c_a), veh/h	723	2886	1267	2105	1443	1465	2170	0	1085	1808	949	0
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.2	14.5	12.5	21.1	12.8	12.8	18.4	0.0	14.6	18.5	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.2	0.0	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0	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	0.4	2.9	0.2	0.9	3.5	3.5	0.4	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	25.8	14.7	12.5	21.5	13.1	13.1	18.4	0.0	14.6	18.6	0.0	0.0
LnGrp LOS	C	B	B	C	B	B	B		B	B		
Approach Vol, veh/h		568			798			69			66	
Approach Delay, s/veh		15.1			14.6			18.2			18.6	
Approach LOS		B			B			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	7.3	18.6		11.0	4.4	21.4		11.7
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	3.9	8.1		2.8	2.7	9.3		2.8
Green Ext Time (p_c), s	0.2	5.4		0.1	0.0	5.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	480	52	97	314	0	0	0	0	571	0	321
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	608	13	123	397	0				723	0	69
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79				0.79	0.79	0.79
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1017	455	226	1628	0				940	0	839
Arrive On Green	0.00	0.29	0.29	0.07	0.46	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3597	1568	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	608	13	123	397	0				723	0	69
Grp Sat Flow(s),veh/h/ln	0	1752	1568	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	4.8	0.2	1.1	2.2	0.0				6.2	0.0	0.5
Cycle Q Clear(g_c), s	0.0	4.8	0.2	1.1	2.2	0.0				6.2	0.0	0.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1017	455	226	1628	0				940	0	839
V/C Ratio(X)	0.00	0.60	0.03	0.55	0.24	0.00				0.77	0.00	0.08
Avail Cap(c_a), veh/h	0	3728	1668	2627	3728	0				3250	0	2900
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.9	8.2	14.7	5.2	0.0				11.0	0.0	8.9
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.8	0.0	0.0				0.5	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	2.3	0.1	0.6	1.1	0.0				3.0	0.0	0.2
LnGrp Delay(d),s/veh	0.0	10.1	8.2	15.4	5.3	0.0				11.5	0.0	8.9
LnGrp LOS		B	A	B	A					B		A
Approach Vol, veh/h		621			520						792	
Approach Delay, s/veh		10.1			7.7						11.2	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	5.6	14.0		12.8		19.7		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	3.1	6.8		8.2		4.2		
Green Ext Time (p_c), s	0.1	2.6		0.5		2.6		

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
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)	170	881	0	0	369	399	42	0	119	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	215	1115	0	0	467	63	53	0	43			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	401	2108	0	0	1235	553	201	0	90			
Arrive On Green	0.12	0.60	0.00	0.00	0.35	0.35	0.06	0.00	0.06			
Sat Flow, veh/h	3408	3597	0	0	3597	1568	3514	0	1568			
Grp Volume(v), veh/h	215	1115	0	0	467	63	53	0	43			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	1.6	5.0	0.0	0.0	2.7	0.7	0.4	0.0	0.7			
Cycle Q Clear(g_c), s	1.6	5.0	0.0	0.0	2.7	0.7	0.4	0.0	0.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	401	2108	0	0	1235	553	201	0	90			
V/C Ratio(X)	0.54	0.53	0.00	0.00	0.38	0.11	0.26	0.00	0.48			
Avail Cap(c_a), veh/h	3195	4600	0	0	4600	2058	3953	0	1764			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.1	3.1	0.0	0.0	6.5	5.8	12.0	0.0	12.2			
Incr Delay (d2), s/veh	0.4	0.1	0.0	0.0	0.1	0.0	0.3	0.0	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			
%ile BackOfQ(50%),veh/ln	0.8	2.3	0.0	0.0	1.2	0.3	0.2	0.0	0.3			
LnGrp Delay(d),s/veh	11.5	3.2	0.0	0.0	6.5	5.9	12.3	0.0	13.7			
LnGrp LOS	B	A			A	A	B		B			
Approach Vol, veh/h		1330			530			96				
Approach Delay, s/veh		4.5			6.4			12.9				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		21.0			6.6	14.4		5.6
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		7.0			3.6	4.7		2.7
Green Ext Time (p_c), s		4.7			0.4	4.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
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.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	695	305	0	768	0	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	914	401	0	1011	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	915	0	1420	458
Stage 1	-	-	-	-	915	-
Stage 2	-	-	-	-	505	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	427	-	154	468
Stage 1	-	0	-	-	277	-
Stage 2	-	0	-	-	550	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	427	-	154	468
Mov Cap-2 Maneuver	-	-	-	-	154	-
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	550	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	468	-	427	-
HCM Lane V/C Ratio	0.039	-	-	-
HCM Control Delay (s)	13	-	0	-
HCM Lane LOS	B	-	A	-
HCM 95th %tile Q(veh)	0.1	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	630	34	27	652	13	82	7	8	15	6	32
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		0.99	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	54	797	39	34	825	15	113	0	0	19	8	0
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	189	1621	79	68	1579	29	341	179	0	40	17	89
Arrive On Green	0.06	0.48	0.48	0.04	0.45	0.45	0.10	0.00	0.00	0.03	0.03	0.00
Sat Flow, veh/h	3408	3401	166	1757	3521	64	3514	1845	0	1254	528	2760
Grp Volume(v), veh/h	54	411	425	34	411	429	113	0	0	27	0	0
Grp Sat Flow(s),veh/h/ln	1704	1752	1815	1757	1752	1832	1757	1845	0	1782	0	1380
Q Serve(g_s), s	0.6	6.8	6.8	0.8	7.2	7.2	1.3	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	0.6	6.8	6.8	0.8	7.2	7.2	1.3	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.03	1.00		0.00	0.70		1.00
Lane Grp Cap(c), veh/h	189	835	865	68	786	822	341	179	0	57	0	89
V/C Ratio(X)	0.29	0.49	0.49	0.50	0.52	0.52	0.33	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	1604	1443	1495	827	1443	1509	2067	1085	0	1048	0	1624
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.3	7.6	7.6	20.0	8.4	8.4	17.9	0.0	0.0	20.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.3	0.3	2.1	0.4	0.4	0.2	0.0	0.0	2.2	0.0	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	0.3	3.3	3.4	0.4	3.5	3.7	0.6	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	19.6	7.9	7.9	22.1	8.8	8.8	18.1	0.0	0.0	22.4	0.0	0.0
LnGrp LOS	B	A	A	C	A	A	B			C		
Approach Vol, veh/h		890			874			113			27	
Approach Delay, s/veh		8.6			9.4			18.1			22.4	
Approach LOS		A			A			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	4.7	24.4		5.4	5.9	23.2		8.1
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	2.8	8.8		2.6	2.6	9.2		3.3
Green Ext Time (p_c), s	0.0	9.9		0.1	0.1	9.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
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)	139	249	234	64	277	122	223	107	31	92	222	192
Number	1	6	16	5	2	12	7	4	14	3	8	18
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		0.99	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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	176	315	6	81	351	19	282	135	2	116	281	0
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	212	1011	19	339	1326	592	322	805	356	147	455	0
Arrive On Green	0.12	0.29	0.29	0.19	0.38	0.38	0.18	0.23	0.23	0.08	0.13	0.00
Sat Flow, veh/h	1757	3518	67	1757	3505	1564	1757	3505	1550	1757	3597	0
Grp Volume(v), veh/h	176	157	164	81	351	19	282	135	2	116	281	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1833	1757	1752	1564	1757	1752	1550	1757	1752	0
Q Serve(g_s), s	7.8	5.6	5.6	3.1	5.5	0.6	12.5	2.5	0.0	5.2	6.1	0.0
Cycle Q Clear(g_c), s	7.8	5.6	5.6	3.1	5.5	0.6	12.5	2.5	0.0	5.2	6.1	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	212	503	526	339	1326	592	322	805	356	147	455	0
V/C Ratio(X)	0.83	0.31	0.31	0.24	0.26	0.03	0.87	0.17	0.01	0.79	0.62	0.00
Avail Cap(c_a), veh/h	253	503	526	339	1326	592	439	1051	465	275	745	0
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)	0.91	0.91	0.91	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.4	22.3	22.3	27.3	17.2	15.6	31.8	24.7	8.6	36.0	32.9	0.0
Incr Delay (d2), s/veh	13.9	0.1	0.1	0.1	0.5	0.1	11.1	0.0	0.0	3.6	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	4.6	2.7	2.8	1.5	2.8	0.3	7.0	1.2	0.0	2.7	3.0	0.0
LnGrp Delay(d),s/veh	48.3	22.4	22.4	27.4	17.7	15.7	42.8	24.7	8.7	39.5	33.4	0.0
LnGrp LOS	D	C	C	C	B	B	D	C	A	D	C	
Approach Vol, veh/h		497			451			419			397	
Approach Delay, s/veh		31.6			19.3			36.8			35.2	
Approach LOS		C			B			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	12.7	34.8	9.7	22.9	20.0	27.5	17.7	14.9
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	4.5	* 4.5	3.0	4.5
Max Green Setting (Gmax), s	11.5	16.5	12.5	24.0	8.5	* 19	20.0	17.0
Max Q Clear Time (g_c+I1), s	9.8	7.5	7.2	4.5	5.1	7.6	14.5	8.1
Green Ext Time (p_c), s	0.0	1.1	0.1	1.6	0.6	0.8	0.2	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	30.5
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* 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)	117	21	139	21	9	33	65	198	14	28	389	60
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		0.99	1.00		1.00	1.00		0.98	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	144	26	24	26	11	0	80	244	12	35	480	18
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	784	202	187	103	108	0	121	1640	80	81	1612	697
Arrive On Green	0.23	0.23	0.23	0.06	0.06	0.00	0.07	0.48	0.48	0.05	0.46	0.46
Sat Flow, veh/h	3408	879	812	1757	1845	0	1757	3397	166	1757	3505	1515
Grp Volume(v), veh/h	144	0	50	26	11	0	80	125	131	35	480	18
Grp Sat Flow(s),veh/h/ln	1704	0	1691	1757	1845	0	1757	1752	1810	1757	1752	1515
Q Serve(g_s), s	3.0	0.0	2.0	1.2	0.5	0.0	3.9	3.5	3.5	1.7	7.5	0.6
Cycle Q Clear(g_c), s	3.0	0.0	2.0	1.2	0.5	0.0	3.9	3.5	3.5	1.7	7.5	0.6
Prop In Lane	1.00		0.48	1.00		0.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	784	0	389	103	108	0	121	846	874	81	1612	697
V/C Ratio(X)	0.18	0.00	0.13	0.25	0.10	0.00	0.66	0.15	0.15	0.43	0.30	0.03
Avail Cap(c_a), veh/h	784	0	389	404	424	0	404	846	874	303	1612	697
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	26.6	39.1	38.8	0.0	39.5	12.5	12.5	40.4	14.7	12.8
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.5	0.2	0.0	2.3	0.4	0.4	1.4	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	1.4	0.0	1.0	0.6	0.3	0.0	1.9	1.8	1.8	0.8	3.7	0.2
LnGrp Delay(d),s/veh	27.4	0.0	27.3	39.6	38.9	0.0	41.8	12.9	12.9	41.7	15.2	12.9
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		194			37			336			533	
Approach Delay, s/veh		27.4			39.4			19.8			16.8	
Approach LOS		C			D			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	7.5	46.2		24.1	9.5	44.2		9.2
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.7	5.5		5.0	5.9	9.5		3.2
Green Ext Time (p_c), s	0.0	10.2		0.4	0.0	9.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	43	0	286	485	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	54	0	358	606	72

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	822	339	679	0	-	0
Stage 1	643	-	-	-	-	-
Stage 2	179	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	310	654	902	-	-	-
Stage 1	483	-	-	-	-	-
Stage 2	831	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	310	654	902	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	483	-	-	-	-	-
Stage 2	831	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	902	-	654	-	-
HCM Lane V/C Ratio	-	-	0.082	-	-
HCM Control Delay (s)	0	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	4	47	0	5	25	68	211	21	79	402	53
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		0.99	1.00		0.96
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	71	5	0	0	6	0	86	267	13	100	509	45
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	331	463	0	5	114	0	193	1111	54	211	1093	96
Arrive On Green	0.10	0.25	0.00	0.00	0.06	0.00	0.11	0.33	0.33	0.12	0.34	0.34
Sat Flow, veh/h	3408	1845	0	1757	1845	0	1757	3402	165	1757	3245	286
Grp Volume(v), veh/h	71	5	0	0	6	0	86	137	143	100	274	280
Grp Sat Flow(s),veh/h/ln	1704	1845	0	1757	1845	0	1757	1752	1814	1757	1752	1779
Q Serve(g_s), s	0.7	0.1	0.0	0.0	0.1	0.0	1.7	2.2	2.2	2.0	4.7	4.7
Cycle Q Clear(g_c), s	0.7	0.1	0.0	0.0	0.1	0.0	1.7	2.2	2.2	2.0	4.7	4.7
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.09	1.00		0.16
Lane Grp Cap(c), veh/h	331	463	0	5	114	0	193	573	593	211	590	599
V/C Ratio(X)	0.21	0.01	0.00	0.00	0.05	0.00	0.45	0.24	0.24	0.47	0.46	0.47
Avail Cap(c_a), veh/h	1030	1503	0	531	1503	0	531	1658	1716	531	1658	1683
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.8	10.7	0.0	0.0	16.8	0.0	15.9	9.4	9.4	15.6	9.9	9.9
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.2	0.0	1.6	0.2	0.2	1.7	0.6	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	0.4	0.0	0.0	0.0	0.1	0.0	0.9	1.1	1.1	1.1	2.3	2.3
LnGrp Delay(d),s/veh	16.2	10.7	0.0	0.0	17.0	0.0	17.5	9.6	9.6	17.3	10.5	10.5
LnGrp LOS	B	B			B		B	A	A	B	B	B
Approach Vol, veh/h		76			6			366			654	
Approach Delay, s/veh		15.8			17.0			11.4			11.5	
Approach LOS		B			B			B			B	

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	8.1	16.4	0.0	13.5	7.7	16.8	7.2	6.4
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	11.5	36.0	11.5	31.0	11.5	36.0	11.5	31.0
Max Q Clear Time (g_c+I1), s	4.0	4.2	0.0	2.1	3.7	6.7	2.7	2.1
Green Ext Time (p_c), s	0.1	5.4	0.0	0.0	0.1	5.3	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	35	245	19	61	12	263	107	34	16	120	17
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	8	42	12	23	73	7	313	127	17	19	143	8
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	26	292	431	70	304	29	395	1218	160	59	678	38
Arrive On Green	0.01	0.16	0.16	0.04	0.18	0.18	0.22	0.39	0.39	0.03	0.20	0.20
Sat Flow, veh/h	1757	1845	2719	1757	1657	159	1757	3103	407	1757	3372	187
Grp Volume(v), veh/h	8	42	12	23	0	80	313	71	73	19	74	77
Grp Sat Flow(s),veh/h/ln	1757	1845	1359	1757	0	1815	1757	1752	1758	1757	1752	1807
Q Serve(g_s), s	0.2	0.7	0.1	0.5	0.0	1.4	6.3	1.0	1.0	0.4	1.3	1.3
Cycle Q Clear(g_c), s	0.2	0.7	0.1	0.5	0.0	1.4	6.3	1.0	1.0	0.4	1.3	1.3
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.23	1.00		0.10
Lane Grp Cap(c), veh/h	26	292	431	70	0	333	395	688	690	59	352	363
V/C Ratio(X)	0.31	0.14	0.03	0.33	0.00	0.24	0.79	0.10	0.11	0.32	0.21	0.21
Avail Cap(c_a), veh/h	1038	1337	1971	802	0	1170	1274	1506	1511	802	1270	1310
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	13.5	13.2	17.4	0.0	13.0	13.6	7.2	7.2	17.6	12.4	12.4
Incr Delay (d2), s/veh	2.4	0.1	0.0	1.0	0.0	0.1	1.4	0.0	0.0	1.2	0.1	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	0.1	0.4	0.1	0.2	0.0	0.7	3.1	0.5	0.5	0.2	0.6	0.7
LnGrp Delay(d),s/veh	20.5	13.6	13.3	18.4	0.0	13.1	15.0	7.2	7.2	18.7	12.5	12.5
LnGrp LOS	C	B	B	B		B	B	A	A	B	B	B
Approach Vol, veh/h		62			103			457			170	
Approach Delay, s/veh		14.4			14.3			12.5			13.2	
Approach LOS		B			B			B			B	

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	3.6	10.8	4.2	18.6	4.5	9.9	11.4	11.5
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.2	3.4	2.4	3.0	2.5	2.7	8.3	3.3
Green Ext Time (p_c), s	0.0	0.4	0.0	1.1	0.0	0.4	0.1	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	714	2	6	896	142	3	1	4	95	3	35
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	38	850	2	7	1067	0	4	1	0	116	0	6
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	1.00
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	70	1976	5	23	1837	822	13	3	0	437	0	195
Arrive On Green	0.04	0.55	0.55	0.01	0.52	0.00	0.01	0.01	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1757	3587	8	1757	3505	1568	1419	355	0	3514	0	1568
Grp Volume(v), veh/h	38	415	437	7	1067	0	5	0	0	116	0	6
Grp Sat Flow(s),veh/h/ln	1757	1752	1843	1757	1752	1568	1774	0	0	1757	0	1568
Q Serve(g_s), s	1.2	7.8	7.8	0.2	11.7	0.0	0.2	0.0	0.0	1.7	0.0	0.2
Cycle Q Clear(g_c), s	1.2	7.8	7.8	0.2	11.7	0.0	0.2	0.0	0.0	1.7	0.0	0.2
Prop In Lane	1.00		0.00	1.00		1.00	0.80		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	966	1015	23	1837	822	17	0	0	437	0	195
V/C Ratio(X)	0.54	0.43	0.43	0.31	0.58	0.00	0.30	0.00	0.00	0.27	0.00	0.03
Avail Cap(c_a), veh/h	625	1309	1376	843	2493	1115	599	0	0	1562	0	697
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.5	7.4	7.4	27.5	9.2	0.0	27.7	0.0	0.0	22.3	0.0	21.6
Incr Delay (d2), s/veh	2.4	0.4	0.3	2.8	0.3	0.0	3.7	0.0	0.0	0.1	0.0	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	0.6	3.8	4.0	0.1	5.7	0.0	0.1	0.0	0.0	0.8	0.0	0.1
LnGrp Delay(d),s/veh	28.9	7.8	7.8	30.3	9.4	0.0	31.4	0.0	0.0	22.4	0.0	21.7
LnGrp LOS	C	A	A	C	A		C			C		C
Approach Vol, veh/h		890			1074			5			122	
Approach Delay, s/veh		8.7			9.6			31.4			22.4	
Approach LOS		A			A			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	4.2	36.0		4.5	5.7	34.5		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	9.8		2.2	3.2	13.7		3.7
Green Ext Time (p_c), s	0.0	17.7		0.0	0.0	15.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.0
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)	0	713	164	0	712	196	0	0	0	854	0	520
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	849	0	0	848	0				1017	0	538
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1202	538	0	1202	538				1346	0	619
Arrive On Green	0.00	0.34	0.00	0.00	0.34	0.00				0.39	0.00	0.39
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	849	0	0	848	0				1017	0	538
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	8.0	0.0	0.0	8.0	0.0				9.8	0.0	12.1
Cycle Q Clear(g_c), s	0.0	8.0	0.0	0.0	8.0	0.0				9.8	0.0	12.1
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1202	538	0	1202	538				1346	0	619
V/C Ratio(X)	0.00	0.71	0.00	0.00	0.71	0.00				0.76	0.00	0.87
Avail Cap(c_a), veh/h	0	4595	2056	0	4595	2056				3128	0	1439
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.9	0.0	0.0	10.9	0.0				9.9	0.0	10.6
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0				0.3	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	3.8	0.0	0.0	3.8	0.0				4.6	0.0	5.3
LnGrp Delay(d),s/veh	0.0	11.2	0.0	0.0	11.1	0.0				10.3	0.0	12.1
LnGrp LOS		B			B					B		B
Approach Vol, veh/h		849			848						1555	
Approach Delay, s/veh		11.2			11.1						10.9	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		18.1		20.1		18.1		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		10.0		14.1		10.0		
Green Ext Time (p_c), s		3.0		1.0		3.0		

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

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)	0	1292	275	0	764	961	144	0	206	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1538	0	0	910	0	171	0	214			
Adj No. of Lanes	0	2	1	0	2	1	2	0	1			
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2066	924	0	2066	924	622	0	286			
Arrive On Green	0.00	0.59	0.00	0.00	0.59	0.00	0.18	0.00	0.18			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1538	0	0	910	0	171	0	214			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	12.7	0.0	0.0	5.7	0.0	1.7	0.0	5.1			
Cycle Q Clear(g_c), s	0.0	12.7	0.0	0.0	5.7	0.0	1.7	0.0	5.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2066	924	0	2066	924	622	0	286			
V/C Ratio(X)	0.00	0.74	0.00	0.00	0.44	0.00	0.28	0.00	0.75			
Avail Cap(c_a), veh/h	0	4441	1987	0	4441	1987	2159	0	993			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	5.9	0.0	0.0	4.5	0.0	13.9	0.0	15.3			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	6.0	0.0	0.0	2.7	0.0	0.8	0.0	2.3			
LnGrp Delay(d),s/veh	0.0	6.1	0.0	0.0	4.5	0.0	14.0	0.0	16.7			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1538			910			385				
Approach Delay, s/veh		6.1			4.5			15.5				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		28.3				28.3		11.2
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		14.7				7.7		7.1
Green Ext Time (p_c), s		8.6				8.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A

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)	418	731	349	69	1165	87	275	79	50	71	67	283
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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	498	870	238	82	1387	56	327	94	39	82	83	249
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	613	2519	1000	123	1982	616	468	170	71	184	193	893
Arrive On Green	0.18	0.50	0.50	0.07	0.39	0.39	0.14	0.14	0.14	0.10	0.10	0.10
Sat Flow, veh/h	3408	5036	1568	1757	5036	1566	3408	1238	514	1757	1845	3136
Grp Volume(v), veh/h	498	870	238	82	1387	56	327	0	133	82	83	249
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1757	1679	1566	1704	0	1751	1757	1845	1568
Q Serve(g_s), s	12.1	9.0	5.6	3.9	19.9	1.9	7.9	0.0	6.1	3.8	3.6	5.3
Cycle Q Clear(g_c), s	12.1	9.0	5.6	3.9	19.9	1.9	7.9	0.0	6.1	3.8	3.6	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	613	2519	1000	123	1982	616	468	0	240	184	193	893
V/C Ratio(X)	0.81	0.35	0.24	0.67	0.70	0.09	0.70	0.00	0.55	0.45	0.43	0.28
Avail Cap(c_a), veh/h	988	2519	1000	509	2336	726	1186	0	609	611	642	1655
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	13.0	6.7	39.1	21.9	16.4	35.5	0.0	34.7	36.2	36.2	24.0
Incr Delay (d2), s/veh	2.7	0.1	0.1	6.2	0.8	0.1	1.9	0.0	2.0	1.7	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	5.9	4.1	3.3	2.1	9.3	0.9	3.8	0.0	3.1	1.9	1.9	2.3
LnGrp Delay(d),s/veh	36.7	13.1	6.8	45.3	22.6	16.5	37.4	0.0	36.7	37.9	37.7	24.1
LnGrp LOS	D	B	A	D	C	B	D		D	D	D	C
Approach Vol, veh/h		1606			1525			460			414	
Approach Delay, s/veh		19.5			23.6			37.2			29.6	
Approach LOS		B			C			D			C	

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	47.9		12.7	19.2	38.7		15.5
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.9	11.0		7.3	14.1	21.9		9.9
Green Ext Time (p_c), s	0.2	20.8		1.7	1.4	12.1		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	856	254	433	725	60	211	12	394	28	11	15
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	882	172	446	747	59	227	0	178	20	23	1
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	1260	554	560	1622	128	520	0	484	165	165	7
Arrive On Green	0.03	0.36	0.36	0.16	0.49	0.49	0.15	0.00	0.15	0.09	0.09	0.09
Sat Flow, veh/h	1757	3505	1541	3408	3284	259	3514	0	1529	1757	1753	76
Grp Volume(v), veh/h	28	882	172	446	398	408	227	0	178	20	0	24
Grp Sat Flow(s),veh/h/ln	1757	1752	1541	1704	1752	1791	1757	0	1529	1757	0	1829
Q Serve(g_s), s	1.1	15.7	5.9	9.2	10.9	10.9	4.3	0.0	6.6	0.8	0.0	0.9
Cycle Q Clear(g_c), s	1.1	15.7	5.9	9.2	10.9	10.9	4.3	0.0	6.6	0.8	0.0	0.9
Prop In Lane	1.00		1.00	1.00		0.14	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	52	1260	554	560	866	884	520	0	484	165	0	172
V/C Ratio(X)	0.54	0.70	0.31	0.80	0.46	0.46	0.44	0.00	0.37	0.12	0.00	0.14
Avail Cap(c_a), veh/h	481	1921	845	1401	961	981	1444	0	886	602	0	627
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.9	20.0	16.9	29.3	12.1	12.1	28.3	0.0	19.5	30.3	0.0	30.3
Incr Delay (d2), s/veh	3.2	0.3	0.1	1.0	0.1	0.1	0.2	0.0	0.2	0.1	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	0.6	7.6	2.5	4.4	5.2	5.4	2.1	0.0	2.8	0.4	0.0	0.5
LnGrp Delay(d),s/veh	38.1	20.3	17.0	30.3	12.2	12.2	28.5	0.0	19.7	30.4	0.0	30.5
LnGrp LOS	D	C	B	C	B	B	C		B	C		C
Approach Vol, veh/h		1082			1252			405			44	
Approach Delay, s/veh		20.2			18.7			24.7			30.5	
Approach LOS		C			B			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	15.0	30.8		11.4	5.2	40.6		15.8
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	11.2	17.7		2.9	3.1	12.9		8.6
Green Ext Time (p_c), s	0.8	8.5		0.1	0.0	9.1		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1180	98	160	679	0	0	0	0	897	5	539
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1216	72	165	700	0				929	0	260
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1484	663	261	1955	0				1050	0	937
Arrive On Green	0.00	0.42	0.42	0.08	0.56	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	3597	1567	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1216	72	165	700	0				929	0	260
Grp Sat Flow(s),veh/h/ln	0	1752	1567	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	18.6	1.7	2.8	6.7	0.0				15.3	0.0	3.8
Cycle Q Clear(g_c), s	0.0	18.6	1.7	2.8	6.7	0.0				15.3	0.0	3.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1484	663	261	1955	0				1050	0	937
V/C Ratio(X)	0.00	0.82	0.11	0.63	0.36	0.00				0.89	0.00	0.28
Avail Cap(c_a), veh/h	0	1995	892	1406	1995	0				1739	0	1552
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.4	10.6	27.2	7.4	0.0				20.3	0.0	16.3
Incr Delay (d2), s/veh	0.0	1.5	0.0	0.9	0.0	0.0				1.8	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
%ile BackOfQ(50%),veh/ln	0.0	9.3	0.7	1.4	3.2	0.0				7.6	0.0	1.7
LnGrp Delay(d),s/veh	0.0	16.9	10.6	28.1	7.4	0.0				22.1	0.0	16.3
LnGrp LOS		B	B	C	A					C		B
Approach Vol, veh/h		1288			865						1189	
Approach Delay, s/veh		16.6			11.4						20.8	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.1	30.3		22.2		38.4		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	4.8	20.6		17.3		8.7		
Green Ext Time (p_c), s	0.1	5.1		0.8		6.1		

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
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)	455	1622	0	0	741	832	98	3	234	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	469	1672	0	0	764	463	103	0	194			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	623	2341	0	0	1472	656	570	0	254			
Arrive On Green	0.18	0.67	0.00	0.00	0.42	0.42	0.16	0.00	0.16			
Sat Flow, veh/h	3408	3597	0	0	3597	1562	3514	0	1568			
Grp Volume(v), veh/h	469	1672	0	0	764	463	103	0	194			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1562	1757	0	1568			
Q Serve(g_s), s	7.0	16.2	0.0	0.0	8.7	13.1	1.4	0.0	6.3			
Cycle Q Clear(g_c), s	7.0	16.2	0.0	0.0	8.7	13.1	1.4	0.0	6.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	623	2341	0	0	1472	656	570	0	254			
V/C Ratio(X)	0.75	0.71	0.00	0.00	0.52	0.71	0.18	0.00	0.76			
Avail Cap(c_a), veh/h	1589	2341	0	0	2288	1020	1966	0	877			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	20.8	5.6	0.0	0.0	11.5	12.8	19.4	0.0	21.5			
Incr Delay (d2), s/veh	0.7	0.9	0.0	0.0	0.1	0.5	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	3.3	8.0	0.0	0.0	4.2	5.6	0.7	0.0	2.9			
LnGrp Delay(d),s/veh	21.5	6.6	0.0	0.0	11.6	13.3	19.4	0.0	23.3			
LnGrp LOS	C	A			B	B	B		C			
Approach Vol, veh/h		2141			1227			297				
Approach Delay, s/veh		9.8			12.3			21.9				
Approach LOS		A			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		40.8			13.3	27.5		12.8
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		18.2			9.0	15.1		8.3
Green Ext Time (p_c), s		8.0			0.8	7.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
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.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1279	577	0	1573	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1319	595	0	1622	0	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1319	0	2130	659
Stage 1	-	-	-	-	1319	-
Stage 2	-	-	-	-	811	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	271	-	57	346
Stage 1	-	0	-	-	155	-
Stage 2	-	0	-	-	384	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	271	-	57	346
Mov Cap-2 Maneuver	-	-	-	-	57	-
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	384	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	346	-	271	-
HCM Lane V/C Ratio	0.098	-	-	-
HCM Control Delay (s)	16.5	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.3	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	324	913	74	47	1036	51	284	40	22	75	24	252
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		0.98	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	334	941	73	48	1068	51	339	0	0	77	25	21
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	443	1688	131	76	1427	68	513	269	0	109	35	219
Arrive On Green	0.13	0.51	0.51	0.04	0.42	0.42	0.15	0.00	0.00	0.08	0.08	0.08
Sat Flow, veh/h	3408	3289	255	1757	3403	162	3514	1845	0	1342	436	2692
Grp Volume(v), veh/h	334	501	513	48	550	569	339	0	0	102	0	21
Grp Sat Flow(s),veh/h/ln	1704	1752	1792	1757	1752	1813	1757	1845	0	1778	0	1346
Q Serve(g_s), s	6.6	13.6	13.6	1.9	18.6	18.6	6.4	0.0	0.0	3.9	0.0	0.5
Cycle Q Clear(g_c), s	6.6	13.6	13.6	1.9	18.6	18.6	6.4	0.0	0.0	3.9	0.0	0.5
Prop In Lane	1.00		0.14	1.00		0.09	1.00		0.00	0.75		1.00
Lane Grp Cap(c), veh/h	443	899	920	76	735	760	513	269	0	145	0	219
V/C Ratio(X)	0.75	0.56	0.56	0.63	0.75	0.75	0.66	0.00	0.00	0.70	0.00	0.10
Avail Cap(c_a), veh/h	975	899	920	503	878	908	1257	660	0	636	0	963
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.3	11.6	11.6	32.9	17.2	17.2	28.2	0.0	0.0	31.3	0.0	29.7
Incr Delay (d2), s/veh	1.0	0.6	0.6	3.2	2.7	2.6	0.5	0.0	0.0	2.3	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	3.2	6.7	6.9	1.0	9.4	9.7	3.1	0.0	0.0	2.0	0.0	0.2
LnGrp Delay(d),s/veh	30.3	12.2	12.2	36.0	19.8	19.7	28.8	0.0	0.0	33.6	0.0	29.8
LnGrp LOS	C	B	B	D	B	B	C			C		C
Approach Vol, veh/h		1348			1167			339			123	
Approach Delay, s/veh		16.7			20.5			28.8			33.0	
Approach LOS		B			C			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	6.0	40.0		9.7	12.6	33.4		14.2
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	3.9	15.6		5.9	8.6	20.6		8.4
Green Ext Time (p_c), s	0.0	11.6		0.4	0.5	8.7		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
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)	280	455	265	102	391	124	589	354	93	96	271	165
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		1.00	1.00		0.94
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	298	484	197	109	416	19	627	377	34	102	288	83
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	325	690	279	175	702	312	594	1411	629	128	366	103
Arrive On Green	0.19	0.29	0.29	0.10	0.20	0.20	0.34	0.40	0.40	0.07	0.14	0.14
Sat Flow, veh/h	1757	2416	976	1757	3505	1556	1757	3505	1562	1757	2664	748
Grp Volume(v), veh/h	298	350	331	109	416	19	627	377	34	102	187	184
Grp Sat Flow(s),veh/h/ln	1757	1752	1640	1757	1752	1556	1757	1752	1562	1757	1752	1659
Q Serve(g_s), s	18.0	19.3	19.5	6.4	11.6	1.1	36.5	7.8	1.4	6.2	11.1	11.6
Cycle Q Clear(g_c), s	18.0	19.3	19.5	6.4	11.6	1.1	36.5	7.8	1.4	6.2	11.1	11.6
Prop In Lane	1.00		0.60	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	325	501	469	175	702	312	594	1411	629	128	241	228
V/C Ratio(X)	0.92	0.70	0.71	0.62	0.59	0.06	1.06	0.27	0.05	0.80	0.78	0.81
Avail Cap(c_a), veh/h	333	501	469	187	702	312	594	1411	629	350	276	261
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)	0.80	0.80	0.80	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.2	34.4	34.5	46.6	39.2	35.0	35.8	21.6	19.7	49.3	45.0	45.2
Incr Delay (d2), s/veh	23.9	2.9	3.3	3.8	3.7	0.4	51.1	0.0	0.0	4.2	9.6	13.1
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	9.7	9.3	3.3	6.0	0.5	26.1	3.8	0.6	3.2	6.0	6.1
LnGrp Delay(d),s/veh	67.0	37.4	37.8	50.5	42.8	35.3	86.9	21.6	19.7	53.5	54.6	58.3
LnGrp LOS	E	D	D	D	D	D	F	C	B	D	D	E
Approach Vol, veh/h		979			544			1038			473	
Approach Delay, s/veh		46.6			44.1			61.0			55.8	
Approach LOS		D			D			E			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	23.0	26.1	10.9	48.0	13.8	35.4	39.5	19.4
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	20.5	19.0	21.5	32.0	11.5	28.0	36.5	17.0
Max Q Clear Time (g_c+I1), s	20.0	13.6	8.2	9.8	8.4	21.5	38.5	13.6
Green Ext Time (p_c), s	0.0	2.3	0.1	3.1	0.0	2.7	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	52.5
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	372	49	177	44	32	46	160	552	15	45	401	129
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		0.98	1.00		1.00	1.00		0.97	1.00		0.96
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	404	53	85	48	35	0	174	600	14	49	436	44
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	718	132	212	147	154	0	206	1696	40	94	1476	637
Arrive On Green	0.21	0.21	0.21	0.08	0.08	0.00	0.12	0.48	0.48	0.05	0.42	0.42
Sat Flow, veh/h	3408	629	1008	1757	1845	0	1757	3498	82	1757	3505	1513
Grp Volume(v), veh/h	404	0	138	48	35	0	174	300	314	49	436	44
Grp Sat Flow(s),veh/h/ln	1704	0	1637	1757	1845	0	1757	1752	1827	1757	1752	1513
Q Serve(g_s), s	10.1	0.0	6.9	2.4	1.7	0.0	9.2	10.1	10.1	2.6	7.8	1.6
Cycle Q Clear(g_c), s	10.1	0.0	6.9	2.4	1.7	0.0	9.2	10.1	10.1	2.6	7.8	1.6
Prop In Lane	1.00		0.62	1.00		0.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	718	0	345	147	154	0	206	850	886	94	1476	637
V/C Ratio(X)	0.56	0.00	0.40	0.33	0.23	0.00	0.85	0.35	0.35	0.52	0.30	0.07
Avail Cap(c_a), veh/h	718	0	345	370	388	0	370	850	886	277	1476	637
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	32.3	41.0	40.6	0.0	41.1	15.2	15.2	43.8	18.2	16.4
Incr Delay (d2), s/veh	3.2	0.0	3.4	0.5	0.3	0.0	3.6	1.2	1.1	1.7	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	5.0	0.0	3.4	1.2	0.9	0.0	4.7	5.1	5.3	1.3	3.9	0.7
LnGrp Delay(d),s/veh	36.8	0.0	35.8	41.5	40.9	0.0	44.7	16.4	16.3	45.4	18.7	16.6
LnGrp LOS	D		D	D	D		D	B	B	D	B	B
Approach Vol, veh/h		542			83			788			529	
Approach Delay, s/veh		36.5			41.2			22.6			21.0	
Approach LOS		D			D			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	8.6	50.3		24.1	14.6	44.2		12.1
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	4.6	12.1		12.1	11.2	9.8		4.4
Green Ext Time (p_c), s	0.0	13.8		1.0	0.0	14.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	26.8
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	106	0	737	531	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	119	0	828	597	99

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1060	348	696	0	-	0
Stage 1	646	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	218	645	889	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	218	645	889	-	-	-
Mov Cap-2 Maneuver	218	-	-	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	632	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	889	-	645	-	-
HCM Lane V/C Ratio	-	-	0.185	-	-
HCM Control Delay (s)	0	-	11.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	6	127	8	9	46	106	536	7	42	550	38
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		0.99	1.00		0.99	1.00		0.97	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	139	7	29	9	10	5	122	616	6	48	632	33
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	399	67	279	29	133	67	197	1459	14	118	1238	65
Arrive On Green	0.12	0.22	0.22	0.02	0.12	0.12	0.11	0.41	0.41	0.07	0.37	0.37
Sat Flow, veh/h	3408	312	1294	1757	1157	578	1757	3555	35	1757	3382	176
Grp Volume(v), veh/h	139	0	36	9	0	15	122	304	318	48	327	338
Grp Sat Flow(s),veh/h/ln	1704	0	1606	1757	0	1735	1757	1752	1837	1757	1752	1806
Q Serve(g_s), s	1.9	0.0	0.9	0.3	0.0	0.4	3.4	6.4	6.4	1.4	7.5	7.5
Cycle Q Clear(g_c), s	1.9	0.0	0.9	0.3	0.0	0.4	3.4	6.4	6.4	1.4	7.5	7.5
Prop In Lane	1.00		0.81	1.00		0.33	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	399	0	346	29	0	200	197	719	754	118	641	661
V/C Ratio(X)	0.35	0.00	0.10	0.31	0.00	0.08	0.62	0.42	0.42	0.41	0.51	0.51
Avail Cap(c_a), veh/h	758	0	963	391	0	1040	391	1220	1279	391	1220	1258
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	16.3	25.1	0.0	20.4	21.9	10.9	10.9	23.1	12.8	12.8
Incr Delay (d2), s/veh	0.5	0.0	0.1	6.0	0.0	0.2	3.2	0.4	0.4	2.2	0.6	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	0.9	0.0	0.4	0.2	0.0	0.2	1.8	3.1	3.3	0.7	3.7	3.9
LnGrp Delay(d),s/veh	21.5	0.0	16.4	31.1	0.0	20.6	25.1	11.3	11.2	25.3	13.4	13.4
LnGrp LOS	C		B	C		C	C	B	B	C	B	B
Approach Vol, veh/h		175			24			744			713	
Approach Delay, s/veh		20.5			24.5			13.5			14.2	
Approach LOS		C			C			B			B	

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	7.0	25.2	4.3	15.1	9.3	22.9	9.5	9.9
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	11.5	36.0	11.5	31.0	11.5	36.0	11.5	31.0
Max Q Clear Time (g_c+I1), s	3.4	8.4	2.3	2.9	5.4	9.5	3.9	2.4
Green Ext Time (p_c), s	0.0	8.9	0.0	0.2	0.1	8.8	0.2	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	83	587	33	54	41	466	230	23	18	157	21
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	35	88	59	35	57	16	496	245	20	19	167	11
Adj No. of Lanes	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	97	290	428	97	217	61	556	1474	119	58	551	36
Arrive On Green	0.05	0.16	0.16	0.05	0.16	0.16	0.32	0.45	0.45	0.03	0.17	0.17
Sat Flow, veh/h	1757	1845	2723	1757	1379	387	1757	3283	266	1757	3340	218
Grp Volume(v), veh/h	35	88	59	35	0	73	496	130	135	19	87	91
Grp Sat Flow(s),veh/h/ln	1757	1845	1361	1757	0	1767	1757	1752	1796	1757	1752	1806
Q Serve(g_s), s	0.9	1.9	0.9	0.9	0.0	1.7	12.3	2.0	2.0	0.5	2.0	2.0
Cycle Q Clear(g_c), s	0.9	1.9	0.9	0.9	0.0	1.7	12.3	2.0	2.0	0.5	2.0	2.0
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.15	1.00		0.12
Lane Grp Cap(c), veh/h	97	290	428	97	0	278	556	787	807	58	289	298
V/C Ratio(X)	0.36	0.30	0.14	0.36	0.00	0.26	0.89	0.17	0.17	0.33	0.30	0.31
Avail Cap(c_a), veh/h	845	1089	1607	653	0	927	1037	1226	1256	653	1034	1066
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	17.1	16.6	20.8	0.0	16.9	14.9	7.5	7.5	21.6	16.8	16.8
Incr Delay (d2), s/veh	0.8	0.2	0.1	0.8	0.0	0.2	2.0	0.0	0.0	1.2	0.2	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	0.5	1.0	0.3	0.5	0.0	0.8	6.2	1.0	1.0	0.3	1.0	1.0
LnGrp Delay(d),s/veh	21.7	17.3	16.7	21.7	0.0	17.1	16.9	7.5	7.5	22.9	17.0	17.0
LnGrp LOS	C	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		182			108			761			197	
Approach Delay, s/veh		17.9			18.6			13.7			17.6	
Approach LOS		B			B			B			B	

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	5.5	11.2	4.5	24.5	5.5	11.2	17.5	11.6
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.9	3.7	2.5	4.0	2.9	3.9	14.3	4.0
Green Ext Time (p_c), s	0.0	0.6	0.0	1.7	0.0	0.7	0.2	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	102	1103	4	15	730	268	4	4	14	280	7	92
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	107	1161	4	16	768	0	4	4	0	300	0	12
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	137	1942	7	48	1723	771	13	13	0	426	0	190
Arrive On Green	0.08	0.54	0.54	0.03	0.49	0.00	0.01	0.01	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1757	3582	12	1757	3505	1568	900	900	0	3514	0	1568
Grp Volume(v), veh/h	107	568	597	16	768	0	8	0	0	300	0	12
Grp Sat Flow(s),veh/h/ln	1757	1752	1842	1757	1752	1568	1800	0	0	1757	0	1568
Q Serve(g_s), s	3.5	12.7	12.7	0.5	8.2	0.0	0.3	0.0	0.0	4.7	0.0	0.4
Cycle Q Clear(g_c), s	3.5	12.7	12.7	0.5	8.2	0.0	0.3	0.0	0.0	4.7	0.0	0.4
Prop In Lane	1.00		0.01	1.00		1.00	0.50		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	137	950	999	48	1723	771	26	0	0	426	0	190
V/C Ratio(X)	0.78	0.60	0.60	0.33	0.45	0.00	0.30	0.00	0.00	0.70	0.00	0.06
Avail Cap(c_a), veh/h	609	1275	1341	822	2429	1087	592	0	0	1522	0	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	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.1	8.9	9.0	27.5	9.6	0.0	28.1	0.0	0.0	24.4	0.0	22.5
Incr Delay (d2), s/veh	3.6	0.7	0.7	1.5	0.2	0.0	2.4	0.0	0.0	0.8	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	1.8	6.2	6.5	0.3	4.0	0.0	0.1	0.0	0.0	2.3	0.0	0.2
LnGrp Delay(d),s/veh	29.7	9.7	9.6	29.0	9.7	0.0	30.5	0.0	0.0	25.2	0.0	22.5
LnGrp LOS	C	A	A	C	A		C			C		C
Approach Vol, veh/h		1272			784			8			312	
Approach Delay, s/veh		11.4			10.1			30.5			25.1	
Approach LOS		B			B			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	5.1	36.3		4.8	8.0	33.4		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.0	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.5	14.7		2.3	5.5	10.2		6.7
Green Ext Time (p_c), s	0.0	16.6		0.0	0.0	17.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
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)	0	1409	233	0	765	277	0	0	0	949	0	301
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	1483	0	0	805	0				999	0	219
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1726	772	0	1726	772				1120	0	515
Arrive On Green	0.00	0.49	0.00	0.00	0.49	0.00				0.33	0.00	0.33
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	1483	0	0	805	0				999	0	219
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	20.8	0.0	0.0	8.5	0.0				15.5	0.0	6.1
Cycle Q Clear(g_c), s	0.0	20.8	0.0	0.0	8.5	0.0				15.5	0.0	6.1
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1726	772	0	1726	772				1120	0	515
V/C Ratio(X)	0.00	0.86	0.00	0.00	0.47	0.00				0.89	0.00	0.43
Avail Cap(c_a), veh/h	0	3139	1404	0	3139	1404				2137	0	983
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.5	0.0	0.0	9.3	0.0				17.8	0.0	14.6
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.1	0.0				1.0	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	10.0	0.0	0.0	4.0	0.0				7.4	0.0	2.6
LnGrp Delay(d),s/veh	0.0	13.0	0.0	0.0	9.4	0.0				18.8	0.0	14.8
LnGrp LOS		B			A					B		B
Approach Vol, veh/h		1483			805						1218	
Approach Delay, s/veh		13.0			9.4						18.1	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		32.5		23.3		32.5		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		22.8		17.5		10.5		
Green Ext Time (p_c), s		4.7		0.8		4.8		

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	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1808	550	0	885	1017	157	0	305	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1903	0	0	932	0	165	0	266			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2245	1004	0	2245	1004	688	0	316			
Arrive On Green	0.00	0.64	0.00	0.00	0.64	0.00	0.20	0.00	0.20			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1903	0	0	932	0	165	0	266			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	24.4	0.0	0.0	7.4	0.0	2.3	0.0	9.3			
Cycle Q Clear(g_c), s	0.0	24.4	0.0	0.0	7.4	0.0	2.3	0.0	9.3			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2245	1004	0	2245	1004	688	0	316			
V/C Ratio(X)	0.00	0.85	0.00	0.00	0.42	0.00	0.24	0.00	0.84			
Avail Cap(c_a), veh/h	0	3070	1374	0	3070	1374	1493	0	687			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	8.1	0.0	0.0	5.0	0.0	19.1	0.0	21.9			
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.0	0.0	0.0	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	11.8	0.0	0.0	3.5	0.0	1.1	0.0	4.2			
LnGrp Delay(d),s/veh	0.0	9.4	0.0	0.0	5.1	0.0	19.2	0.0	24.2			
LnGrp LOS		A			A		B		C			
Approach Vol, veh/h		1903			932			431				
Approach Delay, s/veh		9.4			5.1			22.3				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		41.6				41.6		15.5
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		26.4				9.4		11.3
Green Ext Time (p_c), s		10.2				11.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A

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)	625	1176	285	51	916	147	341	132	64	179	88	626
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		0.97	1.00		0.98	1.00		0.98	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	658	1238	206	54	964	57	359	139	53	140	159	597
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	742	2230	909	95	1421	435	507	188	72	340	357	1290
Arrive On Green	0.22	0.44	0.44	0.05	0.28	0.28	0.15	0.15	0.15	0.19	0.19	0.19
Sat Flow, veh/h	3408	5036	1528	1757	5036	1542	3408	1264	482	1757	1845	3136
Grp Volume(v), veh/h	658	1238	206	54	964	57	359	0	192	140	159	597
Grp Sat Flow(s),veh/h/ln	1704	1679	1528	1757	1679	1542	1704	0	1746	1757	1845	1568
Q Serve(g_s), s	18.8	18.3	6.4	3.0	17.1	2.8	10.1	0.0	10.6	7.0	7.7	13.9
Cycle Q Clear(g_c), s	18.8	18.3	6.4	3.0	17.1	2.8	10.1	0.0	10.6	7.0	7.7	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	742	2230	909	95	1421	435	507	0	260	340	357	1290
V/C Ratio(X)	0.89	0.56	0.23	0.57	0.68	0.13	0.71	0.00	0.74	0.41	0.45	0.46
Avail Cap(c_a), veh/h	846	2230	909	436	2001	613	1016	0	520	524	550	1617
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	20.7	9.7	46.5	32.1	26.9	40.8	0.0	41.0	35.6	35.8	21.5
Incr Delay (d2), s/veh	10.3	0.3	0.1	5.2	0.6	0.1	1.8	0.0	4.1	0.8	0.9	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	9.9	8.5	3.7	1.6	8.0	1.2	4.9	0.0	5.4	3.5	4.0	6.0
LnGrp Delay(d),s/veh	48.4	21.0	9.8	51.7	32.7	27.1	42.6	0.0	45.1	36.4	36.7	21.8
LnGrp LOS	D	C	A	D	C	C	D		D	D	D	C
Approach Vol, veh/h		2102			1075			551			896	
Approach Delay, s/veh		28.5			33.3			43.5			26.7	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	49.4		23.2	25.6	33.2		18.7
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.0	20.3		15.9	20.8	19.1		12.6
Green Ext Time (p_c), s	0.1	15.1		3.6	1.1	9.3		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	31.1
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)	45	785	258	559	629	91	204	18	502	90	26	49
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	46	801	157	570	642	87	221	0	366	66	64	12
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	65	1018	447	660	1381	187	770	0	640	201	172	32
Arrive On Green	0.04	0.29	0.29	0.19	0.45	0.45	0.22	0.00	0.22	0.11	0.11	0.11
Sat Flow, veh/h	1757	3505	1539	3408	3091	418	3514	0	1535	1757	1503	282
Grp Volume(v), veh/h	46	801	157	570	363	366	221	0	366	66	0	76
Grp Sat Flow(s),veh/h/ln	1757	1752	1539	1704	1752	1757	1757	0	1535	1757	0	1785
Q Serve(g_s), s	2.4	19.7	7.6	15.2	13.6	13.6	4.9	0.0	17.2	3.2	0.0	3.7
Cycle Q Clear(g_c), s	2.4	19.7	7.6	15.2	13.6	13.6	4.9	0.0	17.2	3.2	0.0	3.7
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	65	1018	447	660	783	785	770	0	640	201	0	204
V/C Ratio(X)	0.70	0.79	0.35	0.86	0.46	0.47	0.29	0.00	0.57	0.33	0.00	0.37
Avail Cap(c_a), veh/h	375	1495	657	1091	783	785	1124	0	795	468	0	476
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.6	30.6	26.3	36.6	18.1	18.1	30.5	0.0	21.2	38.2	0.0	38.4
Incr Delay (d2), s/veh	5.0	0.9	0.2	2.0	0.2	0.2	0.1	0.0	0.3	0.4	0.0	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	1.3	9.7	3.2	7.3	6.6	6.6	2.4	0.0	7.3	1.6	0.0	1.8
LnGrp Delay(d),s/veh	49.7	31.5	26.5	38.6	18.3	18.3	30.6	0.0	21.5	38.5	0.0	38.8
LnGrp LOS	D	C	C	D	B	B	C		C	D		D
Approach Vol, veh/h		1004			1299			587			142	
Approach Delay, s/veh		31.6			27.2			24.9			38.7	
Approach LOS		C			C			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	21.2	31.8		15.2	6.5	46.5		25.5
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	17.2	21.7		5.7	4.4	15.6		19.2
Green Ext Time (p_c), s	1.0	5.5		0.3	0.0	7.7		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	28.7
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1298	79	163	725	0	0	0	0	972	4	554
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1324	51	166	740	0				995	0	308
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1497	664	256	1945	0				1105	0	986
Arrive On Green	0.00	0.43	0.43	0.08	0.55	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3597	1554	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1324	51	166	740	0				995	0	308
Grp Sat Flow(s),veh/h/ln	0	1752	1554	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	23.2	1.3	3.2	7.9	0.0				18.0	0.0	5.0
Cycle Q Clear(g_c), s	0.0	23.2	1.3	3.2	7.9	0.0				18.0	0.0	5.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1497	664	256	1945	0				1105	0	986
V/C Ratio(X)	0.00	0.88	0.08	0.65	0.38	0.00				0.90	0.00	0.31
Avail Cap(c_a), veh/h	0	1816	805	1280	1945	0				1583	0	1413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.6	11.3	29.9	8.4	0.0				21.8	0.0	17.4
Incr Delay (d2), s/veh	0.0	4.3	0.0	1.0	0.0	0.0				4.3	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
%ile BackOfQ(50%),veh/ln	0.0	11.9	0.6	1.5	3.8	0.0				9.4	0.0	2.1
LnGrp Delay(d),s/veh	0.0	21.8	11.3	31.0	8.4	0.0				26.1	0.0	17.4
LnGrp LOS		C	B	C	A					C		B
Approach Vol, veh/h		1375			906						1303	
Approach Delay, s/veh		21.4			12.5						24.1	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.5	33.0		25.0		41.6		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	5.2	25.2		20.0		9.9		
Green Ext Time (p_c), s	0.1	3.3		0.9		6.7		

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
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)	412	1858	0	0	804	796	84	2	260	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	420	1896	0	0	820	400	87	0	219			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	570	2292	0	0	1478	660	624	0	278			
Arrive On Green	0.17	0.65	0.00	0.00	0.42	0.42	0.18	0.00	0.18			
Sat Flow, veh/h	3408	3597	0	0	3597	1565	3514	0	1568			
Grp Volume(v), veh/h	420	1896	0	0	820	400	87	0	219			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1565	1757	0	1568			
Q Serve(g_s), s	6.3	22.0	0.0	0.0	9.5	10.7	1.1	0.0	7.2			
Cycle Q Clear(g_c), s	6.3	22.0	0.0	0.0	9.5	10.7	1.1	0.0	7.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	570	2292	0	0	1478	660	624	0	278			
V/C Ratio(X)	0.74	0.83	0.00	0.00	0.55	0.61	0.14	0.00	0.79			
Avail Cap(c_a), veh/h	1578	2292	0	0	2272	1014	1953	0	871			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	21.3	7.0	0.0	0.0	11.8	12.1	18.7	0.0	21.2			
Incr Delay (d2), s/veh	0.7	2.5	0.0	0.0	0.1	0.3	0.0	0.0	1.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.0	11.1	0.0	0.0	4.6	4.6	0.5	0.0	3.2			
LnGrp Delay(d),s/veh	22.0	9.5	0.0	0.0	11.9	12.5	18.8	0.0	23.1			
LnGrp LOS	C	A			B	B	B		C			
Approach Vol, veh/h		2316			1220			306				
Approach Delay, s/veh		11.8			12.1			21.9				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		40.3			12.5	27.8		13.7
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		24.0			8.3	12.7		9.2
Green Ext Time (p_c), s		7.0			0.7	10.0		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
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.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1405	713	0	1600	0	53
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1434	728	0	1633	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1439	0	2255	722
Stage 1	-	-	-	-	1439	-
Stage 2	-	-	-	-	816	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	237	-	48	315
Stage 1	-	0	-	-	130	-
Stage 2	-	0	-	-	382	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	237	-	48	314
Mov Cap-2 Maneuver	-	-	-	-	48	-
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	382	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	314	-	237	-
HCM Lane V/C Ratio	0.172	-	-	-
HCM Control Delay (s)	18.8	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.6	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	477	881	100	82	998	73	314	61	24	91	53	288
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		0.97	1.00		1.00	1.00		0.99	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	487	899	97	84	1018	70	201	229	20	93	54	33
Adj No. of Lanes	2	2	0	1	2	0	1	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	580	1491	161	108	1178	81	311	296	26	123	72	293
Arrive On Green	0.17	0.47	0.47	0.06	0.35	0.35	0.18	0.18	0.18	0.11	0.11	0.11
Sat Flow, veh/h	3408	3182	343	1757	3327	229	1757	1671	146	1131	657	2695
Grp Volume(v), veh/h	487	495	501	84	536	552	201	0	249	147	0	33
Grp Sat Flow(s),veh/h/ln	1704	1752	1773	1757	1752	1803	1757	0	1817	1788	0	1348
Q Serve(g_s), s	11.4	17.2	17.2	3.9	23.4	23.4	8.7	0.0	10.7	6.6	0.0	0.9
Cycle Q Clear(g_c), s	11.4	17.2	17.2	3.9	23.4	23.4	8.7	0.0	10.7	6.6	0.0	0.9
Prop In Lane	1.00		0.19	1.00		0.13	1.00		0.08	0.63		1.00
Lane Grp Cap(c), veh/h	580	821	831	108	621	639	311	0	321	195	0	293
V/C Ratio(X)	0.84	0.60	0.60	0.78	0.86	0.86	0.65	0.00	0.77	0.76	0.00	0.11
Avail Cap(c_a), veh/h	830	821	831	428	746	768	535	0	553	544	0	820
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.0	16.2	16.2	38.0	24.7	24.7	31.4	0.0	32.3	35.5	0.0	33.0
Incr Delay (d2), s/veh	3.7	1.1	1.1	4.4	8.5	8.3	0.8	0.0	1.5	2.2	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	5.6	8.5	8.6	2.0	12.8	13.1	4.3	0.0	5.5	3.3	0.0	0.3
LnGrp Delay(d),s/veh	36.7	17.3	17.3	42.4	33.2	33.0	32.3	0.0	33.8	37.8	0.0	33.1
LnGrp LOS	D	B	B	D	C	C	C		C	D		C
Approach Vol, veh/h		1483			1172			450			180	
Approach Delay, s/veh		23.7			33.8			33.1			36.9	
Approach LOS		C			C			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	8.1	42.6		12.9	17.5	33.2		18.5
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	5.9	19.2		8.6	13.4	25.4		12.7
Green Ext Time (p_c), s	0.1	9.9		0.5	0.6	3.7		1.1

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	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	288	397	259	118	385	128	549	309	84	97	311	196
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	291	401	180	119	389	38	555	312	23	98	314	127
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	318	479	212	516	1110	490	369	1076	478	122	406	160
Arrive On Green	0.18	0.20	0.20	0.29	0.32	0.32	0.21	0.31	0.31	0.07	0.17	0.17
Sat Flow, veh/h	1757	2351	1041	1757	3505	1547	1757	3505	1557	1757	2433	961
Grp Volume(v), veh/h	291	298	283	119	389	38	555	312	23	98	224	217
Grp Sat Flow(s),veh/h/ln	1757	1752	1639	1757	1752	1547	1757	1752	1557	1757	1752	1641
Q Serve(g_s), s	19.4	19.4	19.8	6.1	10.2	2.0	25.0	8.1	1.2	6.5	14.6	15.1
Cycle Q Clear(g_c), s	19.4	19.4	19.8	6.1	10.2	2.0	25.0	8.1	1.2	6.5	14.6	15.1
Prop In Lane	1.00		0.64	1.00		1.00	1.00		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	318	357	334	516	1110	490	369	1076	478	122	292	274
V/C Ratio(X)	0.92	0.83	0.85	0.23	0.35	0.08	1.51	0.29	0.05	0.80	0.77	0.79
Avail Cap(c_a), veh/h	369	662	619	516	1110	490	369	1076	478	369	441	413
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.9	45.5	45.7	31.9	31.3	28.5	47.1	31.4	29.0	54.6	47.4	47.7
Incr Delay (d2), s/veh	23.4	2.0	2.3	1.0	0.1	0.0	241.2	0.1	0.0	4.5	1.9	3.1
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	11.4	9.6	9.2	3.1	4.9	0.9	36.8	3.9	0.5	3.3	7.2	7.1
LnGrp Delay(d),s/veh	71.3	47.5	48.0	32.9	31.4	28.5	288.3	31.5	29.1	59.1	49.3	50.7
LnGrp LOS	E	D	D	C	C	C	F	C	C	E	D	D
Approach Vol, veh/h		872			546			890			539	
Approach Delay, s/veh		55.6			31.5			191.6			51.7	
Approach LOS		E			C			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	24.5	42.2	11.3	41.1	38.0	28.8	28.0	24.4
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	25.0	35.0	25.0	20.0	35.0	45.0	25.0	30.0
Max Q Clear Time (g_c+I1), s	21.4	12.2	8.5	10.1	8.1	21.8	27.0	17.1
Green Ext Time (p_c), s	0.2	4.2	0.1	2.3	0.1	2.4	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	92.7
HCM 2010 LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	288	397	259	118	385	128	549	309	84	97	311	196
Future Volume (veh/h)	288	397	259	118	385	128	549	309	84	97	311	196
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	291	401	180	119	389	38	555	312	23	98	314	127
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	318	503	223	320	752	330	537	1440	641	122	424	168
Arrive On Green	0.18	0.21	0.21	0.18	0.21	0.21	0.31	0.41	0.41	0.07	0.17	0.17
Sat Flow, veh/h	1757	2351	1041	1757	3505	1537	1757	3505	1560	1757	2433	961
Grp Volume(v), veh/h	291	298	283	119	389	38	555	312	23	98	224	217
Grp Sat Flow(s),veh/h/ln	1757	1752	1640	1757	1752	1537	1757	1752	1560	1757	1752	1642
Q Serve(g_s), s	19.7	19.4	19.9	7.2	11.9	2.4	37.0	7.0	1.1	6.6	14.6	15.2
Cycle Q Clear(g_c), s	19.7	19.4	19.9	7.2	11.9	2.4	37.0	7.0	1.1	6.6	14.6	15.2
Prop In Lane	1.00		0.63	1.00		1.00	1.00		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	318	375	350	320	752	330	537	1440	641	122	306	286
V/C Ratio(X)	0.92	0.79	0.81	0.37	0.52	0.12	1.03	0.22	0.04	0.80	0.73	0.76
Avail Cap(c_a), veh/h	392	587	549	320	1029	451	537	1463	651	247	442	414
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	45.0	45.2	43.4	42.0	38.2	42.0	23.0	21.3	55.5	47.3	47.5
Incr Delay (d2), s/veh	20.8	1.7	2.3	3.3	0.2	0.1	47.5	0.0	0.0	4.6	1.5	2.4
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	11.4	9.6	9.2	3.8	5.7	1.0	25.0	3.4	0.5	3.4	7.2	7.1
LnGrp Delay(d),s/veh	69.4	46.7	47.5	46.7	42.2	38.3	89.5	23.1	21.3	60.1	48.7	49.9
LnGrp LOS	E	D	D	D	D	D	F	C	C	E	D	D
Approach Vol, veh/h		872			546			890			539	
Approach Delay, s/veh		54.6			42.9			64.4			51.3	
Approach LOS		D			D			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	24.9	30.5	11.4	54.2	25.0	30.4	40.0	25.6
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	27.0	35.5	17.0	50.5	22.0	40.5	37.0	30.5
Max Q Clear Time (g_c+I1), s	21.7	13.9	8.6	9.0	9.2	21.9	39.0	17.2
Green Ext Time (p_c), s	0.2	4.1	0.1	3.3	0.1	4.0	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	54.8
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	450	35	177	35	25	29	189	443	16	24	446	185
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		0.97	1.00		1.00	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	495	38	41	38	27	0	208	487	16	26	490	62
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	721	169	182	106	112	0	240	1810	59	64	1482	647
Arrive On Green	0.21	0.21	0.21	0.06	0.06	0.00	0.14	0.52	0.52	0.04	0.42	0.42
Sat Flow, veh/h	3408	799	862	1757	1845	0	1757	3460	114	1757	3505	1530
Grp Volume(v), veh/h	495	0	79	38	27	0	208	246	257	26	490	62
Grp Sat Flow(s),veh/h/ln	1704	0	1660	1757	1845	0	1757	1752	1822	1757	1752	1530
Q Serve(g_s), s	12.7	0.0	3.7	2.0	1.3	0.0	11.0	7.4	7.4	1.4	8.9	2.3
Cycle Q Clear(g_c), s	12.7	0.0	3.7	2.0	1.3	0.0	11.0	7.4	7.4	1.4	8.9	2.3
Prop In Lane	1.00		0.52	1.00		0.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	721	0	351	106	112	0	240	917	953	64	1482	647
V/C Ratio(X)	0.69	0.00	0.23	0.36	0.24	0.00	0.87	0.27	0.27	0.40	0.33	0.10
Avail Cap(c_a), veh/h	721	0	351	372	390	0	372	917	953	279	1482	647
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	0.0	30.9	42.7	42.3	0.0	40.0	12.5	12.5	44.5	18.3	16.4
Incr Delay (d2), s/veh	5.3	0.0	1.5	0.8	0.4	0.0	8.1	0.7	0.7	1.5	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	6.5	0.0	1.9	1.0	0.7	0.0	5.9	3.7	3.9	0.7	4.4	1.0
LnGrp Delay(d),s/veh	39.7	0.0	32.4	43.4	42.8	0.0	48.0	13.2	13.2	46.1	18.9	16.7
LnGrp LOS	D		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		574			65			711			578	
Approach Delay, s/veh		38.7			43.1			23.4			19.9	
Approach LOS		D			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	7.0	53.7		24.1	16.4	44.2		9.8
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.4	9.4		14.7	13.0	10.9		4.0
Green Ext Time (p_c), s	0.0	13.9		0.8	0.0	13.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	27.6
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	141	0	644	552	108
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	152	0	692	594	116

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	998	355	710	0	-	0
Stage 1	652	-	-	-	-	-
Stage 2	346	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	239	638	878	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	239	638	878	-	-	-
Mov Cap-2 Maneuver	239	-	-	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	685	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	878	-	638	-	-
HCM Lane V/C Ratio	-	-	0.238	-	-
HCM Control Delay (s)	0	-	12.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	6	108	1	11	14	127	503	2	22	617	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		0.99	1.00		0.99	1.00		0.97	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	128	6	15	1	12	2	135	535	2	23	656	33
Adj No. of Lanes	2	1	0	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	398	97	243	4	144	24	209	1612	6	67	1254	63
Arrive On Green	0.12	0.21	0.21	0.00	0.09	0.09	0.12	0.45	0.45	0.04	0.37	0.37
Sat Flow, veh/h	3408	466	1164	1757	1540	257	1757	3581	13	1757	3395	171
Grp Volume(v), veh/h	128	0	21	1	0	14	135	262	275	23	338	351
Grp Sat Flow(s),veh/h/ln	1704	0	1629	1757	0	1796	1757	1752	1842	1757	1752	1813
Q Serve(g_s), s	1.7	0.0	0.5	0.0	0.0	0.4	3.7	4.8	4.8	0.6	7.5	7.5
Cycle Q Clear(g_c), s	1.7	0.0	0.5	0.0	0.0	0.4	3.7	4.8	4.8	0.6	7.5	7.5
Prop In Lane	1.00		0.71	1.00		0.14	1.00		0.01	1.00		0.09
Lane Grp Cap(c), veh/h	398	0	340	4	0	168	209	789	829	67	647	670
V/C Ratio(X)	0.32	0.00	0.06	0.28	0.00	0.08	0.65	0.33	0.33	0.34	0.52	0.52
Avail Cap(c_a), veh/h	787	0	1014	406	0	1118	406	1267	1332	406	1267	1311
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	0.0	15.8	24.8	0.0	20.6	20.9	8.9	8.9	23.3	12.3	12.3
Incr Delay (d2), s/veh	0.5	0.0	0.1	38.9	0.0	0.2	3.3	0.2	0.2	3.0	0.7	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	0.8	0.0	0.2	0.1	0.0	0.2	2.0	2.4	2.5	0.4	3.7	3.8
LnGrp Delay(d),s/veh	20.7	0.0	15.9	63.7	0.0	20.8	24.3	9.1	9.1	26.3	12.9	12.9
LnGrp LOS	C		B	E		C	C	A	A	C	B	B
Approach Vol, veh/h		149			15			672			712	
Approach Delay, s/veh		20.0			23.7			12.1			13.3	
Approach LOS		B			C			B			B	

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	5.4	26.4	3.6	14.4	9.4	22.4	9.3	8.7
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	11.5	36.0	11.5	31.0	11.5	36.0	11.5	31.0
Max Q Clear Time (g_c+I1), s	2.6	6.8	2.0	2.5	5.7	9.5	3.7	2.4
Green Ext Time (p_c), s	0.0	8.5	0.0	0.1	0.1	8.2	0.2	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	70	583	14	58	29	501	208	9	17	135	29
Number	1	6	16	5	2	12	7	4	14	3	8	18
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		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	39	76	67	15	63	14	545	226	8	18	147	16
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	104	335	499	47	217	48	602	1596	56	55	482	52
Arrive On Green	0.06	0.18	0.18	0.03	0.15	0.15	0.34	0.46	0.46	0.03	0.15	0.15
Sat Flow, veh/h	1757	1845	2746	1757	1462	325	1757	3451	122	1757	3189	342
Grp Volume(v), veh/h	39	76	67	15	0	77	545	114	120	18	80	83
Grp Sat Flow(s),veh/h/ln	1757	1845	1373	1757	0	1787	1757	1752	1820	1757	1752	1779
Q Serve(g_s), s	1.0	1.7	1.0	0.4	0.0	1.8	13.9	1.8	1.8	0.5	1.9	2.0
Cycle Q Clear(g_c), s	1.0	1.7	1.0	0.4	0.0	1.8	13.9	1.8	1.8	0.5	1.9	2.0
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.07	1.00		0.19
Lane Grp Cap(c), veh/h	104	335	499	47	0	266	602	811	842	55	265	269
V/C Ratio(X)	0.37	0.23	0.13	0.32	0.00	0.29	0.91	0.14	0.14	0.33	0.30	0.31
Avail Cap(c_a), veh/h	823	1061	1579	636	0	1295	1010	1195	1241	636	1008	1023
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	16.4	16.1	22.4	0.0	17.8	14.7	7.3	7.3	22.3	17.7	17.7
Incr Delay (d2), s/veh	0.8	0.1	0.0	1.5	0.0	0.2	4.0	0.0	0.0	1.3	0.2	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	0.5	0.9	0.4	0.2	0.0	0.9	7.3	0.8	0.9	0.2	0.9	1.0
LnGrp Delay(d),s/veh	22.1	16.5	16.2	23.9	0.0	18.0	18.7	7.3	7.3	23.5	18.0	18.0
LnGrp LOS	C	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		182			92			779			181	
Approach Delay, s/veh		17.6			19.0			15.3			18.5	
Approach LOS		B			B			B			B	

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	5.8	11.0	4.5	25.7	4.2	12.5	19.1	11.1
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	34.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	3.8	3.8	2.5	3.8	2.4	3.7	15.9	4.0
Green Ext Time (p_c), s	0.0	0.7	0.0	1.5	0.0	0.7	0.2	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	104	684	14	7	619	311	9	5	13	342	7	137
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	108	712	14	7	645	0	9	5	0	361	0	24
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	138	1660	33	23	1425	638	28	16	0	502	0	224
Arrive On Green	0.08	0.47	0.47	0.01	0.41	0.00	0.02	0.02	0.00	0.14	0.00	0.14
Sat Flow, veh/h	1757	3515	69	1757	3505	1568	1149	638	0	3514	0	1568
Grp Volume(v), veh/h	108	355	371	7	645	0	14	0	0	361	0	24
Grp Sat Flow(s),veh/h/ln	1757	1752	1831	1757	1752	1568	1787	0	0	1757	0	1568
Q Serve(g_s), s	3.0	6.6	6.6	0.2	6.6	0.0	0.4	0.0	0.0	4.8	0.0	0.7
Cycle Q Clear(g_c), s	3.0	6.6	6.6	0.2	6.6	0.0	0.4	0.0	0.0	4.8	0.0	0.7
Prop In Lane	1.00		0.04	1.00		1.00	0.64		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	828	865	23	1425	638	44	0	0	502	0	224
V/C Ratio(X)	0.78	0.43	0.43	0.31	0.45	0.00	0.32	0.00	0.00	0.72	0.00	0.11
Avail Cap(c_a), veh/h	717	1503	1570	968	2862	1280	693	0	0	1793	0	800
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.2	8.6	8.6	24.0	10.6	0.0	23.5	0.0	0.0	20.1	0.0	18.3
Incr Delay (d2), s/veh	3.6	0.4	0.4	2.8	0.2	0.0	1.5	0.0	0.0	0.7	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	1.6	3.3	3.4	0.1	3.2	0.0	0.2	0.0	0.0	2.4	0.0	0.3
LnGrp Delay(d),s/veh	25.8	9.0	9.0	26.7	10.8	0.0	25.0	0.0	0.0	20.8	0.0	18.3
LnGrp LOS	C	A	A	C	B		C			C		B
Approach Vol, veh/h		834			652			14			385	
Approach Delay, s/veh		11.1			11.0			25.0			20.6	
Approach LOS		B			B			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	4.1	28.1		5.2	7.3	24.9		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	8.6		2.4	5.0	8.6		6.8
Green Ext Time (p_c), s	0.0	11.6		0.0	0.0	11.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
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)	0	945	159	0	752	209	0	0	0	564	0	261
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	984	0	0	783	0				588	0	161
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1437	643	0	1437	643				827	0	380
Arrive On Green	0.00	0.41	0.00	0.00	0.41	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	984	0	0	783	0				588	0	161
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	6.6	0.0	0.0	4.9	0.0				4.5	0.0	2.5
Cycle Q Clear(g_c), s	0.0	6.6	0.0	0.0	4.9	0.0				4.5	0.0	2.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1437	643	0	1437	643				827	0	380
V/C Ratio(X)	0.00	0.68	0.00	0.00	0.54	0.00				0.71	0.00	0.42
Avail Cap(c_a), veh/h	0	6086	2723	0	6086	2723				4143	0	1906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.0	0.0	0.0	6.5	0.0				10.0	0.0	9.2
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0				0.4	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	3.2	0.0	0.0	2.3	0.0				2.2	0.0	1.1
LnGrp Delay(d),s/veh	0.0	7.2	0.0	0.0	6.6	0.0				10.4	0.0	9.5
LnGrp LOS		A			A					B		A
Approach Vol, veh/h		984			783						749	
Approach Delay, s/veh		7.2			6.6						10.2	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		16.8		12.0		16.8		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		8.6		6.5		6.9		
Green Ext Time (p_c), s		3.2		0.5		3.2		

Intersection Summary	
HCM 2010 Ctrl Delay	7.9
HCM 2010 LOS	A

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)	0	1232	277	0	838	671	123	0	172	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1283	0	0	873	0	128	0	107			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	1979	885	0	1979	885	405	0	186			
Arrive On Green	0.00	0.56	0.00	0.00	0.56	0.00	0.12	0.00	0.12			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1283	0	0	873	0	128	0	107			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	7.1	0.0	0.0	4.1	0.0	1.0	0.0	1.8			
Cycle Q Clear(g_c), s	0.0	7.1	0.0	0.0	4.1	0.0	1.0	0.0	1.8			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1979	885	0	1979	885	405	0	186			
V/C Ratio(X)	0.00	0.65	0.00	0.00	0.44	0.00	0.32	0.00	0.57			
Avail Cap(c_a), veh/h	0	6164	2758	0	6164	2758	2997	0	1379			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.2	0.0	0.0	3.6	0.0	11.5	0.0	11.8			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	3.2	0.0	0.0	2.0	0.0	0.5	0.0	0.8			
LnGrp Delay(d),s/veh	0.0	4.4	0.0	0.0	3.6	0.0	11.6	0.0	12.9			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1283			873			235				
Approach Delay, s/veh		4.4			3.6			12.2				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		21.1				21.1		7.4
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		9.1				6.1		3.8
Green Ext Time (p_c), s		6.9				6.9		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A

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)	517	619	256	75	709	211	231	150	72	197	98	548
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		0.97	1.00		1.00	1.00		0.97	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	539	645	149	78	739	46	241	156	61	154	174	431
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	658	2045	879	122	1441	448	570	209	82	290	304	1123
Arrive On Green	0.19	0.41	0.41	0.07	0.29	0.29	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	3408	5036	1520	1757	5036	1566	3408	1252	489	1757	1845	3136
Grp Volume(v), veh/h	539	645	149	78	739	46	241	0	217	154	174	431
Grp Sat Flow(s),veh/h/ln	1704	1679	1520	1757	1679	1566	1704	0	1741	1757	1845	1568
Q Serve(g_s), s	12.8	7.4	3.9	3.6	10.4	1.8	5.3	0.0	10.0	6.8	7.3	8.6
Cycle Q Clear(g_c), s	12.8	7.4	3.9	3.6	10.4	1.8	5.3	0.0	10.0	6.8	7.3	8.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	658	2045	879	122	1441	448	570	0	291	290	304	1123
V/C Ratio(X)	0.82	0.32	0.17	0.64	0.51	0.10	0.42	0.00	0.75	0.53	0.57	0.38
Avail Cap(c_a), veh/h	1010	2388	983	521	2388	743	1212	0	619	625	656	1721
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.6	17.1	8.5	38.2	25.2	22.1	31.5	0.0	33.4	32.2	32.5	20.1
Incr Delay (d2), s/veh	3.2	0.1	0.1	5.4	0.3	0.1	0.5	0.0	3.8	1.5	1.7	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	6.3	3.4	2.3	2.0	4.8	0.8	2.5	0.0	5.1	3.4	3.9	3.8
LnGrp Delay(d),s/veh	35.8	17.2	8.6	43.6	25.5	22.2	32.0	0.0	37.2	33.7	34.2	20.4
LnGrp LOS	D	B	A	D	C	C	C		D	C	C	C
Approach Vol, veh/h		1333			863			458			759	
Approach Delay, s/veh		23.7			26.9			34.5			26.2	
Approach LOS		C			C			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	9.9	39.1		17.6	20.0	28.9		17.8
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.6	9.4		10.6	14.8	12.4		12.0
Green Ext Time (p_c), s	0.1	12.3		3.3	1.5	11.8		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	26.5
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)	20	431	78	121	470	54	49	5	70	49	7	21
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		0.98	1.00		0.97	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	25	546	19	153	595	62	66	0	3	69	0	0
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	2	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	1022	449	302	1121	117	483	0	350	481	253	0
Arrive On Green	0.03	0.29	0.29	0.09	0.35	0.35	0.14	0.00	0.14	0.14	0.00	0.00
Sat Flow, veh/h	1757	3505	1539	3408	3195	332	3514	0	1534	3514	1845	0
Grp Volume(v), veh/h	25	546	19	153	326	331	66	0	3	69	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1539	1704	1752	1774	1757	0	1534	1757	1845	0
Q Serve(g_s), s	0.7	6.5	0.4	2.1	7.3	7.4	0.8	0.0	0.1	0.9	0.0	0.0
Cycle Q Clear(g_c), s	0.7	6.5	0.4	2.1	7.3	7.4	0.8	0.0	0.1	0.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	52	1022	449	302	615	623	483	0	350	481	253	0
V/C Ratio(X)	0.48	0.53	0.04	0.51	0.53	0.53	0.14	0.00	0.01	0.14	0.00	0.00
Avail Cap(c_a), veh/h	709	2830	1243	2064	1415	1433	2128	0	1068	1773	931	0
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.7	14.7	12.6	21.5	12.8	12.8	18.8	0.0	14.9	18.8	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.2	0.0	0.5	0.3	0.3	0.0	0.0	0.0	0.1	0.0	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	0.4	3.1	0.2	1.0	3.6	3.6	0.4	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	26.3	14.9	12.6	22.0	13.1	13.1	18.8	0.0	14.9	18.9	0.0	0.0
LnGrp LOS	C	B	B	C	B	B	B		B	B		
Approach Vol, veh/h		590			810			69			69	
Approach Delay, s/veh		15.3			14.8			18.6			18.9	
Approach LOS		B			B			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	7.4	19.0		11.3	4.5	22.0		11.8
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	4.1	8.5		2.9	2.7	9.4		2.8
Green Ext Time (p_c), s	0.3	5.6		0.1	0.0	5.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	497	53	103	324	0	0	0	0	551	0	321
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	629	15	130	410	0				697	0	64
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79				0.79	0.79	0.79
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1042	466	237	1661	0				912	0	814
Arrive On Green	0.00	0.30	0.30	0.07	0.47	0.00				0.26	0.00	0.26
Sat Flow, veh/h	0	3597	1568	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	629	15	130	410	0				697	0	64
Grp Sat Flow(s),veh/h/ln	0	1752	1568	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	5.0	0.2	1.2	2.3	0.0				6.0	0.0	0.5
Cycle Q Clear(g_c), s	0.0	5.0	0.2	1.2	2.3	0.0				6.0	0.0	0.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1042	466	237	1661	0				912	0	814
V/C Ratio(X)	0.00	0.60	0.03	0.55	0.25	0.00				0.76	0.00	0.08
Avail Cap(c_a), veh/h	0	3703	1657	2609	3703	0				3228	0	2881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.8	8.1	14.7	5.1	0.0				11.2	0.0	9.1
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.7	0.0	0.0				0.5	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	2.4	0.1	0.6	1.1	0.0				2.9	0.0	0.2
LnGrp Delay(d),s/veh	0.0	10.0	8.2	15.4	5.1	0.0				11.7	0.0	9.2
LnGrp LOS		B	A	B	A					B		A
Approach Vol, veh/h		644			540						761	
Approach Delay, s/veh		10.0			7.6						11.5	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	5.8	14.3		12.6		20.1		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	3.3	7.0		8.0		4.3		
Green Ext Time (p_c), s	0.1	2.7		0.5		2.7		

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
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)	170	878	0	0	385	431	42	0	114	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	215	1111	0	0	487	74	53	0	34			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	401	2126	0	0	1254	561	188	0	84			
Arrive On Green	0.12	0.61	0.00	0.00	0.36	0.36	0.05	0.00	0.05			
Sat Flow, veh/h	3408	3597	0	0	3597	1568	3514	0	1568			
Grp Volume(v), veh/h	215	1111	0	0	487	74	53	0	34			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	1.6	4.9	0.0	0.0	2.8	0.9	0.4	0.0	0.6			
Cycle Q Clear(g_c), s	1.6	4.9	0.0	0.0	2.8	0.9	0.4	0.0	0.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	401	2126	0	0	1254	561	188	0	84			
V/C Ratio(X)	0.54	0.52	0.00	0.00	0.39	0.13	0.28	0.00	0.41			
Avail Cap(c_a), veh/h	3185	4585	0	0	4585	2051	3940	0	1758			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.1	3.0	0.0	0.0	6.4	5.8	12.2	0.0	12.3			
Incr Delay (d2), s/veh	0.4	0.1	0.0	0.0	0.1	0.0	0.3	0.0	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			
%ile BackOfQ(50%),veh/ln	0.8	2.3	0.0	0.0	1.3	0.4	0.2	0.0	0.3			
LnGrp Delay(d),s/veh	11.5	3.1	0.0	0.0	6.5	5.8	12.5	0.0	13.4			
LnGrp LOS	B	A			A	A	B		B			
Approach Vol, veh/h		1326			561			87				
Approach Delay, s/veh		4.5			6.4			12.8				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		21.2			6.6	14.6		5.5
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		6.9			3.6	4.8		2.6
Green Ext Time (p_c), s		4.8			0.4	4.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
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.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	714	278	0	816	0	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	939	366	0	1074	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	940	0	1477	471
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	537	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	415	-	142	459
Stage 1	-	0	-	-	267	-
Stage 2	-	0	-	-	530	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	415	-	142	459
Mov Cap-2 Maneuver	-	-	-	-	142	-
Stage 1	-	-	-	-	267	-
Stage 2	-	-	-	-	530	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	459	-	415	-
HCM Lane V/C Ratio	0.04	-	-	-
HCM Control Delay (s)	13.2	-	0	-
HCM Lane LOS	B	-	A	-
HCM 95th %tile Q(veh)	0.1	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	651	34	27	674	27	113	7	8	20	6	32
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		0.99	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	54	824	40	34	853	31	154	0	0	25	8	0
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	1639	80	68	1567	57	369	194	0	51	16	104
Arrive On Green	0.05	0.48	0.48	0.04	0.45	0.45	0.11	0.00	0.00	0.04	0.04	0.00
Sat Flow, veh/h	3408	3402	165	1757	3448	125	3514	1845	0	1346	431	2760
Grp Volume(v), veh/h	54	424	440	34	434	450	154	0	0	33	0	0
Grp Sat Flow(s),veh/h/ln	1704	1752	1815	1757	1752	1821	1757	1845	0	1777	0	1380
Q Serve(g_s), s	0.7	7.4	7.4	0.9	8.0	8.0	1.8	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	0.7	7.4	7.4	0.9	8.0	8.0	1.8	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.07	1.00		0.00	0.76		1.00
Lane Grp Cap(c), veh/h	186	844	875	68	797	828	369	194	0	67	0	104
V/C Ratio(X)	0.29	0.50	0.50	0.50	0.54	0.54	0.42	0.00	0.00	0.49	0.00	0.00
Avail Cap(c_a), veh/h	1521	1369	1418	784	1369	1422	1960	1029	0	992	0	1540
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.3	7.9	7.9	21.1	8.9	8.9	18.8	0.0	0.0	21.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.3	0.3	2.1	0.4	0.4	0.3	0.0	0.0	2.1	0.0	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	0.3	3.6	3.7	0.4	3.9	4.1	0.9	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	20.7	8.3	8.3	23.3	9.3	9.3	19.0	0.0	0.0	23.2	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	B			C		
Approach Vol, veh/h		918			918			154			33	
Approach Delay, s/veh		9.0			9.8			19.0			23.2	
Approach LOS		A			A			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	4.7	25.7		5.7	5.9	24.5		8.7
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	2.9	9.4		2.8	2.7	10.0		3.8
Green Ext Time (p_c), s	0.0	10.4		0.1	0.1	10.3		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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	144	306	210	56	368	126	160	95	19	96	199	201
Number	1	6	16	5	2	12	7	4	14	3	8	18
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	182	387	62	71	466	27	203	120	0	122	252	0
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	219	1098	175	300	1499	669	243	605	271	154	427	0
Arrive On Green	0.12	0.36	0.36	0.17	0.43	0.43	0.14	0.17	0.00	0.09	0.12	0.00
Sat Flow, veh/h	1757	3029	481	1757	3505	1565	1757	3505	1568	1757	3597	0
Grp Volume(v), veh/h	182	223	226	71	466	27	203	120	0	122	252	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1758	1757	1752	1565	1757	1752	1568	1757	1752	0
Q Serve(g_s), s	8.1	7.4	7.5	2.8	7.0	0.8	9.0	2.3	0.0	5.4	5.4	0.0
Cycle Q Clear(g_c), s	8.1	7.4	7.5	2.8	7.0	0.8	9.0	2.3	0.0	5.4	5.4	0.0
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	219	636	637	300	1499	669	243	605	271	154	427	0
V/C Ratio(X)	0.83	0.35	0.36	0.24	0.31	0.04	0.84	0.20	0.00	0.79	0.59	0.00
Avail Cap(c_a), veh/h	253	636	637	300	1499	669	439	1051	470	275	745	0
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)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.2	18.6	18.7	28.7	15.1	13.3	33.6	28.3	0.0	35.8	33.2	0.0
Incr Delay (d2), s/veh	14.8	0.1	0.1	0.1	0.5	0.1	2.9	0.1	0.0	3.5	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	4.8	3.6	3.7	1.4	3.5	0.4	4.5	1.1	0.0	2.8	2.7	0.0
LnGrp Delay(d),s/veh	49.0	18.7	18.8	28.8	15.6	13.4	36.5	28.4	0.0	39.2	33.7	0.0
LnGrp LOS	D	B	B	C	B	B	D	C		D	C	
Approach Vol, veh/h		631			564			323			374	
Approach Delay, s/veh		27.5			17.2			33.5			35.5	
Approach LOS		C			B			C			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	13.0	38.7	10.0	18.3	18.2	33.5	14.1	14.3
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	4.5	* 4.5	3.0	4.5
Max Green Setting (Gmax), s	10.5	16.5	12.5	24.0	8.5	* 19	20.0	17.0
Max Q Clear Time (g_c+I1), s	10.1	9.0	7.4	4.3	4.8	9.5	11.0	7.4
Green Ext Time (p_c), s	0.0	1.4	0.1	1.4	0.8	1.2	0.2	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	27.0
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* 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)	56	20	137	17	8	33	58	174	10	29	350	43
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		0.99	1.00		1.00	1.00		0.98	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	69	25	23	21	10	0	72	215	8	36	432	13
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	790	204	188	94	99	0	117	1664	62	82	1625	702
Arrive On Green	0.23	0.23	0.23	0.05	0.05	0.00	0.07	0.48	0.48	0.05	0.46	0.46
Sat Flow, veh/h	3408	881	811	1757	1845	0	1757	3443	128	1757	3505	1515
Grp Volume(v), veh/h	69	0	48	21	10	0	72	109	114	36	432	13
Grp Sat Flow(s),veh/h/ln	1704	0	1692	1757	1845	0	1757	1752	1818	1757	1752	1515
Q Serve(g_s), s	1.4	0.0	1.9	1.0	0.4	0.0	3.4	3.0	3.0	1.7	6.5	0.4
Cycle Q Clear(g_c), s	1.4	0.0	1.9	1.0	0.4	0.0	3.4	3.0	3.0	1.7	6.5	0.4
Prop In Lane	1.00		0.48	1.00		0.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	790	0	392	94	99	0	117	847	879	82	1625	702
V/C Ratio(X)	0.09	0.00	0.12	0.22	0.10	0.00	0.61	0.13	0.13	0.44	0.27	0.02
Avail Cap(c_a), veh/h	790	0	392	407	428	0	407	847	879	305	1625	702
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	0.0	26.2	39.1	38.8	0.0	39.2	12.3	12.3	40.0	14.2	12.5
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.4	0.2	0.0	1.9	0.3	0.3	1.3	0.4	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	0.7	0.0	1.0	0.5	0.2	0.0	1.7	1.5	1.6	0.9	3.2	0.2
LnGrp Delay(d),s/veh	26.2	0.0	26.8	39.5	39.0	0.0	41.1	12.6	12.6	41.4	14.6	12.6
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		117			31			295			481	
Approach Delay, s/veh		26.5			39.4			19.6			16.5	
Approach LOS		C			D			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	7.5	45.9		24.1	9.3	44.2		8.7
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.7	5.0		3.9	5.4	8.5		3.0
Green Ext Time (p_c), s	0.0	8.9		0.2	0.0	8.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	22	0	251	494	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	28	0	314	618	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	777	311	623	0	-	0
Stage 1	620	-	-	-	-	-
Stage 2	157	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	332	682	947	-	-	-
Stage 1	496	-	-	-	-	-
Stage 2	852	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	332	682	947	-	-	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	496	-	-	-	-	-
Stage 2	852	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	947	-	682	-	-
HCM Lane V/C Ratio	-	-	0.04	-	-
HCM Control Delay (s)	0	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	0	10	0	0	25	17	223	21	81	399	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	9	0	13	0	0	32	22	282	27	103	505	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	921	1089	283	797	1104	155	559	0	0	309	0	0
Stage 1	737	737	-	339	339	-	-	-	-	-	-	-
Stage 2	184	352	-	458	765	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	224	212	711	276	208	860	1001	-	-	1241	-	-
Stage 1	374	420	-	646	636	-	-	-	-	-	-	-
Stage 2	797	628	-	549	408	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	199	190	709	249	187	859	998	-	-	1240	-	-
Mov Cap-2 Maneuver	199	190	-	249	187	-	-	-	-	-	-	-
Stage 1	366	385	-	632	622	-	-	-	-	-	-	-
Stage 2	750	614	-	493	374	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.1	9.4	0.6	1.3
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	998	-	-	345	-	859	1240	-	-
HCM Lane V/C Ratio	0.022	-	-	0.062	-	0.037	0.083	-	-
HCM Control Delay (s)	8.7	-	-	16.1	0	9.4	8.2	-	-
HCM Lane LOS	A	-	-	C	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0.1	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	35	200	19	61	12	214	109	34	16	129	53
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	23	42	13	23	73	7	255	130	17	19	154	19
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	70	310	457	70	278	27	342	1150	148	59	654	79
Arrive On Green	0.04	0.17	0.17	0.04	0.17	0.17	0.19	0.37	0.37	0.03	0.21	0.21
Sat Flow, veh/h	1757	1845	2719	1757	1657	159	1757	3113	399	1757	3140	381
Grp Volume(v), veh/h	23	42	13	23	0	80	255	72	75	19	85	88
Grp Sat Flow(s),veh/h/ln	1757	1845	1360	1757	0	1815	1757	1752	1760	1757	1752	1768
Q Serve(g_s), s	0.5	0.7	0.1	0.5	0.0	1.4	4.9	1.0	1.0	0.4	1.5	1.5
Cycle Q Clear(g_c), s	0.5	0.7	0.1	0.5	0.0	1.4	4.9	1.0	1.0	0.4	1.5	1.5
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.23	1.00		0.22
Lane Grp Cap(c), veh/h	70	310	457	70	0	305	342	647	650	59	365	368
V/C Ratio(X)	0.33	0.14	0.03	0.33	0.00	0.26	0.74	0.11	0.12	0.32	0.23	0.24
Avail Cap(c_a), veh/h	1074	1384	2040	830	0	1210	1318	1558	1564	830	1314	1327
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.8	12.7	12.5	16.8	0.0	13.0	13.6	7.5	7.5	17.0	11.9	11.9
Incr Delay (d2), s/veh	1.0	0.1	0.0	1.0	0.0	0.2	1.2	0.0	0.0	1.1	0.1	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	0.2	0.4	0.1	0.2	0.0	0.7	2.5	0.5	0.5	0.2	0.7	0.7
LnGrp Delay(d),s/veh	17.8	12.8	12.5	17.8	0.0	13.2	14.9	7.5	7.5	18.1	12.0	12.0
LnGrp LOS	B	B	B	B		B	B	A	A	B	B	B
Approach Vol, veh/h		78			103			402			192	
Approach Delay, s/veh		14.2			14.2			12.2			12.6	
Approach LOS		B			B			B			B	

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	4.4	10.0	4.2	17.3	4.4	10.0	10.0	11.5
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.5	3.4	2.4	3.0	2.5	2.7	6.9	3.5
Green Ext Time (p_c), s	0.0	0.4	0.0	1.2	0.0	0.4	0.1	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	714	2	6	927	142	3	1	4	94	3	35
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	38	850	2	7	1104	0	4	1	0	115	0	6
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	1.00
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	70	1996	5	23	1857	831	13	3	0	432	0	193
Arrive On Green	0.04	0.56	0.56	0.01	0.53	0.00	0.01	0.01	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1757	3587	8	1757	3505	1568	1419	355	0	3514	0	1568
Grp Volume(v), veh/h	38	415	437	7	1104	0	5	0	0	115	0	6
Grp Sat Flow(s),veh/h/ln	1757	1752	1843	1757	1752	1568	1774	0	0	1757	0	1568
Q Serve(g_s), s	1.2	7.8	7.8	0.2	12.3	0.0	0.2	0.0	0.0	1.7	0.0	0.2
Cycle Q Clear(g_c), s	1.2	7.8	7.8	0.2	12.3	0.0	0.2	0.0	0.0	1.7	0.0	0.2
Prop In Lane	1.00		0.00	1.00		1.00	0.80		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	975	1026	23	1857	831	17	0	0	432	0	193
V/C Ratio(X)	0.55	0.43	0.43	0.31	0.59	0.00	0.30	0.00	0.00	0.27	0.00	0.03
Avail Cap(c_a), veh/h	617	1292	1359	833	2461	1101	592	0	0	1542	0	688
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.9	7.3	7.3	27.9	9.2	0.0	28.0	0.0	0.0	22.7	0.0	22.0
Incr Delay (d2), s/veh	2.4	0.4	0.3	2.8	0.3	0.0	3.7	0.0	0.0	0.1	0.0	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	0.6	3.8	4.0	0.1	5.9	0.0	0.1	0.0	0.0	0.8	0.0	0.1
LnGrp Delay(d),s/veh	29.3	7.7	7.7	30.7	9.5	0.0	31.7	0.0	0.0	22.8	0.0	22.0
LnGrp LOS	C	A	A	C	A		C			C		C
Approach Vol, veh/h		890			1111			5			121	
Approach Delay, s/veh		8.6			9.6			31.7			22.7	
Approach LOS		A			A			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	4.2	36.7		4.5	5.8	35.2		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	9.8		2.2	3.2	14.3		3.7
Green Ext Time (p_c), s	0.0	18.2		0.0	0.0	15.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.0
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)	0	711	164	0	738	185	0	0	0	854	0	520
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	846	0	0	879	0				1017	0	545
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1222	547	0	1222	547				1355	0	623
Arrive On Green	0.00	0.35	0.00	0.00	0.35	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	846	0	0	879	0				1017	0	545
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	8.2	0.0	0.0	8.6	0.0				10.1	0.0	12.6
Cycle Q Clear(g_c), s	0.0	8.2	0.0	0.0	8.6	0.0				10.1	0.0	12.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1222	547	0	1222	547				1355	0	623
V/C Ratio(X)	0.00	0.69	0.00	0.00	0.72	0.00				0.75	0.00	0.87
Avail Cap(c_a), veh/h	0	4450	1991	0	4450	1991				3029	0	1394
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.0	0.0	0.0	11.2	0.0				10.2	0.0	11.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0				0.3	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	3.9	0.0	0.0	4.1	0.0				4.7	0.0	5.6
LnGrp Delay(d),s/veh	0.0	11.3	0.0	0.0	11.5	0.0				10.5	0.0	12.5
LnGrp LOS		B			B					B		B
Approach Vol, veh/h		846			879						1562	
Approach Delay, s/veh		11.3			11.5						11.2	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		18.7		20.7		18.7		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		10.2		14.6		10.6		
Green Ext Time (p_c), s		3.1		1.0		3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

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)	0	1290	275	0	779	961	144	0	198	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1536	0	0	927	0	171	0	176			
Adj No. of Lanes	0	2	1	0	2	1	2	0	1			
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2100	939	0	2100	939	546	0	251			
Arrive On Green	0.00	0.60	0.00	0.00	0.60	0.00	0.16	0.00	0.16			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1536	0	0	927	0	171	0	176			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	11.7	0.0	0.0	5.4	0.0	1.7	0.0	4.0			
Cycle Q Clear(g_c), s	0.0	11.7	0.0	0.0	5.4	0.0	1.7	0.0	4.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2100	939	0	2100	939	546	0	251			
V/C Ratio(X)	0.00	0.73	0.00	0.00	0.44	0.00	0.31	0.00	0.70			
Avail Cap(c_a), veh/h	0	4686	2096	0	4686	2096	2278	0	1048			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	5.3	0.0	0.0	4.1	0.0	13.9	0.0	14.9			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.0	1.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	5.4	0.0	0.0	2.6	0.0	0.8	0.0	1.8			
LnGrp Delay(d),s/veh	0.0	5.5	0.0	0.0	4.1	0.0	14.0	0.0	16.2			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1536			927			347				
Approach Delay, s/veh		5.5			4.1			15.1				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		27.4				27.4		10.0
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		13.7				7.4		6.0
Green Ext Time (p_c), s		8.7				8.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.3
HCM 2010 LOS	A

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)	394	745	349	77	1210	64	275	77	50	56	66	255
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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	469	887	226	92	1440	30	327	92	39	67	79	215
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	585	2533	1005	128	2053	638	470	169	72	167	176	837
Arrive On Green	0.17	0.50	0.50	0.07	0.41	0.41	0.14	0.14	0.14	0.10	0.10	0.10
Sat Flow, veh/h	3408	5036	1568	1757	5036	1566	3408	1229	521	1757	1845	3136
Grp Volume(v), veh/h	469	887	226	92	1440	30	327	0	131	67	79	215
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1757	1679	1566	1704	0	1750	1757	1845	1568
Q Serve(g_s), s	11.2	9.0	5.1	4.3	20.1	1.0	7.8	0.0	5.9	3.0	3.4	4.6
Cycle Q Clear(g_c), s	11.2	9.0	5.1	4.3	20.1	1.0	7.8	0.0	5.9	3.0	3.4	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	585	2533	1005	128	2053	638	470	0	241	167	176	837
V/C Ratio(X)	0.80	0.35	0.22	0.72	0.70	0.05	0.70	0.00	0.54	0.40	0.45	0.26
Avail Cap(c_a), veh/h	1004	2533	1005	518	2374	738	1205	0	619	621	652	1647
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	12.7	6.4	38.5	20.8	15.2	34.9	0.0	34.1	36.1	36.3	24.5
Incr Delay (d2), s/veh	2.6	0.1	0.1	7.3	0.8	0.0	1.9	0.0	1.9	1.5	1.8	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	5.5	4.2	3.1	2.4	9.5	0.4	3.8	0.0	3.0	1.5	1.8	2.0
LnGrp Delay(d),s/veh	36.3	12.8	6.5	45.7	21.6	15.2	36.7	0.0	36.0	37.7	38.1	24.6
LnGrp LOS	D	B	A	D	C	B	D		D	D	D	C
Approach Vol, veh/h		1582			1562			458			361	
Approach Delay, s/veh		18.9			22.9			36.5			30.0	
Approach LOS		B			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.2	47.5		11.8	18.3	39.4		15.4
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	6.3	11.0		6.6	13.2	22.1		9.8
Green Ext Time (p_c), s	0.2	21.2		1.5	1.4	12.5		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	879	255	432	728	62	212	12	397	32	11	15
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		0.98	1.00		0.97	1.00		0.97	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	906	175	445	751	61	228	0	182	23	25	2
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	1274	560	556	1629	132	509	0	477	174	167	13
Arrive On Green	0.03	0.36	0.36	0.16	0.50	0.50	0.14	0.00	0.14	0.10	0.10	0.10
Sat Flow, veh/h	1757	3505	1541	3408	3276	266	3514	0	1529	1757	1682	135
Grp Volume(v), veh/h	28	906	175	445	402	410	228	0	182	23	0	27
Grp Sat Flow(s),veh/h/ln	1757	1752	1541	1704	1752	1789	1757	0	1529	1757	0	1817
Q Serve(g_s), s	1.2	16.6	6.1	9.4	11.2	11.2	4.4	0.0	7.0	0.9	0.0	1.0
Cycle Q Clear(g_c), s	1.2	16.6	6.1	9.4	11.2	11.2	4.4	0.0	7.0	0.9	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	52	1274	560	556	871	890	509	0	477	174	0	180
V/C Ratio(X)	0.54	0.71	0.31	0.80	0.46	0.46	0.45	0.00	0.38	0.13	0.00	0.15
Avail Cap(c_a), veh/h	471	1878	826	1370	939	959	1412	0	870	588	0	608
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.7	20.4	17.1	30.1	12.2	12.2	29.2	0.0	20.3	30.7	0.0	30.7
Incr Delay (d2), s/veh	3.2	0.3	0.1	1.0	0.1	0.1	0.2	0.0	0.2	0.1	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	0.6	8.0	2.6	4.5	5.4	5.5	2.2	0.0	2.9	0.4	0.0	0.5
LnGrp Delay(d),s/veh	39.0	20.7	17.2	31.1	12.4	12.4	29.4	0.0	20.5	30.8	0.0	30.9
LnGrp LOS	D	C	B	C	B	B	C		C	C		C
Approach Vol, veh/h		1109			1257			410			50	
Approach Delay, s/veh		20.6			19.0			25.4			30.9	
Approach LOS		C			B			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	15.2	31.7		11.9	5.2	41.7		15.8
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	11.4	18.6		3.0	3.2	13.2		9.0
Green Ext Time (p_c), s	0.8	8.6		0.1	0.0	9.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.8
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1210	98	160	678	0	0	0	0	871	5	544
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1247	72	165	699	0				902	0	261
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1512	676	261	1982	0				1023	0	913
Arrive On Green	0.00	0.43	0.43	0.08	0.57	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3597	1567	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1247	72	165	699	0				902	0	261
Grp Sat Flow(s),veh/h/ln	0	1752	1567	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	19.1	1.7	2.9	6.6	0.0				14.9	0.0	3.9
Cycle Q Clear(g_c), s	0.0	19.1	1.7	2.9	6.6	0.0				14.9	0.0	3.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1512	676	261	1982	0				1023	0	913
V/C Ratio(X)	0.00	0.82	0.11	0.63	0.35	0.00				0.88	0.00	0.29
Avail Cap(c_a), veh/h	0	1992	890	1403	1992	0				1736	0	1550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.2	10.3	27.2	7.2	0.0				20.5	0.0	16.6
Incr Delay (d2), s/veh	0.0	1.7	0.0	0.9	0.0	0.0				1.5	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
%ile BackOfQ(50%),veh/ln	0.0	9.5	0.7	1.4	3.1	0.0				7.4	0.0	1.7
LnGrp Delay(d),s/veh	0.0	16.9	10.3	28.2	7.2	0.0				22.0	0.0	16.7
LnGrp LOS		B	B	C	A					C		B
Approach Vol, veh/h		1319			864						1163	
Approach Delay, s/veh		16.6			11.2						20.8	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.1	30.8		21.8		38.9		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	4.9	21.1		16.9		8.6		
Green Ext Time (p_c), s	0.1	5.1		0.8		6.2		

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
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)	458	1623	0	0	740	805	98	3	230	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	472	1673	0	0	763	425	103	0	190			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	629	2340	0	0	1461	651	563	0	251			
Arrive On Green	0.18	0.67	0.00	0.00	0.42	0.42	0.16	0.00	0.16			
Sat Flow, veh/h	3408	3597	0	0	3597	1562	3514	0	1568			
Grp Volume(v), veh/h	472	1673	0	0	763	425	103	0	190			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1562	1757	0	1568			
Q Serve(g_s), s	6.9	16.0	0.0	0.0	8.6	11.5	1.3	0.0	6.1			
Cycle Q Clear(g_c), s	6.9	16.0	0.0	0.0	8.6	11.5	1.3	0.0	6.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	629	2340	0	0	1461	651	563	0	251			
V/C Ratio(X)	0.75	0.72	0.00	0.00	0.52	0.65	0.18	0.00	0.76			
Avail Cap(c_a), veh/h	1613	2340	0	0	2323	1035	1996	0	891			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	20.4	5.6	0.0	0.0	11.5	12.3	19.2	0.0	21.2			
Incr Delay (d2), s/veh	0.7	0.9	0.0	0.0	0.1	0.4	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	3.3	7.7	0.0	0.0	4.2	5.0	0.6	0.0	2.8			
LnGrp Delay(d),s/veh	21.1	6.5	0.0	0.0	11.6	12.8	19.2	0.0	23.0			
LnGrp LOS	C	A			B	B	B		C			
Approach Vol, veh/h		2145			1188			293				
Approach Delay, s/veh		9.7			12.0			21.7				
Approach LOS		A			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		40.3			13.2	27.0		12.6
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		18.0			8.9	13.5		8.1
Green Ext Time (p_c), s		8.0			0.8	8.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
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.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1339	514	0	1545	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1380	530	0	1593	0	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1380	0	2176	690
Stage 1	-	-	-	-	1380	-
Stage 2	-	-	-	-	796	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	253	-	54	331
Stage 1	-	0	-	-	142	-
Stage 2	-	0	-	-	391	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	253	-	54	331
Mov Cap-2 Maneuver	-	-	-	-	54	-
Stage 1	-	-	-	-	142	-
Stage 2	-	-	-	-	391	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	331	-	253	-
HCM Lane V/C Ratio	0.103	-	-	-
HCM Control Delay (s)	17.1	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.3	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	325	973	74	47	915	62	378	40	22	100	24	252
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		0.98	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	335	1003	72	48	943	60	438	0	0	103	25	25
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	439	1600	115	75	1304	83	598	314	0	141	34	267
Arrive On Green	0.13	0.48	0.48	0.04	0.39	0.39	0.17	0.00	0.00	0.10	0.10	0.10
Sat Flow, veh/h	3408	3311	238	1757	3343	213	3514	1845	0	1427	346	2694
Grp Volume(v), veh/h	335	531	544	48	494	509	438	0	0	128	0	25
Grp Sat Flow(s),veh/h/ln	1704	1752	1796	1757	1752	1803	1757	1845	0	1773	0	1347
Q Serve(g_s), s	7.0	16.5	16.5	2.0	17.6	17.6	8.7	0.0	0.0	5.2	0.0	0.6
Cycle Q Clear(g_c), s	7.0	16.5	16.5	2.0	17.6	17.6	8.7	0.0	0.0	5.2	0.0	0.6
Prop In Lane	1.00		0.13	1.00		0.12	1.00		0.00	0.80		1.00
Lane Grp Cap(c), veh/h	439	847	868	75	684	704	598	314	0	176	0	267
V/C Ratio(X)	0.76	0.63	0.63	0.64	0.72	0.72	0.73	0.00	0.00	0.73	0.00	0.09
Avail Cap(c_a), veh/h	926	847	868	477	833	857	1193	626	0	602	0	915
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.0	14.1	14.1	34.7	19.1	19.1	29.0	0.0	0.0	32.2	0.0	30.2
Incr Delay (d2), s/veh	1.1	1.3	1.3	3.4	2.1	2.1	0.7	0.0	0.0	2.2	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	3.4	8.3	8.5	1.0	8.9	9.2	4.3	0.0	0.0	2.6	0.0	0.2
LnGrp Delay(d),s/veh	32.0	15.4	15.4	38.1	21.2	21.1	29.6	0.0	0.0	34.4	0.0	30.2
LnGrp LOS	C	B	B	D	C	C	C			C		C
Approach Vol, veh/h		1410			1051			438			153	
Approach Delay, s/veh		19.4			22.0			29.6			33.7	
Approach LOS		B			C			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	6.1	39.7		11.3	13.0	32.8		16.5
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	4.0	18.5		7.2	9.0	19.6		10.7
Green Ext Time (p_c), s	0.0	10.2		0.5	0.5	9.1		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	22.4
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)	315	563	220	83	461	130	401	328	77	103	238	174
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		1.00	1.00		0.94
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	335	599	194	88	490	24	427	349	21	110	253	50
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	333	796	257	299	1010	449	458	1070	476	137	355	69
Arrive On Green	0.19	0.31	0.31	0.17	0.29	0.29	0.26	0.31	0.31	0.08	0.12	0.12
Sat Flow, veh/h	1757	2587	836	1757	3505	1560	1757	3505	1560	1757	2895	559
Grp Volume(v), veh/h	335	405	388	88	490	24	427	349	21	110	151	152
Grp Sat Flow(s),veh/h/ln	1757	1752	1670	1757	1752	1560	1757	1752	1560	1757	1752	1702
Q Serve(g_s), s	20.5	22.5	22.6	4.7	12.5	1.2	25.6	8.3	1.0	6.7	8.9	9.3
Cycle Q Clear(g_c), s	20.5	22.5	22.6	4.7	12.5	1.2	25.6	8.3	1.0	6.7	8.9	9.3
Prop In Lane	1.00		0.50	1.00		1.00	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	333	539	514	299	1010	449	458	1070	476	137	215	209
V/C Ratio(X)	1.00	0.75	0.75	0.29	0.49	0.05	0.93	0.33	0.04	0.80	0.70	0.73
Avail Cap(c_a), veh/h	333	539	514	299	1010	449	594	1070	476	350	276	268
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)	0.73	0.73	0.73	1.00	1.00	1.00	0.96	0.96	0.96	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	33.7	33.7	39.1	31.8	27.8	39.0	28.9	26.4	49.0	45.5	45.6
Incr Delay (d2), s/veh	43.2	3.9	4.1	0.2	1.7	0.2	16.4	0.1	0.0	4.1	3.2	4.6
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	13.9	11.5	11.0	2.3	6.3	0.5	14.5	4.0	0.4	3.4	4.5	4.7
LnGrp Delay(d),s/veh	86.9	37.5	37.8	39.3	33.5	28.0	55.4	29.0	26.4	53.1	48.7	50.2
LnGrp LOS	F	D	D	D	C	C	E	C	C	D	D	D
Approach Vol, veh/h		1128			602			797			413	
Approach Delay, s/veh		52.3			34.1			43.1			50.4	
Approach LOS		D			C			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	23.5	35.6	11.4	37.5	21.4	37.7	31.1	17.8
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	20.5	19.0	21.5	32.0	11.5	28.0	36.5	17.0
Max Q Clear Time (g_c+I1), s	22.5	14.5	8.7	10.3	6.7	24.6	27.6	11.3
Green Ext Time (p_c), s	0.0	2.4	0.1	2.6	0.0	1.9	0.5	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	45.8
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	177	46	172	39	29	46	134	496	9	45	336	90
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		0.98	1.00		1.00	1.00		0.97	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	192	50	78	42	32	0	146	539	9	49	365	32
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	733	138	215	145	153	0	177	1682	28	95	1508	651
Arrive On Green	0.22	0.22	0.22	0.08	0.08	0.00	0.10	0.48	0.48	0.05	0.43	0.43
Sat Flow, veh/h	3408	640	999	1757	1845	0	1757	3526	59	1757	3505	1513
Grp Volume(v), veh/h	192	0	128	42	32	0	146	268	280	49	365	32
Grp Sat Flow(s),veh/h/ln	1704	0	1640	1757	1845	0	1757	1752	1832	1757	1752	1513
Q Serve(g_s), s	4.4	0.0	6.2	2.1	1.5	0.0	7.6	8.8	8.8	2.5	6.2	1.1
Cycle Q Clear(g_c), s	4.4	0.0	6.2	2.1	1.5	0.0	7.6	8.8	8.8	2.5	6.2	1.1
Prop In Lane	1.00		0.61	1.00		0.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	733	0	353	145	153	0	177	836	874	95	1508	651
V/C Ratio(X)	0.26	0.00	0.36	0.29	0.21	0.00	0.82	0.32	0.32	0.52	0.24	0.05
Avail Cap(c_a), veh/h	733	0	353	378	397	0	378	836	874	283	1508	651
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	31.1	40.1	39.8	0.0	41.0	15.0	15.0	42.8	16.8	15.4
Incr Delay (d2), s/veh	0.9	0.0	2.9	0.4	0.3	0.0	3.6	1.0	1.0	1.6	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	2.1	0.0	3.1	1.0	0.8	0.0	3.9	4.5	4.7	1.3	3.1	0.5
LnGrp Delay(d),s/veh	31.2	0.0	33.9	40.5	40.1	0.0	44.6	16.0	16.0	44.4	17.2	15.6
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		320			74			694			446	
Approach Delay, s/veh		32.3			40.3			22.0			20.1	
Approach LOS		C			D			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	8.5	48.6		24.1	12.9	44.2		11.8
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	4.5	10.8		8.2	9.6	8.2		4.1
Green Ext Time (p_c), s	0.0	12.1		0.7	0.0	12.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.5
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	55	0	649	540	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	62	0	729	607	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	976	307	615	0	-	0
Stage 1	611	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	247	686	954	-	-	-
Stage 1	501	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	247	686	954	-	-	-
Mov Cap-2 Maneuver	247	-	-	-	-	-
Stage 1	501	-	-	-	-	-
Stage 2	670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	954	-	686	-	-
HCM Lane V/C Ratio	-	-	0.09	-	-
HCM Control Delay (s)	0	-	10.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	0	38	8	1	46	13	546	7	44	532	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	29	0	44	9	1	53	15	628	8	51	611	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1068	1390	317	1068	1395	327	633	0	0	636	0	0
Stage 1	724	724	-	661	661	-	-	-	-	-	-	-
Stage 2	344	666	-	407	734	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	175	140	676	175	139	666	939	-	-	937	-	-
Stage 1	381	426	-	416	455	-	-	-	-	-	-	-
Stage 2	642	453	-	589	422	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	150	130	676	155	129	661	939	-	-	930	-	-
Mov Cap-2 Maneuver	150	130	-	155	129	-	-	-	-	-	-	-
Stage 1	375	403	-	409	448	-	-	-	-	-	-	-
Stage 2	575	446	-	521	399	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22	14.1	0.2	0.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	939	-	-	283	155	608	930	-	-
HCM Lane V/C Ratio	0.016	-	-	0.256	0.059	0.089	0.054	-	-
HCM Control Delay (s)	8.9	-	-	22	29.7	11.5	9.1	-	-
HCM Lane LOS	A	-	-	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1	0.2	0.3	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	83	472	33	54	41	378	244	23	18	161	27
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	54	88	71	35	57	16	402	260	20	19	171	15
Adj No. of Lanes	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	135	340	502	97	224	63	469	1341	102	58	563	49
Arrive On Green	0.08	0.18	0.18	0.06	0.16	0.16	0.27	0.41	0.41	0.03	0.17	0.17
Sat Flow, veh/h	1757	1845	2723	1757	1380	387	1757	3299	252	1757	3263	283
Grp Volume(v), veh/h	54	88	71	35	0	73	402	137	143	19	91	95
Grp Sat Flow(s),veh/h/ln	1757	1845	1362	1757	0	1767	1757	1752	1799	1757	1752	1794
Q Serve(g_s), s	1.3	1.8	1.0	0.8	0.0	1.6	9.5	2.2	2.2	0.5	2.0	2.0
Cycle Q Clear(g_c), s	1.3	1.8	1.0	0.8	0.0	1.6	9.5	2.2	2.2	0.5	2.0	2.0
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.14	1.00		0.16
Lane Grp Cap(c), veh/h	135	340	502	97	0	287	469	712	731	58	302	310
V/C Ratio(X)	0.40	0.26	0.14	0.36	0.00	0.25	0.86	0.19	0.20	0.33	0.30	0.31
Avail Cap(c_a), veh/h	886	1141	1685	684	0	972	1087	1285	1319	684	1084	1110
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	15.2	14.9	19.9	0.0	16.0	15.2	8.3	8.3	20.6	15.8	15.8
Incr Delay (d2), s/veh	0.7	0.1	0.0	0.8	0.0	0.2	1.8	0.0	0.0	1.2	0.2	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	0.6	0.9	0.4	0.4	0.0	0.8	4.8	1.1	1.1	0.2	1.0	1.0
LnGrp Delay(d),s/veh	19.9	15.4	15.0	20.7	0.0	16.1	17.0	8.4	8.4	21.8	16.0	16.0
LnGrp LOS	B	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		213			108			682			205	
Approach Delay, s/veh		16.4			17.6			13.5			16.5	
Approach LOS		B			B			B			B	

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	6.4	11.1	4.4	21.7	5.4	12.0	14.6	11.5
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	3.3	3.6	2.5	4.2	2.8	3.8	11.5	4.0
Green Ext Time (p_c), s	0.0	0.7	0.0	1.8	0.0	0.7	0.2	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	102	1109	4	15	725	267	4	4	14	279	7	92
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	107	1167	4	16	763	0	4	4	0	299	0	12
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	137	1945	7	48	1725	772	13	13	0	425	0	190
Arrive On Green	0.08	0.54	0.54	0.03	0.49	0.00	0.01	0.01	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1757	3582	12	1757	3505	1568	900	900	0	3514	0	1568
Grp Volume(v), veh/h	107	571	600	16	763	0	8	0	0	299	0	12
Grp Sat Flow(s),veh/h/ln	1757	1752	1842	1757	1752	1568	1800	0	0	1757	0	1568
Q Serve(g_s), s	3.5	12.8	12.8	0.5	8.2	0.0	0.3	0.0	0.0	4.7	0.0	0.4
Cycle Q Clear(g_c), s	3.5	12.8	12.8	0.5	8.2	0.0	0.3	0.0	0.0	4.7	0.0	0.4
Prop In Lane	1.00		0.01	1.00		1.00	0.50		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	137	951	1000	48	1725	772	26	0	0	425	0	190
V/C Ratio(X)	0.78	0.60	0.60	0.33	0.44	0.00	0.30	0.00	0.00	0.70	0.00	0.06
Avail Cap(c_a), veh/h	608	1273	1339	821	2425	1085	592	0	0	1520	0	678
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.2	9.0	9.0	27.6	9.5	0.0	28.2	0.0	0.0	24.4	0.0	22.5
Incr Delay (d2), s/veh	3.6	0.7	0.7	1.5	0.2	0.0	2.4	0.0	0.0	0.8	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	1.8	6.2	6.5	0.3	4.0	0.0	0.1	0.0	0.0	2.3	0.0	0.2
LnGrp Delay(d),s/veh	29.8	9.7	9.7	29.1	9.7	0.0	30.6	0.0	0.0	25.2	0.0	22.6
LnGrp LOS	C	A	A	C	A		C			C		C
Approach Vol, veh/h		1278			779			8			311	
Approach Delay, s/veh		11.4			10.1			30.6			25.1	
Approach LOS		B			B			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	5.1	36.4		4.8	8.0	33.5		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.0	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.5	14.8		2.3	5.5	10.2		6.7
Green Ext Time (p_c), s	0.0	16.6		0.0	0.0	17.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
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)	0	1424	233	0	758	239	0	0	0	949	0	302
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	1499	0	0	798	0				999	0	218
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1737	777	0	1737	777				1118	0	514
Arrive On Green	0.00	0.50	0.00	0.00	0.50	0.00				0.33	0.00	0.33
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	1499	0	0	798	0				999	0	218
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	21.4	0.0	0.0	8.4	0.0				15.8	0.0	6.2
Cycle Q Clear(g_c), s	0.0	21.4	0.0	0.0	8.4	0.0				15.8	0.0	6.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1737	777	0	1737	777				1118	0	514
V/C Ratio(X)	0.00	0.86	0.00	0.00	0.46	0.00				0.89	0.00	0.42
Avail Cap(c_a), veh/h	0	3091	1383	0	3091	1383				2104	0	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.6	0.0	0.0	9.3	0.0				18.1	0.0	14.9
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.1	0.0				1.1	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	10.3	0.0	0.0	4.0	0.0				7.5	0.0	2.7
LnGrp Delay(d),s/veh	0.0	13.1	0.0	0.0	9.4	0.0				19.2	0.0	15.1
LnGrp LOS		B			A					B		B
Approach Vol, veh/h		1499			798						1217	
Approach Delay, s/veh		13.1			9.4						18.4	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		33.1		23.6		33.1		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		23.4		17.8		10.4		
Green Ext Time (p_c), s		4.7		0.8		4.8		

Intersection Summary	
HCM 2010 Ctrl Delay	14.1
HCM 2010 LOS	B

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)	0	1823	550	0	840	1017	157	0	285	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1919	0	0	884	0	165	0	247			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2267	1014	0	2267	1014	651	0	299			
Arrive On Green	0.00	0.65	0.00	0.00	0.65	0.00	0.19	0.00	0.19			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1919	0	0	884	0	165	0	247			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	23.7	0.0	0.0	6.6	0.0	2.3	0.0	8.4			
Cycle Q Clear(g_c), s	0.0	23.7	0.0	0.0	6.6	0.0	2.3	0.0	8.4			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2267	1014	0	2267	1014	651	0	299			
V/C Ratio(X)	0.00	0.85	0.00	0.00	0.39	0.00	0.25	0.00	0.83			
Avail Cap(c_a), veh/h	0	3160	1414	0	3160	1414	1536	0	707			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	7.6	0.0	0.0	4.6	0.0	19.1	0.0	21.5			
Incr Delay (d2), s/veh	0.0	1.2	0.0	0.0	0.0	0.0	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	11.6	0.0	0.0	3.1	0.0	1.1	0.0	3.8			
LnGrp Delay(d),s/veh	0.0	8.8	0.0	0.0	4.7	0.0	19.1	0.0	23.8			
LnGrp LOS		A			A		B		C			
Approach Vol, veh/h		1919			884			412				
Approach Delay, s/veh		8.8			4.7			21.9				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		40.9				40.9		14.6
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		25.7				8.6		10.4
Green Ext Time (p_c), s		10.2				11.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

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)	573	1220	285	53	940	111	341	130	64	135	86	557
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		0.97	1.00		0.98	1.00		0.98	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	603	1284	212	56	989	44	359	137	53	116	127	524
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	699	2270	923	99	1536	470	508	188	73	311	326	1198
Arrive On Green	0.21	0.45	0.45	0.06	0.30	0.30	0.15	0.15	0.15	0.18	0.18	0.18
Sat Flow, veh/h	3408	5036	1528	1757	5036	1542	3408	1258	487	1757	1845	3136
Grp Volume(v), veh/h	603	1284	212	56	989	44	359	0	190	116	127	524
Grp Sat Flow(s),veh/h/ln	1704	1679	1528	1757	1679	1542	1704	0	1745	1757	1845	1568
Q Serve(g_s), s	16.6	18.2	6.2	3.0	16.5	2.0	9.7	0.0	10.1	5.6	5.9	12.0
Cycle Q Clear(g_c), s	16.6	18.2	6.2	3.0	16.5	2.0	9.7	0.0	10.1	5.6	5.9	12.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	699	2270	923	99	1536	470	508	0	260	311	326	1198
V/C Ratio(X)	0.86	0.57	0.23	0.57	0.64	0.09	0.71	0.00	0.73	0.37	0.39	0.44
Avail Cap(c_a), veh/h	879	2270	923	453	2077	636	1054	0	540	543	571	1613
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	19.6	9.0	44.6	29.1	24.1	39.2	0.0	39.4	35.2	35.3	22.2
Incr Delay (d2), s/veh	7.3	0.3	0.1	5.0	0.5	0.1	1.8	0.0	3.9	0.7	0.8	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	8.5	8.5	3.6	1.6	7.7	0.9	4.7	0.0	5.1	2.8	3.1	5.2
LnGrp Delay(d),s/veh	44.6	20.0	9.1	49.6	29.6	24.2	41.1	0.0	43.3	35.9	36.0	22.5
LnGrp LOS	D	B	A	D	C	C	D		D	D	D	C
Approach Vol, veh/h		2099			1089			549			767	
Approach Delay, s/veh		25.9			30.4			41.8			26.8	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	48.5		20.8	23.6	34.4		18.2
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.0	20.2		14.0	18.6	18.5		12.1
Green Ext Time (p_c), s	0.1	15.5		3.1	1.3	11.1		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	29.1
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)	45	788	259	559	615	94	205	18	505	103	26	49
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	46	804	157	570	628	89	222	0	382	74	70	16
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	65	1007	442	659	1362	193	795	0	650	200	164	38
Arrive On Green	0.04	0.29	0.29	0.19	0.44	0.44	0.23	0.00	0.23	0.11	0.11	0.11
Sat Flow, veh/h	1757	3505	1539	3408	3072	434	3514	0	1536	1757	1445	330
Grp Volume(v), veh/h	46	804	157	570	358	359	222	0	382	74	0	86
Grp Sat Flow(s),veh/h/ln	1757	1752	1539	1704	1752	1754	1757	0	1536	1757	0	1775
Q Serve(g_s), s	2.5	20.2	7.7	15.4	13.6	13.7	5.0	0.0	18.3	3.7	0.0	4.3
Cycle Q Clear(g_c), s	2.5	20.2	7.7	15.4	13.6	13.7	5.0	0.0	18.3	3.7	0.0	4.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	65	1007	442	659	777	778	795	0	650	200	0	202
V/C Ratio(X)	0.71	0.80	0.36	0.87	0.46	0.46	0.28	0.00	0.59	0.37	0.00	0.43
Avail Cap(c_a), veh/h	369	1472	646	1073	777	778	1106	0	787	461	0	466
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.4	31.4	26.9	37.2	18.5	18.5	30.4	0.0	21.4	39.1	0.0	39.3
Incr Delay (d2), s/veh	5.2	1.2	0.2	2.3	0.2	0.2	0.1	0.0	0.3	0.4	0.0	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	1.3	9.9	3.3	7.5	6.6	6.6	2.4	0.0	7.7	1.8	0.0	2.1
LnGrp Delay(d),s/veh	50.6	32.6	27.1	39.6	18.7	18.7	30.5	0.0	21.7	39.5	0.0	39.8
LnGrp LOS	D	C	C	D	B	B	C		C	D		D
Approach Vol, veh/h		1007			1287			604			160	
Approach Delay, s/veh		32.5			27.9			24.9			39.7	
Approach LOS		C			C			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	21.4	32.0		15.3	6.5	46.9		26.5
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	17.4	22.2		6.3	4.5	15.7		20.3
Green Ext Time (p_c), s	1.0	5.2		0.4	0.0	7.7		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1317	79	162	709	0	0	0	0	931	4	559
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1344	51	165	723	0				953	0	300
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1524	676	256	1976	0				1065	0	951
Arrive On Green	0.00	0.43	0.43	0.08	0.56	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	3597	1554	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1344	51	165	723	0				953	0	300
Grp Sat Flow(s),veh/h/ln	0	1752	1554	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	23.0	1.3	3.1	7.4	0.0				17.0	0.0	4.8
Cycle Q Clear(g_c), s	0.0	23.0	1.3	3.1	7.4	0.0				17.0	0.0	4.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1524	676	256	1976	0				1065	0	951
V/C Ratio(X)	0.00	0.88	0.08	0.64	0.37	0.00				0.89	0.00	0.32
Avail Cap(c_a), veh/h	0	1850	820	1303	1976	0				1612	0	1439
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.9	10.8	29.4	7.8	0.0				21.8	0.0	17.5
Incr Delay (d2), s/veh	0.0	4.1	0.0	1.0	0.0	0.0				3.3	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
%ile BackOfQ(50%),veh/ln	0.0	11.9	0.5	1.5	3.5	0.0				8.7	0.0	2.1
LnGrp Delay(d),s/veh	0.0	21.0	10.8	30.4	7.9	0.0				25.1	0.0	17.6
LnGrp LOS		C	B	C	A					C		B
Approach Vol, veh/h		1395			888						1253	
Approach Delay, s/veh		20.6			12.1						23.3	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.4	33.0		23.9		41.5		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	5.1	25.0		19.0		9.4		
Green Ext Time (p_c), s	0.1	3.5		0.9		6.8		

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
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)	412	1836	0	0	787	755	84	2	240	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	420	1873	0	0	803	349	87	0	199			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	578	2302	0	0	1469	656	583	0	260			
Arrive On Green	0.17	0.66	0.00	0.00	0.42	0.42	0.17	0.00	0.17			
Sat Flow, veh/h	3408	3597	0	0	3597	1565	3514	0	1568			
Grp Volume(v), veh/h	420	1873	0	0	803	349	87	0	199			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1565	1757	0	1568			
Q Serve(g_s), s	6.0	20.2	0.0	0.0	8.9	8.6	1.1	0.0	6.2			
Cycle Q Clear(g_c), s	6.0	20.2	0.0	0.0	8.9	8.6	1.1	0.0	6.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	578	2302	0	0	1469	656	583	0	260			
V/C Ratio(X)	0.73	0.81	0.00	0.00	0.55	0.53	0.15	0.00	0.76			
Avail Cap(c_a), veh/h	1659	2388	0	0	2388	1066	2052	0	916			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	20.2	6.5	0.0	0.0	11.2	11.2	18.3	0.0	20.5			
Incr Delay (d2), s/veh	0.7	2.0	0.0	0.0	0.1	0.2	0.0	0.0	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			
%ile BackOfQ(50%),veh/ln	2.9	10.0	0.0	0.0	4.3	3.7	0.5	0.0	2.8			
LnGrp Delay(d),s/veh	20.9	8.5	0.0	0.0	11.4	11.4	18.4	0.0	22.2			
LnGrp LOS	C	A			B	B	B		C			
Approach Vol, veh/h		2293			1152			286				
Approach Delay, s/veh		10.8			11.4			21.1				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		38.7			12.2	26.5		12.6
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		22.2			8.0	10.9		8.2
Green Ext Time (p_c), s		7.6			0.7	10.6		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
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.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1449	627	0	1542	0	53
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1479	640	0	1573	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1484	0	2271	744
Stage 1	-	-	-	-	1484	-
Stage 2	-	-	-	-	787	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	225	-	47	305
Stage 1	-	0	-	-	122	-
Stage 2	-	0	-	-	395	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	225	-	47	304
Mov Cap-2 Maneuver	-	-	-	-	47	-
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	304	-	225	-
HCM Lane V/C Ratio	0.178	-	-	-
HCM Control Delay (s)	19.4	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.6	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	477	925	100	82	846	89	408	61	24	122	53	288
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		0.97	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	487	944	96	84	863	85	480	0	0	124	54	38
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	580	1449	147	108	1089	107	612	321	0	159	69	345
Arrive On Green	0.17	0.45	0.45	0.06	0.34	0.34	0.17	0.00	0.00	0.13	0.13	0.13
Sat Flow, veh/h	3408	3203	326	1757	3222	317	3514	1845	0	1242	541	2696
Grp Volume(v), veh/h	487	516	524	84	469	479	480	0	0	178	0	38
Grp Sat Flow(s),veh/h/ln	1704	1752	1776	1757	1752	1787	1757	1845	0	1783	0	1348
Q Serve(g_s), s	11.4	18.8	18.8	3.9	19.9	19.9	10.7	0.0	0.0	8.0	0.0	1.0
Cycle Q Clear(g_c), s	11.4	18.8	18.8	3.9	19.9	19.9	10.7	0.0	0.0	8.0	0.0	1.0
Prop In Lane	1.00		0.18	1.00		0.18	1.00		0.00	0.70		1.00
Lane Grp Cap(c), veh/h	580	793	804	108	592	604	612	321	0	228	0	345
V/C Ratio(X)	0.84	0.65	0.65	0.78	0.79	0.79	0.78	0.00	0.00	0.78	0.00	0.11
Avail Cap(c_a), veh/h	829	793	804	427	746	760	1068	561	0	542	0	819
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.0	17.5	17.5	38.0	24.6	24.6	32.5	0.0	0.0	34.7	0.0	31.7
Incr Delay (d2), s/veh	3.7	1.7	1.7	4.4	4.2	4.1	0.8	0.0	0.0	2.2	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	5.6	9.4	9.5	2.0	10.3	10.5	5.3	0.0	0.0	4.0	0.0	0.4
LnGrp Delay(d),s/veh	36.8	19.2	19.2	42.4	28.8	28.7	33.3	0.0	0.0	36.9	0.0	31.8
LnGrp LOS	D	B	B	D	C	C	C			D		C
Approach Vol, veh/h		1527			1032			480			216	
Approach Delay, s/veh		24.8			29.9			33.3			36.0	
Approach LOS		C			C			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	8.1	41.3		14.5	17.5	31.9		18.3
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	5.9	20.8		10.0	13.4	21.9		12.7
Green Ext Time (p_c), s	0.1	8.8		0.7	0.6	5.9		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
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)	324	500	202	89	462	134	340	272	61	104	266	207
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	327	505	173	90	467	43	343	275	16	105	269	108
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	351	590	201	507	1119	494	362	992	441	130	369	144
Arrive On Green	0.20	0.23	0.23	0.29	0.32	0.32	0.21	0.28	0.28	0.07	0.15	0.15
Sat Flow, veh/h	1757	2556	870	1757	3505	1547	1757	3505	1556	1757	2442	951
Grp Volume(v), veh/h	327	345	333	90	467	43	343	275	16	105	191	186
Grp Sat Flow(s),veh/h/ln	1757	1752	1674	1757	1752	1547	1757	1752	1556	1757	1752	1641
Q Serve(g_s), s	22.2	22.9	23.1	4.7	12.7	2.4	23.4	7.4	0.9	7.1	12.6	13.2
Cycle Q Clear(g_c), s	22.2	22.9	23.1	4.7	12.7	2.4	23.4	7.4	0.9	7.1	12.6	13.2
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		0.58
Lane Grp Cap(c), veh/h	351	404	386	507	1119	494	362	992	441	130	265	248
V/C Ratio(X)	0.93	0.85	0.86	0.18	0.42	0.09	0.95	0.28	0.04	0.81	0.72	0.75
Avail Cap(c_a), veh/h	362	650	621	507	1119	494	362	992	441	362	433	406
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	44.7	44.8	32.4	32.4	28.9	47.5	33.8	31.5	55.3	49.1	49.3
Incr Delay (d2), s/veh	29.3	3.4	4.0	0.8	0.1	0.0	33.5	0.1	0.0	4.4	1.4	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	13.7	11.5	11.1	2.4	6.2	1.0	14.7	3.6	0.4	3.6	6.2	6.1
LnGrp Delay(d),s/veh	77.0	48.1	48.8	33.1	32.5	28.9	81.0	33.9	31.5	59.8	50.4	51.1
LnGrp LOS	E	D	D	C	C	C	F	C	C	E	D	D
Approach Vol, veh/h		1005			600			634			482	
Approach Delay, s/veh		57.7			32.3			59.3			52.7	
Approach LOS		E			C			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	27.2	43.2	12.0	38.8	38.0	32.5	28.0	22.8
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	25.0	35.0	25.0	20.0	35.0	45.0	25.0	30.0
Max Q Clear Time (g_c+I1), s	24.2	14.7	9.1	9.4	6.7	25.1	25.4	15.2
Green Ext Time (p_c), s	0.1	4.9	0.1	2.0	0.1	2.8	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	51.6
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	232	31	172	29	21	29	157	379	10	24	364	128
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		0.97	1.00		1.00	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	255	34	40	32	23	0	173	416	9	26	400	44
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	741	165	194	101	106	0	206	1806	39	65	1525	666
Arrive On Green	0.22	0.22	0.22	0.06	0.06	0.00	0.12	0.52	0.52	0.04	0.44	0.44
Sat Flow, veh/h	3408	760	894	1757	1845	0	1757	3506	76	1757	3505	1530
Grp Volume(v), veh/h	255	0	74	32	23	0	173	208	217	26	400	44
Grp Sat Flow(s),veh/h/ln	1704	0	1654	1757	1845	0	1757	1752	1829	1757	1752	1530
Q Serve(g_s), s	5.8	0.0	3.4	1.6	1.1	0.0	8.9	6.0	6.0	1.3	6.7	1.5
Cycle Q Clear(g_c), s	5.8	0.0	3.4	1.6	1.1	0.0	8.9	6.0	6.0	1.3	6.7	1.5
Prop In Lane	1.00		0.54	1.00		0.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	741	0	360	101	106	0	206	903	942	65	1525	666
V/C Ratio(X)	0.34	0.00	0.21	0.32	0.22	0.00	0.84	0.23	0.23	0.40	0.26	0.07
Avail Cap(c_a), veh/h	741	0	360	382	401	0	382	903	942	287	1525	666
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	0.0	29.5	41.6	41.4	0.0	39.8	12.3	12.3	43.3	16.6	15.1
Incr Delay (d2), s/veh	1.3	0.0	1.3	0.7	0.4	0.0	3.5	0.6	0.6	1.5	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	2.9	0.0	1.7	0.8	0.6	0.0	4.5	3.0	3.2	0.7	3.3	0.7
LnGrp Delay(d),s/veh	31.7	0.0	30.8	42.3	41.7	0.0	43.3	12.9	12.8	44.8	17.0	15.3
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		329			55			598			470	
Approach Delay, s/veh		31.5			42.0			21.7			18.4	
Approach LOS		C			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	6.9	51.6		24.1	14.3	44.2		9.4
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.3	8.0		7.8	10.9	8.7		3.6
Green Ext Time (p_c), s	0.0	11.4		0.6	0.0	11.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	74	0	542	562	5
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	80	0	583	604	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	898	305	610	0	-	0
Stage 1	607	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	277	688	958	-	-	-
Stage 1	504	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	277	688	958	-	-	-
Mov Cap-2 Maneuver	277	-	-	-	-	-
Stage 1	504	-	-	-	-	-
Stage 2	730	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	958	-	688	-	-
HCM Lane V/C Ratio	-	-	0.116	-	-
HCM Control Delay (s)	0	-	10.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	0	7	1	0	14	10	513	2	27	589	14
Conflicting Peds, #/hr	0	0	2	0	0	0	0	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	0	7	1	0	15	11	546	2	29	627	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	987	1262	323	941	1269	275	643	0	0	548	0	0
Stage 1	693	693	-	568	568	-	-	-	-	-	-	-
Stage 2	294	569	-	373	701	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	200	167	670	216	166	719	931	-	-	1011	-	-
Stage 1	397	440	-	472	502	-	-	-	-	-	-	-
Stage 2	687	502	-	617	437	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	189	160	669	207	159	718	931	-	-	1010	-	-
Mov Cap-2 Maneuver	189	160	-	207	159	-	-	-	-	-	-	-
Stage 1	392	427	-	466	496	-	-	-	-	-	-	-
Stage 2	664	496	-	593	424	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.4	10.9	0.2	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	931	-	-	268	207	718	1010	-	-
HCM Lane V/C Ratio	0.011	-	-	0.067	0.005	0.021	0.028	-	-
HCM Control Delay (s)	8.9	-	-	19.4	22.5	10.1	8.7	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0.1	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	70	450	14	58	29	387	220	9	17	138	37
Number	1	6	16	5	2	12	7	4	14	3	8	18
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		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	61	76	66	15	63	14	421	239	9	18	150	18
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	147	395	589	47	230	51	487	1403	53	55	510	60
Arrive On Green	0.08	0.21	0.21	0.03	0.16	0.16	0.28	0.41	0.41	0.03	0.16	0.16
Sat Flow, veh/h	1757	1845	2748	1757	1462	325	1757	3442	129	1757	3153	373
Grp Volume(v), veh/h	61	76	66	15	0	77	421	121	127	18	82	86
Grp Sat Flow(s),veh/h/ln	1757	1845	1374	1757	0	1787	1757	1752	1818	1757	1752	1773
Q Serve(g_s), s	1.4	1.5	0.8	0.4	0.0	1.7	10.0	1.9	1.9	0.4	1.8	1.9
Cycle Q Clear(g_c), s	1.4	1.5	0.8	0.4	0.0	1.7	10.0	1.9	1.9	0.4	1.8	1.9
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.07	1.00		0.21
Lane Grp Cap(c), veh/h	147	395	589	47	0	281	487	714	741	55	283	287
V/C Ratio(X)	0.41	0.19	0.11	0.32	0.00	0.27	0.86	0.17	0.17	0.33	0.29	0.30
Avail Cap(c_a), veh/h	884	1139	1696	683	0	1389	1084	1282	1330	683	1082	1094
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	14.1	13.8	20.9	0.0	16.2	15.0	8.2	8.3	20.7	16.1	16.1
Incr Delay (d2), s/veh	0.7	0.1	0.0	1.4	0.0	0.2	1.8	0.0	0.0	1.3	0.2	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	0.7	0.7	0.3	0.2	0.0	0.8	5.0	0.9	1.0	0.2	0.9	0.9
LnGrp Delay(d),s/veh	19.7	14.2	13.9	22.3	0.0	16.4	16.9	8.3	8.3	22.0	16.3	16.4
LnGrp LOS	B	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		203			92			669			186	
Approach Delay, s/veh		15.7			17.4			13.7			16.9	
Approach LOS		B			B			B			B	

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	6.7	10.9	4.4	21.8	4.2	13.4	15.1	11.1
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	34.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	3.4	3.7	2.4	3.9	2.4	3.5	12.0	3.9
Green Ext Time (p_c), s	0.0	0.7	0.0	1.6	0.0	0.7	0.2	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	104	682	14	7	612	310	9	5	13	341	7	137
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	108	710	14	7	638	0	9	5	0	360	0	24
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	138	1653	33	23	1418	634	28	16	0	504	0	225
Arrive On Green	0.08	0.47	0.47	0.01	0.40	0.00	0.02	0.02	0.00	0.14	0.00	0.14
Sat Flow, veh/h	1757	3514	69	1757	3505	1568	1149	638	0	3514	0	1568
Grp Volume(v), veh/h	108	354	370	7	638	0	14	0	0	360	0	24
Grp Sat Flow(s),veh/h/ln	1757	1752	1831	1757	1752	1568	1787	0	0	1757	0	1568
Q Serve(g_s), s	2.9	6.5	6.5	0.2	6.5	0.0	0.4	0.0	0.0	4.8	0.0	0.6
Cycle Q Clear(g_c), s	2.9	6.5	6.5	0.2	6.5	0.0	0.4	0.0	0.0	4.8	0.0	0.6
Prop In Lane	1.00		0.04	1.00		1.00	0.64		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	824	861	23	1418	634	44	0	0	504	0	225
V/C Ratio(X)	0.78	0.43	0.43	0.31	0.45	0.00	0.32	0.00	0.00	0.71	0.00	0.11
Avail Cap(c_a), veh/h	720	1508	1576	972	2873	1285	696	0	0	1800	0	803
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.1	8.6	8.6	23.9	10.6	0.0	23.4	0.0	0.0	19.9	0.0	18.2
Incr Delay (d2), s/veh	3.6	0.4	0.4	2.8	0.2	0.0	1.5	0.0	0.0	0.7	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	1.5	3.2	3.4	0.1	3.1	0.0	0.2	0.0	0.0	2.3	0.0	0.3
LnGrp Delay(d),s/veh	25.6	9.0	9.0	26.6	10.8	0.0	24.9	0.0	0.0	20.7	0.0	18.3
LnGrp LOS	C	A	A	C	B		C			C		B
Approach Vol, veh/h		832			645			14			384	
Approach Delay, s/veh		11.2			11.0			24.9			20.5	
Approach LOS		B			B			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	4.1	28.0		5.2	7.3	24.7		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	8.5		2.4	4.9	8.5		6.8
Green Ext Time (p_c), s	0.0	11.5		0.0	0.0	11.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
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)	0	949	159	0	744	164	0	0	0	564	0	262
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	989	0	0	775	0				588	0	159
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1440	644	0	1440	644				826	0	380
Arrive On Green	0.00	0.41	0.00	0.00	0.41	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	989	0	0	775	0				588	0	159
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	6.7	0.0	0.0	4.8	0.0				4.6	0.0	2.5
Cycle Q Clear(g_c), s	0.0	6.7	0.0	0.0	4.8	0.0				4.6	0.0	2.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1440	644	0	1440	644				826	0	380
V/C Ratio(X)	0.00	0.69	0.00	0.00	0.54	0.00				0.71	0.00	0.42
Avail Cap(c_a), veh/h	0	6075	2718	0	6075	2718				4135	0	1902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.0	0.0	0.0	6.4	0.0				10.0	0.0	9.2
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0				0.4	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	3.2	0.0	0.0	2.3	0.0				2.2	0.0	1.1
LnGrp Delay(d),s/veh	0.0	7.2	0.0	0.0	6.5	0.0				10.4	0.0	9.5
LnGrp LOS		A			A					B		A
Approach Vol, veh/h		989			775						747	
Approach Delay, s/veh		7.2			6.5						10.2	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		16.9		12.0		16.9		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		8.7		6.6		6.8		
Green Ext Time (p_c), s		3.2		0.5		3.2		

Intersection Summary	
HCM 2010 Ctrl Delay	7.9
HCM 2010 LOS	A

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)	0	1236	277	0	785	671	123	0	147	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1288	0	0	818	0	128	0	84			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	1974	883	0	1974	883	393	0	181			
Arrive On Green	0.00	0.56	0.00	0.00	0.56	0.00	0.12	0.00	0.12			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1288	0	0	818	0	128	0	84			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	7.1	0.0	0.0	3.7	0.0	1.0	0.0	1.4			
Cycle Q Clear(g_c), s	0.0	7.1	0.0	0.0	3.7	0.0	1.0	0.0	1.4			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1974	883	0	1974	883	393	0	181			
V/C Ratio(X)	0.00	0.65	0.00	0.00	0.41	0.00	0.33	0.00	0.46			
Avail Cap(c_a), veh/h	0	6258	2800	0	6258	2800	3043	0	1400			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.2	0.0	0.0	3.5	0.0	11.4	0.0	11.6			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	3.3	0.0	0.0	1.7	0.0	0.5	0.0	0.6			
LnGrp Delay(d),s/veh	0.0	4.4	0.0	0.0	3.5	0.0	11.6	0.0	12.3			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1288			818			212				
Approach Delay, s/veh		4.4			3.5			11.8				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		20.8				20.8		7.2
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		9.1				5.7		3.4
Green Ext Time (p_c), s		6.7				6.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.8
HCM 2010 LOS	A

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)	456	654	256	86	743	158	231	148	72	150	96	464
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		0.97	1.00		1.00	1.00		0.97	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	475	681	146	90	774	38	241	154	61	128	139	341
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	602	2046	883	134	1560	485	577	211	84	249	262	999
Arrive On Green	0.18	0.41	0.41	0.08	0.31	0.31	0.17	0.17	0.17	0.14	0.14	0.14
Sat Flow, veh/h	3408	5036	1520	1757	5036	1566	3408	1247	494	1757	1845	3136
Grp Volume(v), veh/h	475	681	146	90	774	38	241	0	215	128	139	341
Grp Sat Flow(s),veh/h/ln	1704	1679	1520	1757	1679	1566	1704	0	1740	1757	1845	1568
Q Serve(g_s), s	10.5	7.3	3.5	3.9	9.9	1.3	5.0	0.0	9.2	5.3	5.5	6.5
Cycle Q Clear(g_c), s	10.5	7.3	3.5	3.9	9.9	1.3	5.0	0.0	9.2	5.3	5.5	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	602	2046	883	134	1560	485	577	0	295	249	262	999
V/C Ratio(X)	0.79	0.33	0.17	0.67	0.50	0.08	0.42	0.00	0.73	0.51	0.53	0.34
Avail Cap(c_a), veh/h	1083	2561	1038	558	2561	797	1300	0	664	670	704	1750
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	16.0	7.8	35.4	22.1	19.2	29.2	0.0	31.0	31.2	31.3	20.5
Incr Delay (d2), s/veh	2.3	0.1	0.1	5.6	0.2	0.1	0.5	0.0	3.5	1.6	1.7	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	5.1	3.4	2.1	2.1	4.6	0.6	2.4	0.0	4.7	2.7	2.9	2.9
LnGrp Delay(d),s/veh	33.3	16.1	7.9	41.0	22.4	19.3	29.7	0.0	34.4	32.9	33.0	20.7
LnGrp LOS	C	B	A	D	C	B	C		C	C	C	C
Approach Vol, veh/h		1302			902			456			608	
Approach Delay, s/veh		21.5			24.1			31.9			26.1	
Approach LOS		C			C			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	10.0	36.8		14.9	17.6	29.2		17.0
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.9	9.3		8.5	12.5	11.9		11.2
Green Ext Time (p_c), s	0.2	13.0		2.6	1.4	12.5		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.5
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)	20	447	78	121	482	54	49	5	71	49	7	21
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		0.98	1.00		0.97	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	25	566	19	153	610	62	66	0	3	69	0	0
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	2	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	1044	458	300	1142	116	481	0	348	479	251	0
Arrive On Green	0.03	0.30	0.30	0.09	0.36	0.36	0.14	0.00	0.14	0.14	0.00	0.00
Sat Flow, veh/h	1757	3505	1539	3408	3203	325	3514	0	1534	3514	1845	0
Grp Volume(v), veh/h	25	566	19	153	333	339	66	0	3	69	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1539	1704	1752	1776	1757	0	1534	1757	1845	0
Q Serve(g_s), s	0.7	6.8	0.4	2.1	7.6	7.6	0.8	0.0	0.1	0.9	0.0	0.0
Cycle Q Clear(g_c), s	0.7	6.8	0.4	2.1	7.6	7.6	0.8	0.0	0.1	0.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	52	1044	458	300	625	633	481	0	348	479	251	0
V/C Ratio(X)	0.49	0.54	0.04	0.51	0.53	0.54	0.14	0.00	0.01	0.14	0.00	0.00
Avail Cap(c_a), veh/h	701	2796	1228	2039	1398	1417	2103	0	1056	1752	920	0
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.0	14.7	12.5	21.8	12.8	12.8	19.0	0.0	15.1	19.1	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.2	0.0	0.5	0.3	0.3	0.0	0.0	0.0	0.1	0.0	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	0.4	3.2	0.2	1.0	3.7	3.7	0.4	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	26.6	14.9	12.5	22.3	13.1	13.1	19.1	0.0	15.1	19.1	0.0	0.0
LnGrp LOS	C	B	B	C	B	B	B		B	B		
Approach Vol, veh/h		610			825			69			69	
Approach Delay, s/veh		15.3			14.8			18.9			19.1	
Approach LOS		B			B			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	7.4	19.5		11.3	4.5	22.5		11.9
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	4.1	8.8		2.9	2.7	9.6		2.8
Green Ext Time (p_c), s	0.3	5.8		0.1	0.0	5.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	514	53	104	336	0	0	0	0	574	0	321
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	651	16	132	425	0				727	0	69
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79				0.79	0.79	0.79
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1057	473	240	1667	0				935	0	835
Arrive On Green	0.00	0.30	0.30	0.07	0.48	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3597	1568	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	651	16	132	425	0				727	0	69
Grp Sat Flow(s),veh/h/ln	0	1752	1568	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	5.4	0.2	1.3	2.4	0.0				6.5	0.0	0.6
Cycle Q Clear(g_c), s	0.0	5.4	0.2	1.3	2.4	0.0				6.5	0.0	0.6
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1057	473	240	1667	0				935	0	835
V/C Ratio(X)	0.00	0.62	0.03	0.55	0.25	0.00				0.78	0.00	0.08
Avail Cap(c_a), veh/h	0	3586	1604	2527	3586	0				3126	0	2790
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.1	8.3	15.2	5.3	0.0				11.4	0.0	9.3
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.7	0.0	0.0				0.5	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	2.6	0.1	0.6	1.2	0.0				3.2	0.0	0.2
LnGrp Delay(d),s/veh	0.0	10.3	8.3	15.9	5.3	0.0				12.0	0.0	9.3
LnGrp LOS		B	A	B	A					B		A
Approach Vol, veh/h		667			557						796	
Approach Delay, s/veh		10.3			7.8						11.7	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	5.9	14.8		13.1		20.6		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	3.3	7.4		8.5		4.4		
Green Ext Time (p_c), s	0.1	2.8		0.5		2.8		

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
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)	170	918	0	0	398	445	42	0	119	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	215	1162	0	0	504	79	53	0	55			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	399	2129	0	0	1275	571	222	0	99			
Arrive On Green	0.12	0.61	0.00	0.00	0.36	0.36	0.06	0.00	0.06			
Sat Flow, veh/h	3408	3597	0	0	3597	1568	3514	0	1568			
Grp Volume(v), veh/h	215	1162	0	0	504	79	53	0	55			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	1.6	5.4	0.0	0.0	3.0	0.9	0.4	0.0	0.9			
Cycle Q Clear(g_c), s	1.6	5.4	0.0	0.0	3.0	0.9	0.4	0.0	0.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	399	2129	0	0	1275	571	222	0	99			
V/C Ratio(X)	0.54	0.55	0.00	0.00	0.40	0.14	0.24	0.00	0.56			
Avail Cap(c_a), veh/h	3083	4439	0	0	4439	1986	3815	0	1702			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.5	3.2	0.0	0.0	6.5	5.9	12.3	0.0	12.6			
Incr Delay (d2), s/veh	0.4	0.1	0.0	0.0	0.1	0.0	0.2	0.0	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			
%ile BackOfQ(50%),veh/ln	0.8	2.4	0.0	0.0	1.4	0.4	0.2	0.0	0.4			
LnGrp Delay(d),s/veh	11.9	3.3	0.0	0.0	6.6	5.9	12.5	0.0	14.4			
LnGrp LOS	B	A			A	A	B		B			
Approach Vol, veh/h		1377			583			108				
Approach Delay, s/veh		4.6			6.5			13.5				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		21.8			6.7	15.1		5.8
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		7.4			3.6	5.0		2.9
Green Ext Time (p_c), s		5.1			0.4	5.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
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.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	732	305	0	843	0	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	963	401	0	1109	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	964	0	1519	483
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	555	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	404	-	134	451
Stage 1	-	0	-	-	259	-
Stage 2	-	0	-	-	519	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	404	-	134	451
Mov Cap-2 Maneuver	-	-	-	-	134	-
Stage 1	-	-	-	-	259	-
Stage 2	-	-	-	-	519	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	451	-	404	-
HCM Lane V/C Ratio	0.041	-	-	-
HCM Control Delay (s)	13.3	-	0	-
HCM Lane LOS	B	-	A	-
HCM 95th %tile Q(veh)	0.1	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	669	34	27	732	27	82	7	8	20	6	32
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		0.99	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	52	847	40	34	927	31	113	0	0	25	8	0
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	180	1706	81	67	1644	55	328	172	0	50	16	103
Arrive On Green	0.05	0.50	0.50	0.04	0.48	0.48	0.09	0.00	0.00	0.04	0.04	0.00
Sat Flow, veh/h	3408	3407	161	1757	3459	116	3514	1845	0	1346	431	2760
Grp Volume(v), veh/h	52	436	451	34	470	488	113	0	0	33	0	0
Grp Sat Flow(s),veh/h/ln	1704	1752	1816	1757	1752	1822	1757	1845	0	1777	0	1380
Q Serve(g_s), s	0.7	7.6	7.6	0.9	8.8	8.8	1.4	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	0.7	7.6	7.6	0.9	8.8	8.8	1.4	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.06	1.00		0.00	0.76		1.00
Lane Grp Cap(c), veh/h	180	877	909	67	833	866	328	172	0	67	0	103
V/C Ratio(X)	0.29	0.50	0.50	0.50	0.56	0.56	0.34	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1490	1341	1389	768	1341	1394	1920	1008	0	971	0	1508
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.8	7.6	7.6	21.6	8.6	8.6	19.4	0.0	0.0	21.6	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.3	0.3	2.2	0.4	0.4	0.2	0.0	0.0	2.1	0.0	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	0.3	3.7	3.8	0.5	4.3	4.4	0.7	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	21.2	7.9	7.9	23.7	9.1	9.0	19.7	0.0	0.0	23.7	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	B			C		
Approach Vol, veh/h		939			992			113			33	
Approach Delay, s/veh		8.6			9.5			19.7			23.7	
Approach LOS		A			A			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	4.8	27.0		5.7	5.9	25.8		8.3
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	2.9	9.6		2.8	2.7	10.8		3.4
Green Ext Time (p_c), s	0.0	11.2		0.1	0.1	11.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
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)	144	300	234	71	362	126	223	118	33	96	222	201
Number	1	6	16	5	2	12	7	4	14	3	8	18
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		0.99	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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	182	380	64	90	458	20	282	149	3	122	281	0
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	219	944	158	291	1312	586	322	793	350	154	457	0
Arrive On Green	0.12	0.31	0.31	0.17	0.37	0.37	0.18	0.23	0.23	0.09	0.13	0.00
Sat Flow, veh/h	1757	3005	502	1757	3505	1564	1757	3505	1549	1757	3597	0
Grp Volume(v), veh/h	182	220	224	90	458	20	282	149	3	122	281	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1754	1757	1752	1564	1757	1752	1549	1757	1752	0
Q Serve(g_s), s	8.1	7.9	8.0	3.6	7.5	0.6	12.5	2.7	0.1	5.4	6.1	0.0
Cycle Q Clear(g_c), s	8.1	7.9	8.0	3.6	7.5	0.6	12.5	2.7	0.1	5.4	6.1	0.0
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	219	551	551	291	1312	586	322	793	350	154	457	0
V/C Ratio(X)	0.83	0.40	0.41	0.31	0.35	0.03	0.87	0.19	0.01	0.79	0.62	0.00
Avail Cap(c_a), veh/h	253	551	551	291	1312	586	439	1051	465	275	745	0
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)	0.90	0.90	0.90	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.2	21.5	21.6	29.3	18.0	15.9	31.8	25.0	9.8	35.8	32.9	0.0
Incr Delay (d2), s/veh	14.9	0.2	0.2	0.2	0.7	0.1	11.1	0.0	0.0	3.5	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	4.8	3.8	3.9	1.8	3.8	0.3	7.0	1.3	0.0	2.8	3.0	0.0
LnGrp Delay(d),s/veh	49.1	21.7	21.7	29.6	18.7	16.0	42.8	25.1	9.8	39.2	33.4	0.0
LnGrp LOS	D	C	C	C	B	B	D	C	A	D	C	
Approach Vol, veh/h		626			568			434			403	
Approach Delay, s/veh		29.7			20.4			36.5			35.2	
Approach LOS		C			C			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	13.0	34.4	10.0	22.6	17.8	29.6	17.7	14.9
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	4.5	* 4.5	3.0	4.5
Max Green Setting (Gmax), s	10.5	16.5	12.5	24.0	8.5	* 19	20.0	17.0
Max Q Clear Time (g_c+I1), s	10.1	9.5	7.4	4.7	5.6	10.0	14.5	8.1
Green Ext Time (p_c), s	0.0	1.3	0.1	1.7	0.7	1.1	0.2	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* 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)	117	21	139	21	9	33	65	212	14	28	395	60
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		0.99	1.00		1.00	1.00		0.98	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	144	26	24	26	11	0	80	262	12	35	488	18
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	784	202	187	103	108	0	121	1646	75	81	1612	697
Arrive On Green	0.23	0.23	0.23	0.06	0.06	0.00	0.07	0.48	0.48	0.05	0.46	0.46
Sat Flow, veh/h	3408	879	812	1757	1845	0	1757	3410	155	1757	3505	1515
Grp Volume(v), veh/h	144	0	50	26	11	0	80	134	140	35	488	18
Grp Sat Flow(s),veh/h/ln	1704	0	1691	1757	1845	0	1757	1752	1813	1757	1752	1515
Q Serve(g_s), s	3.0	0.0	2.0	1.2	0.5	0.0	3.9	3.7	3.8	1.7	7.6	0.6
Cycle Q Clear(g_c), s	3.0	0.0	2.0	1.2	0.5	0.0	3.9	3.7	3.8	1.7	7.6	0.6
Prop In Lane	1.00		0.48	1.00		0.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	784	0	389	103	108	0	121	846	875	81	1612	697
V/C Ratio(X)	0.18	0.00	0.13	0.25	0.10	0.00	0.66	0.16	0.16	0.43	0.30	0.03
Avail Cap(c_a), veh/h	784	0	389	404	424	0	404	846	875	303	1612	697
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	26.6	39.1	38.8	0.0	39.5	12.6	12.6	40.4	14.7	12.8
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.5	0.2	0.0	2.3	0.4	0.4	1.4	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	1.4	0.0	1.0	0.6	0.3	0.0	1.9	1.9	2.0	0.8	3.8	0.2
LnGrp Delay(d),s/veh	27.4	0.0	27.3	39.6	38.9	0.0	41.8	13.0	13.0	41.7	15.2	12.9
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		194			37			354			541	
Approach Delay, s/veh		27.4			39.4			19.5			16.9	
Approach LOS		C			D			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	7.5	46.2		24.1	9.5	44.2		9.2
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.7	5.8		5.0	5.9	9.6		3.2
Green Ext Time (p_c), s	0.0	10.6		0.4	0.0	10.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	43	0	300	491	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	54	0	375	614	72

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	838	343	686	0	-	0
Stage 1	650	-	-	-	-	-
Stage 2	188	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	303	650	897	-	-	-
Stage 1	479	-	-	-	-	-
Stage 2	822	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	303	650	897	-	-	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	479	-	-	-	-	-
Stage 2	822	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	897	-	650	-	-
HCM Lane V/C Ratio	-	-	0.083	-	-
HCM Control Delay (s)	0	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	4	47	0	5	25	68	223	21	79	408	53
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		0.99	1.00		0.96
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	71	5	0	0	6	0	86	282	13	100	516	45
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	330	461	0	5	114	0	192	1127	52	210	1106	96
Arrive On Green	0.10	0.25	0.00	0.00	0.06	0.00	0.11	0.33	0.33	0.12	0.34	0.34
Sat Flow, veh/h	3408	1845	0	1757	1845	0	1757	3411	157	1757	3250	282
Grp Volume(v), veh/h	71	5	0	0	6	0	86	144	151	100	277	284
Grp Sat Flow(s),veh/h/ln	1704	1845	0	1757	1845	0	1757	1752	1816	1757	1752	1780
Q Serve(g_s), s	0.7	0.1	0.0	0.0	0.1	0.0	1.8	2.3	2.3	2.0	4.8	4.8
Cycle Q Clear(g_c), s	0.7	0.1	0.0	0.0	0.1	0.0	1.8	2.3	2.3	2.0	4.8	4.8
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.09	1.00		0.16
Lane Grp Cap(c), veh/h	330	461	0	5	114	0	192	579	600	210	597	606
V/C Ratio(X)	0.22	0.01	0.00	0.00	0.05	0.00	0.45	0.25	0.25	0.48	0.46	0.47
Avail Cap(c_a), veh/h	1022	1492	0	527	1492	0	527	1646	1705	527	1646	1671
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.0	10.8	0.0	0.0	16.9	0.0	16.0	9.4	9.4	15.8	9.9	9.9
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.2	0.0	1.6	0.2	0.2	1.7	0.6	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	0.4	0.0	0.0	0.0	0.1	0.0	0.9	1.1	1.2	1.1	2.3	2.4
LnGrp Delay(d),s/veh	16.3	10.8	0.0	0.0	17.1	0.0	17.6	9.6	9.6	17.4	10.5	10.5
LnGrp LOS	B	B			B		B	A	A	B	B	B
Approach Vol, veh/h		76			6			381			661	
Approach Delay, s/veh		15.9			17.1			11.4			11.5	
Approach LOS		B			B			B			B	

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	8.1	16.7	0.0	13.6	7.7	17.1	7.2	6.4
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	11.5	36.0	11.5	31.0	11.5	36.0	11.5	31.0
Max Q Clear Time (g_c+I1), s	4.0	4.3	0.0	2.1	3.8	6.8	2.7	2.1
Green Ext Time (p_c), s	0.1	5.6	0.0	0.0	0.1	5.5	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	35	245	19	61	12	263	109	34	16	129	54
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	23	42	13	23	73	7	313	130	17	19	154	19
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	70	302	445	70	271	26	394	1219	156	59	630	76
Arrive On Green	0.04	0.16	0.16	0.04	0.16	0.16	0.22	0.39	0.39	0.03	0.20	0.20
Sat Flow, veh/h	1757	1845	2719	1757	1657	159	1757	3113	400	1757	3139	381
Grp Volume(v), veh/h	23	42	13	23	0	80	313	72	75	19	85	88
Grp Sat Flow(s),veh/h/ln	1757	1845	1359	1757	0	1815	1757	1752	1760	1757	1752	1768
Q Serve(g_s), s	0.5	0.7	0.2	0.5	0.0	1.5	6.3	1.0	1.0	0.4	1.5	1.6
Cycle Q Clear(g_c), s	0.5	0.7	0.2	0.5	0.0	1.5	6.3	1.0	1.0	0.4	1.5	1.6
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.23	1.00		0.22
Lane Grp Cap(c), veh/h	70	302	445	70	0	297	394	686	689	59	352	355
V/C Ratio(X)	0.33	0.14	0.03	0.33	0.00	0.27	0.79	0.11	0.11	0.32	0.24	0.25
Avail Cap(c_a), veh/h	1026	1322	1948	793	0	1156	1259	1488	1495	793	1256	1267
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.6	13.5	13.2	17.6	0.0	13.8	13.8	7.3	7.3	17.8	12.7	12.7
Incr Delay (d2), s/veh	1.0	0.1	0.0	1.0	0.0	0.2	1.4	0.0	0.0	1.2	0.1	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	0.2	0.4	0.1	0.2	0.0	0.7	3.2	0.5	0.5	0.2	0.7	0.8
LnGrp Delay(d),s/veh	18.6	13.6	13.2	18.6	0.0	14.0	15.2	7.3	7.3	19.0	12.8	12.8
LnGrp LOS	B	B	B	B		B	B	A	A	B	B	B
Approach Vol, veh/h		78			103			460			192	
Approach Delay, s/veh		15.0			15.0			12.7			13.4	
Approach LOS		B			B			B			B	

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	4.5	10.2	4.3	18.8	4.5	10.2	11.5	11.6
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.5	3.5	2.4	3.0	2.5	2.7	8.3	3.6
Green Ext Time (p_c), s	0.0	0.4	0.0	1.2	0.0	0.4	0.1	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	721	2	6	931	142	3	1	4	95	3	35
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	38	858	2	7	1108	0	4	1	0	116	0	6
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	1.00
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	70	2000	5	23	1861	832	13	3	0	431	0	192
Arrive On Green	0.04	0.56	0.56	0.01	0.53	0.00	0.01	0.01	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1757	3587	8	1757	3505	1568	1419	355	0	3514	0	1568
Grp Volume(v), veh/h	38	419	441	7	1108	0	5	0	0	116	0	6
Grp Sat Flow(s),veh/h/ln	1757	1752	1843	1757	1752	1568	1774	0	0	1757	0	1568
Q Serve(g_s), s	1.2	7.9	7.9	0.2	12.4	0.0	0.2	0.0	0.0	1.7	0.0	0.2
Cycle Q Clear(g_c), s	1.2	7.9	7.9	0.2	12.4	0.0	0.2	0.0	0.0	1.7	0.0	0.2
Prop In Lane	1.00		0.00	1.00		1.00	0.80		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	977	1028	23	1861	832	17	0	0	431	0	192
V/C Ratio(X)	0.55	0.43	0.43	0.31	0.60	0.00	0.30	0.00	0.00	0.27	0.00	0.03
Avail Cap(c_a), veh/h	615	1288	1355	830	2454	1098	590	0	0	1538	0	686
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.9	7.3	7.3	27.9	9.2	0.0	28.1	0.0	0.0	22.7	0.0	22.1
Incr Delay (d2), s/veh	2.5	0.4	0.3	2.8	0.3	0.0	3.7	0.0	0.0	0.1	0.0	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	0.6	3.8	4.0	0.1	5.9	0.0	0.1	0.0	0.0	0.8	0.0	0.1
LnGrp Delay(d),s/veh	29.4	7.7	7.7	30.8	9.5	0.0	31.8	0.0	0.0	22.9	0.0	22.1
LnGrp LOS	C	A	A	C	A		C			C		C
Approach Vol, veh/h		898			1115			5			122	
Approach Delay, s/veh		8.6			9.6			31.8			22.8	
Approach LOS		A			A			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	4.2	36.9		4.5	5.8	35.3		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	9.9		2.2	3.2	14.4		3.7
Green Ext Time (p_c), s	0.0	18.3		0.0	0.0	15.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.0
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)	0	719	164	0	742	200	0	0	0	854	0	520
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	856	0	0	883	0				1017	0	546
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1225	548	0	1225	548				1356	0	624
Arrive On Green	0.00	0.35	0.00	0.00	0.35	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	856	0	0	883	0				1017	0	546
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	8.3	0.0	0.0	8.7	0.0				10.1	0.0	12.7
Cycle Q Clear(g_c), s	0.0	8.3	0.0	0.0	8.7	0.0				10.1	0.0	12.7
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1225	548	0	1225	548				1356	0	624
V/C Ratio(X)	0.00	0.70	0.00	0.00	0.72	0.00				0.75	0.00	0.88
Avail Cap(c_a), veh/h	0	4426	1980	0	4426	1980				3013	0	1386
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.1	0.0	0.0	11.2	0.0				10.2	0.0	11.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0				0.3	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	4.0	0.0	0.0	4.2	0.0				4.7	0.0	5.7
LnGrp Delay(d),s/veh	0.0	11.4	0.0	0.0	11.5	0.0				10.6	0.0	12.6
LnGrp LOS		B			B					B		B
Approach Vol, veh/h		856			883						1563	
Approach Delay, s/veh		11.4			11.5						11.3	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		18.8		20.8		18.8		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		10.3		14.7		10.7		
Green Ext Time (p_c), s		3.1		1.0		3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

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)	0	1298	275	0	798	961	144	0	207	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1545	0	0	950	0	171	0	185			
Adj No. of Lanes	0	2	1	0	2	1	2	0	1			
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2102	941	0	2102	941	563	0	259			
Arrive On Green	0.00	0.60	0.00	0.00	0.60	0.00	0.17	0.00	0.17			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1545	0	0	950	0	171	0	185			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	12.1	0.0	0.0	5.7	0.0	1.7	0.0	4.3			
Cycle Q Clear(g_c), s	0.0	12.1	0.0	0.0	5.7	0.0	1.7	0.0	4.3			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2102	941	0	2102	941	563	0	259			
V/C Ratio(X)	0.00	0.73	0.00	0.00	0.45	0.00	0.30	0.00	0.71			
Avail Cap(c_a), veh/h	0	4576	2047	0	4576	2047	2225	0	1024			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	5.5	0.0	0.0	4.2	0.0	14.1	0.0	15.1			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	5.6	0.0	0.0	2.7	0.0	0.8	0.0	1.9			
LnGrp Delay(d),s/veh	0.0	5.7	0.0	0.0	4.3	0.0	14.2	0.0	16.5			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1545			950			356				
Approach Delay, s/veh		5.7			4.3			15.4				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		28.0				28.0		10.3
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		14.1				7.7		6.3
Green Ext Time (p_c), s		8.9				9.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.4
HCM 2010 LOS	A

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)	418	738	349	69	1199	87	275	79	50	71	67	283
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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	498	879	240	82	1427	58	327	94	39	82	83	248
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	613	2527	1002	122	1990	619	467	170	70	183	192	891
Arrive On Green	0.18	0.50	0.50	0.07	0.40	0.40	0.14	0.14	0.14	0.10	0.10	0.10
Sat Flow, veh/h	3408	5036	1568	1757	5036	1566	3408	1238	514	1757	1845	3136
Grp Volume(v), veh/h	498	879	240	82	1427	58	327	0	133	82	83	248
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1757	1679	1566	1704	0	1751	1757	1845	1568
Q Serve(g_s), s	12.2	9.1	5.6	3.9	20.7	2.0	7.9	0.0	6.1	3.8	3.7	5.3
Cycle Q Clear(g_c), s	12.2	9.1	5.6	3.9	20.7	2.0	7.9	0.0	6.1	3.8	3.7	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	613	2527	1002	122	1990	619	467	0	240	183	192	891
V/C Ratio(X)	0.81	0.35	0.24	0.67	0.72	0.09	0.70	0.00	0.55	0.45	0.43	0.28
Avail Cap(c_a), veh/h	984	2527	1002	507	2326	723	1181	0	607	609	639	1650
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	13.0	6.7	39.3	22.1	16.4	35.7	0.0	34.9	36.4	36.4	24.1
Incr Delay (d2), s/veh	2.8	0.1	0.1	6.2	0.9	0.1	1.9	0.0	2.0	1.7	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	6.0	4.3	3.4	2.1	9.7	0.9	3.8	0.0	3.1	1.9	1.9	2.3
LnGrp Delay(d),s/veh	36.9	13.1	6.8	45.5	23.0	16.5	37.6	0.0	36.9	38.1	37.9	24.3
LnGrp LOS	D	B	A	D	C	B	D		D	D	D	C
Approach Vol, veh/h		1617			1567			460			413	
Approach Delay, s/veh		19.5			23.9			37.4			29.8	
Approach LOS		B			C			D			C	

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	48.3		12.7	19.3	39.0		15.6
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.9	11.1		7.3	14.2	22.7		9.9
Green Ext Time (p_c), s	0.2	21.1		1.7	1.4	11.5		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	24.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	903	255	435	753	62	212	12	399	32	11	15
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		0.98	1.00		0.97	1.00		0.97	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	931	178	448	776	61	228	0	183	23	25	2
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	1296	570	557	1656	130	502	0	475	173	166	13
Arrive On Green	0.03	0.37	0.37	0.16	0.50	0.50	0.14	0.00	0.14	0.10	0.10	0.10
Sat Flow, veh/h	1757	3505	1541	3408	3285	258	3514	0	1528	1757	1682	135
Grp Volume(v), veh/h	28	931	178	448	414	423	228	0	183	23	0	27
Grp Sat Flow(s),veh/h/ln	1757	1752	1541	1704	1752	1791	1757	0	1528	1757	0	1817
Q Serve(g_s), s	1.2	17.3	6.2	9.6	11.6	11.6	4.5	0.0	7.2	0.9	0.0	1.0
Cycle Q Clear(g_c), s	1.2	17.3	6.2	9.6	11.6	11.6	4.5	0.0	7.2	0.9	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.14	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	52	1296	570	557	883	903	502	0	475	173	0	179
V/C Ratio(X)	0.54	0.72	0.31	0.80	0.47	0.47	0.45	0.00	0.39	0.13	0.00	0.15
Avail Cap(c_a), veh/h	463	1847	812	1347	924	944	1389	0	860	579	0	598
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.3	20.5	17.0	30.6	12.2	12.2	29.8	0.0	20.7	31.2	0.0	31.3
Incr Delay (d2), s/veh	3.3	0.3	0.1	1.0	0.1	0.1	0.2	0.0	0.2	0.1	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	0.6	8.3	2.7	4.6	5.7	5.8	2.2	0.0	3.1	0.4	0.0	0.5
LnGrp Delay(d),s/veh	39.6	20.8	17.2	31.6	12.4	12.4	30.1	0.0	20.9	31.4	0.0	31.4
LnGrp LOS	D	C	B	C	B	B	C		C	C		C
Approach Vol, veh/h		1137			1285			411			50	
Approach Delay, s/veh		20.7			19.1			26.0			31.4	
Approach LOS		C			B			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	15.4	32.7		12.0	5.2	42.8		15.8
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	11.6	19.3		3.0	3.2	13.6		9.2
Green Ext Time (p_c), s	0.8	8.8		0.1	0.0	9.6		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.9
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1236	98	163	706	0	0	0	0	918	5	544
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1274	71	168	728	0				950	0	286
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1500	671	262	1962	0				1065	0	951
Arrive On Green	0.00	0.43	0.43	0.08	0.56	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	3597	1567	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1274	71	168	728	0				950	0	286
Grp Sat Flow(s),veh/h/ln	0	1752	1567	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	20.8	1.7	3.0	7.3	0.0				16.4	0.0	4.4
Cycle Q Clear(g_c), s	0.0	20.8	1.7	3.0	7.3	0.0				16.4	0.0	4.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1500	671	262	1962	0				1065	0	951
V/C Ratio(X)	0.00	0.85	0.11	0.64	0.37	0.00				0.89	0.00	0.30
Avail Cap(c_a), veh/h	0	1904	851	1341	1962	0				1659	0	1481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.3	10.9	28.5	7.8	0.0				21.1	0.0	17.0
Incr Delay (d2), s/veh	0.0	2.6	0.0	1.0	0.0	0.0				2.8	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
%ile BackOfQ(50%),veh/ln	0.0	10.4	0.8	1.5	3.6	0.0				8.3	0.0	1.9
LnGrp Delay(d),s/veh	0.0	18.9	10.9	29.5	7.8	0.0				23.9	0.0	17.0
LnGrp LOS		B	B	C	A					C		B
Approach Vol, veh/h		1345			896						1236	
Approach Delay, s/veh		18.5			11.9						22.3	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.4	31.8		23.4		40.2		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	5.0	22.8		18.4		9.3		
Green Ext Time (p_c), s	0.1	4.4		0.9		6.5		

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
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)	455	1699	0	0	774	850	98	3	245	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	469	1752	0	0	798	492	103	0	206			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	619	2332	0	0	1473	656	595	0	265			
Arrive On Green	0.18	0.67	0.00	0.00	0.42	0.42	0.17	0.00	0.17			
Sat Flow, veh/h	3408	3597	0	0	3597	1562	3514	0	1568			
Grp Volume(v), veh/h	469	1752	0	0	798	492	103	0	206			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1562	1757	0	1568			
Q Serve(g_s), s	7.2	18.4	0.0	0.0	9.4	14.7	1.4	0.0	6.9			
Cycle Q Clear(g_c), s	7.2	18.4	0.0	0.0	9.4	14.7	1.4	0.0	6.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	619	2332	0	0	1473	656	595	0	265			
V/C Ratio(X)	0.76	0.75	0.00	0.00	0.54	0.75	0.17	0.00	0.78			
Avail Cap(c_a), veh/h	1548	2332	0	0	2229	993	1915	0	855			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	21.4	6.2	0.0	0.0	12.0	13.5	19.6	0.0	21.9			
Incr Delay (d2), s/veh	0.7	1.2	0.0	0.0	0.1	0.7	0.1	0.0	1.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.4	8.9	0.0	0.0	4.6	6.4	0.7	0.0	3.1			
LnGrp Delay(d),s/veh	22.1	7.4	0.0	0.0	12.1	14.2	19.6	0.0	23.7			
LnGrp LOS	C	A			B	B	B		C			
Approach Vol, veh/h		2221			1290			309				
Approach Delay, s/veh		10.5			12.9			22.4				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		41.6			13.5	28.1		13.4
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		20.4			9.2	16.7		8.9
Green Ext Time (p_c), s		7.9			0.8	6.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
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.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1367	577	0	1624	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1409	595	0	1674	0	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1409	0	2246	705
Stage 1	-	-	-	-	1409	-
Stage 2	-	-	-	-	837	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	245	-	49	323
Stage 1	-	0	-	-	136	-
Stage 2	-	0	-	-	373	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	245	-	49	323
Mov Cap-2 Maneuver	-	-	-	-	49	-
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	373	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	323	-	245	-
HCM Lane V/C Ratio	0.105	-	-	-
HCM Control Delay (s)	17.5	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.4	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	324	1001	74	47	1088	62	284	40	22	100	24	252
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		0.98	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	334	1032	73	48	1122	61	339	0	0	103	25	25
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	439	1679	119	75	1398	76	507	266	0	142	34	267
Arrive On Green	0.13	0.51	0.51	0.04	0.41	0.41	0.14	0.00	0.00	0.10	0.10	0.10
Sat Flow, veh/h	3408	3315	234	1757	3378	184	3514	1845	0	1427	346	2694
Grp Volume(v), veh/h	334	546	559	48	582	601	339	0	0	128	0	25
Grp Sat Flow(s),veh/h/ln	1704	1752	1796	1757	1752	1809	1757	1845	0	1773	0	1347
Q Serve(g_s), s	6.9	16.2	16.3	2.0	21.2	21.3	6.7	0.0	0.0	5.1	0.0	0.6
Cycle Q Clear(g_c), s	6.9	16.2	16.3	2.0	21.2	21.3	6.7	0.0	0.0	5.1	0.0	0.6
Prop In Lane	1.00		0.13	1.00		0.10	1.00		0.00	0.80		1.00
Lane Grp Cap(c), veh/h	439	888	910	75	725	748	507	266	0	176	0	267
V/C Ratio(X)	0.76	0.61	0.61	0.64	0.80	0.80	0.67	0.00	0.00	0.73	0.00	0.09
Avail Cap(c_a), veh/h	936	888	910	482	842	869	1206	633	0	609	0	925
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.7	12.9	12.9	34.3	18.7	18.8	29.5	0.0	0.0	31.9	0.0	29.8
Incr Delay (d2), s/veh	1.0	1.1	1.1	3.4	4.6	4.5	0.6	0.0	0.0	2.2	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	3.3	8.0	8.2	1.0	11.1	11.5	3.2	0.0	0.0	2.6	0.0	0.2
LnGrp Delay(d),s/veh	31.7	14.0	14.0	37.7	23.4	23.3	30.1	0.0	0.0	34.0	0.0	29.9
LnGrp LOS	C	B	B	D	C	C	C			C		C
Approach Vol, veh/h		1439			1231			339			153	
Approach Delay, s/veh		18.1			23.9			30.1			33.3	
Approach LOS		B			C			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	6.1	41.0		11.2	12.9	34.2		14.5
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	4.0	18.3		7.1	8.9	23.3		8.7
Green Ext Time (p_c), s	0.0	11.3		0.5	0.5	6.9		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.4
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)	315	546	265	110	446	130	589	366	108	103	278	174
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		1.00	1.00		0.94
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	335	581	223	117	474	17	627	389	39	110	296	87
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	333	701	268	172	678	301	594	1401	625	137	371	106
Arrive On Green	0.19	0.29	0.29	0.10	0.19	0.19	0.34	0.40	0.40	0.08	0.14	0.14
Sat Flow, veh/h	1757	2458	941	1757	3505	1556	1757	3505	1562	1757	2650	760
Grp Volume(v), veh/h	335	414	390	117	474	17	627	389	39	110	193	190
Grp Sat Flow(s),veh/h/ln	1757	1752	1647	1757	1752	1556	1757	1752	1562	1757	1752	1657
Q Serve(g_s), s	20.5	23.9	24.0	6.9	13.6	1.0	36.5	8.1	1.7	6.7	11.5	12.0
Cycle Q Clear(g_c), s	20.5	23.9	24.0	6.9	13.6	1.0	36.5	8.1	1.7	6.7	11.5	12.0
Prop In Lane	1.00		0.57	1.00		1.00	1.00		1.00	1.00		0.46
Lane Grp Cap(c), veh/h	333	500	470	172	678	301	594	1401	625	137	245	232
V/C Ratio(X)	1.00	0.83	0.83	0.68	0.70	0.06	1.06	0.28	0.06	0.80	0.79	0.82
Avail Cap(c_a), veh/h	333	500	470	187	678	301	594	1401	625	350	276	261
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	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	36.1	36.2	47.1	40.6	35.5	35.8	21.9	19.9	49.0	44.9	45.1
Incr Delay (d2), s/veh	43.6	8.0	8.7	6.6	5.9	0.4	51.1	0.0	0.0	4.1	11.0	14.8
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	13.9	12.6	12.0	3.7	7.1	0.4	26.1	3.9	0.7	3.4	6.3	6.4
LnGrp Delay(d),s/veh	87.4	44.1	44.8	53.6	46.5	35.9	86.8	21.9	20.0	53.1	55.9	59.9
LnGrp LOS	F	D	D	D	D	D	F	C	B	D	E	E
Approach Vol, veh/h		1139			608			1055			493	
Approach Delay, s/veh		57.1			47.6			60.4			56.8	
Approach LOS		E			D			E			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	23.5	25.4	11.4	47.7	13.6	35.3	39.5	19.6
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	20.5	19.0	21.5	32.0	11.5	28.0	36.5	17.0
Max Q Clear Time (g_c+I1), s	22.5	15.6	8.7	10.1	8.9	26.0	38.5	14.0
Green Ext Time (p_c), s	0.0	1.9	0.1	3.2	0.0	1.2	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	56.4
HCM 2010 LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	372	49	177	44	32	46	160	560	15	45	409	129
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		0.98	1.00		1.00	1.00		0.97	1.00		0.96
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	404	53	85	48	35	0	174	609	14	49	445	44
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	718	132	212	147	154	0	206	1697	39	94	1476	637
Arrive On Green	0.21	0.21	0.21	0.08	0.08	0.00	0.12	0.48	0.48	0.05	0.42	0.42
Sat Flow, veh/h	3408	629	1008	1757	1845	0	1757	3500	80	1757	3505	1513
Grp Volume(v), veh/h	404	0	138	48	35	0	174	305	318	49	445	44
Grp Sat Flow(s),veh/h/ln	1704	0	1637	1757	1845	0	1757	1752	1828	1757	1752	1513
Q Serve(g_s), s	10.1	0.0	6.9	2.4	1.7	0.0	9.2	10.3	10.3	2.6	8.0	1.6
Cycle Q Clear(g_c), s	10.1	0.0	6.9	2.4	1.7	0.0	9.2	10.3	10.3	2.6	8.0	1.6
Prop In Lane	1.00		0.62	1.00		0.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	718	0	345	147	154	0	206	850	886	94	1476	637
V/C Ratio(X)	0.56	0.00	0.40	0.33	0.23	0.00	0.85	0.36	0.36	0.52	0.30	0.07
Avail Cap(c_a), veh/h	718	0	345	370	388	0	370	850	886	277	1476	637
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	32.3	41.0	40.6	0.0	41.1	15.3	15.3	43.8	18.2	16.4
Incr Delay (d2), s/veh	3.2	0.0	3.4	0.5	0.3	0.0	3.6	1.2	1.1	1.7	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	5.0	0.0	3.4	1.2	0.9	0.0	4.7	5.3	5.5	1.3	3.9	0.7
LnGrp Delay(d),s/veh	36.8	0.0	35.8	41.5	40.9	0.0	44.7	16.4	16.4	45.4	18.8	16.6
LnGrp LOS	D		D	D	D		D	B	B	D	B	B
Approach Vol, veh/h		542			83			797			538	
Approach Delay, s/veh		36.5			41.2			22.6			21.0	
Approach LOS		D			D			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	8.6	50.3		24.1	14.6	44.2		12.1
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	4.6	12.3		12.1	11.2	10.0		4.4
Green Ext Time (p_c), s	0.0	14.0		1.0	0.0	14.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	26.8
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

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

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	106	0	745	542	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	119	0	837	609	99

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1077	354	708	0	-	0
Stage 1	658	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	212	639	880	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	639	880	-	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	629	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	880	-	639	-	-
HCM Lane V/C Ratio	-	-	0.186	-	-
HCM Control Delay (s)	0	-	11.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	6	127	8	9	46	106	546	7	42	562	38
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		0.99	1.00		0.99	1.00		0.97	1.00		0.96
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	139	7	35	9	10	5	122	628	6	48	646	33
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	393	58	290	29	137	69	194	1475	14	118	1257	64
Arrive On Green	0.12	0.22	0.22	0.02	0.12	0.12	0.11	0.41	0.41	0.07	0.37	0.37
Sat Flow, veh/h	3408	266	1332	1757	1157	578	1757	3556	34	1757	3385	173
Grp Volume(v), veh/h	139	0	42	9	0	15	122	309	325	48	334	345
Grp Sat Flow(s),veh/h/ln	1704	0	1599	1757	0	1735	1757	1752	1837	1757	1752	1806
Q Serve(g_s), s	2.0	0.0	1.1	0.3	0.0	0.4	3.5	6.6	6.6	1.4	7.8	7.8
Cycle Q Clear(g_c), s	2.0	0.0	1.1	0.3	0.0	0.4	3.5	6.6	6.6	1.4	7.8	7.8
Prop In Lane	1.00		0.83	1.00		0.33	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	393	0	348	29	0	206	194	727	762	118	651	671
V/C Ratio(X)	0.35	0.00	0.12	0.31	0.00	0.07	0.63	0.43	0.43	0.41	0.51	0.51
Avail Cap(c_a), veh/h	743	0	939	383	0	1019	383	1195	1253	383	1195	1232
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	16.6	25.7	0.0	20.7	22.4	11.0	11.0	23.6	12.9	12.9
Incr Delay (d2), s/veh	0.5	0.0	0.2	6.0	0.0	0.1	3.3	0.4	0.4	2.3	0.6	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	1.0	0.0	0.5	0.2	0.0	0.2	1.9	3.3	3.4	0.7	3.8	3.9
LnGrp Delay(d),s/veh	22.1	0.0	16.7	31.7	0.0	20.8	25.8	11.4	11.4	25.9	13.5	13.5
LnGrp LOS	C		B	C		C	C	B	B	C	B	B
Approach Vol, veh/h		181			24			756			727	
Approach Delay, s/veh		20.8			24.9			13.7			14.3	
Approach LOS		C			C			B			B	

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	7.0	25.9	4.4	15.5	9.3	23.6	9.6	10.3
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	11.5	36.0	11.5	31.0	11.5	36.0	11.5	31.0
Max Q Clear Time (g_c+I1), s	3.4	8.6	2.3	3.1	5.5	9.8	4.0	2.4
Green Ext Time (p_c), s	0.0	9.1	0.0	0.3	0.1	9.0	0.2	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	52	83	587	33	54	41	469	244	23	18	161	28
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	55	88	76	35	57	16	499	260	20	19	171	16
Adj No. of Lanes	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	134	320	472	96	210	59	557	1466	112	57	518	48
Arrive On Green	0.08	0.17	0.17	0.05	0.15	0.15	0.32	0.44	0.44	0.03	0.16	0.16
Sat Flow, veh/h	1757	1845	2723	1757	1379	387	1757	3299	252	1757	3243	300
Grp Volume(v), veh/h	55	88	76	35	0	73	499	137	143	19	92	95
Grp Sat Flow(s),veh/h/ln	1757	1845	1361	1757	0	1766	1757	1752	1799	1757	1752	1791
Q Serve(g_s), s	1.4	2.0	1.1	0.9	0.0	1.7	12.9	2.2	2.3	0.5	2.2	2.2
Cycle Q Clear(g_c), s	1.4	2.0	1.1	0.9	0.0	1.7	12.9	2.2	2.3	0.5	2.2	2.2
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.14	1.00		0.17
Lane Grp Cap(c), veh/h	134	320	472	96	0	268	557	779	799	57	280	286
V/C Ratio(X)	0.41	0.27	0.16	0.37	0.00	0.27	0.90	0.18	0.18	0.33	0.33	0.33
Avail Cap(c_a), veh/h	815	1050	1549	629	0	893	1000	1182	1213	629	997	1019
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.9	17.0	16.7	21.6	0.0	17.8	15.5	7.9	8.0	22.4	17.7	17.7
Incr Delay (d2), s/veh	0.8	0.2	0.1	0.9	0.0	0.2	2.1	0.0	0.0	1.2	0.3	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	0.7	1.0	0.4	0.5	0.0	0.8	6.4	1.1	1.1	0.3	1.1	1.1
LnGrp Delay(d),s/veh	21.7	17.2	16.7	22.5	0.0	18.0	17.6	8.0	8.0	23.7	17.9	17.9
LnGrp LOS	C	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		219			108			779			206	
Approach Delay, s/veh		18.2			19.5			14.1			18.5	
Approach LOS		B			B			B			B	

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	6.6	11.2	4.6	25.1	5.6	12.2	18.0	11.6
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	3.4	3.7	2.5	4.3	2.9	4.0	14.9	4.2
Green Ext Time (p_c), s	0.0	0.7	0.0	1.8	0.0	0.7	0.2	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	102	1118	4	15	735	268	4	4	14	280	7	92
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	107	1177	4	16	774	0	4	4	0	300	0	11
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	137	1953	7	48	1733	775	13	13	0	423	0	189
Arrive On Green	0.08	0.55	0.55	0.03	0.49	0.00	0.01	0.01	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1757	3583	12	1757	3505	1568	900	900	0	3514	0	1568
Grp Volume(v), veh/h	107	576	605	16	774	0	8	0	0	300	0	11
Grp Sat Flow(s),veh/h/ln	1757	1752	1842	1757	1752	1568	1800	0	0	1757	0	1568
Q Serve(g_s), s	3.5	12.9	12.9	0.5	8.3	0.0	0.3	0.0	0.0	4.8	0.0	0.4
Cycle Q Clear(g_c), s	3.5	12.9	12.9	0.5	8.3	0.0	0.3	0.0	0.0	4.8	0.0	0.4
Prop In Lane	1.00		0.01	1.00		1.00	0.50		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	137	955	1004	48	1733	775	26	0	0	423	0	189
V/C Ratio(X)	0.78	0.60	0.60	0.33	0.45	0.00	0.30	0.00	0.00	0.71	0.00	0.06
Avail Cap(c_a), veh/h	605	1266	1331	816	2412	1079	588	0	0	1511	0	674
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.3	9.0	9.0	27.7	9.5	0.0	28.3	0.0	0.0	24.6	0.0	22.6
Incr Delay (d2), s/veh	3.6	0.7	0.7	1.5	0.2	0.0	2.4	0.0	0.0	0.8	0.0	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	6.3	6.6	0.3	4.0	0.0	0.1	0.0	0.0	2.3	0.0	0.2
LnGrp Delay(d),s/veh	29.9	9.7	9.7	29.2	9.7	0.0	30.7	0.0	0.0	25.4	0.0	22.7
LnGrp LOS	C	A	A	C	A		C			C		C
Approach Vol, veh/h		1288			790			8			311	
Approach Delay, s/veh		11.4			10.1			30.7			25.3	
Approach LOS		B			B			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	5.1	36.7		4.8	8.0	33.7		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.0	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.5	14.9		2.3	5.5	10.3		6.8
Green Ext Time (p_c), s	0.0	16.7		0.0	0.0	17.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
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)	0	1434	233	0	769	277	0	0	0	949	0	302
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	1509	0	0	809	0				999	0	221
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1745	781	0	1745	781				1117	0	514
Arrive On Green	0.00	0.50	0.00	0.00	0.50	0.00				0.33	0.00	0.33
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	1509	0	0	809	0				999	0	221
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	21.8	0.0	0.0	8.6	0.0				16.0	0.0	6.3
Cycle Q Clear(g_c), s	0.0	21.8	0.0	0.0	8.6	0.0				16.0	0.0	6.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1745	781	0	1745	781				1117	0	514
V/C Ratio(X)	0.00	0.86	0.00	0.00	0.46	0.00				0.89	0.00	0.43
Avail Cap(c_a), veh/h	0	3057	1367	0	3057	1367				2081	0	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.7	0.0	0.0	9.4	0.0				18.3	0.0	15.1
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.1	0.0				1.1	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	10.4	0.0	0.0	4.2	0.0				7.7	0.0	2.7
LnGrp Delay(d),s/veh	0.0	13.2	0.0	0.0	9.5	0.0				19.4	0.0	15.3
LnGrp LOS		B			A					B		B
Approach Vol, veh/h		1509			809						1220	
Approach Delay, s/veh		13.2			9.5						18.7	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		33.5		23.8		33.5		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		23.8		18.0		10.6		
Green Ext Time (p_c), s		4.8		0.8		4.9		

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

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)	0	1833	550	0	889	1017	157	0	305	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1929	0	0	936	0	165	0	266			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2258	1010	0	2258	1010	686	0	315			
Arrive On Green	0.00	0.64	0.00	0.00	0.64	0.00	0.20	0.00	0.20			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1929	0	0	936	0	165	0	266			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	25.4	0.0	0.0	7.6	0.0	2.4	0.0	9.5			
Cycle Q Clear(g_c), s	0.0	25.4	0.0	0.0	7.6	0.0	2.4	0.0	9.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2258	1010	0	2258	1010	686	0	315			
V/C Ratio(X)	0.00	0.85	0.00	0.00	0.41	0.00	0.24	0.00	0.84			
Avail Cap(c_a), veh/h	0	3007	1345	0	3007	1345	1462	0	673			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	8.2	0.0	0.0	5.0	0.0	19.5	0.0	22.4			
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.0	0.0	0.0	0.1	0.0	2.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	12.5	0.0	0.0	3.7	0.0	1.1	0.0	4.3			
LnGrp Delay(d),s/veh	0.0	9.7	0.0	0.0	5.1	0.0	19.6	0.0	24.8			
LnGrp LOS		A			A		B		C			
Approach Vol, veh/h		1929			936			431				
Approach Delay, s/veh		9.7			5.1			22.8				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		42.6				42.6		15.7
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		27.4				9.6		11.5
Green Ext Time (p_c), s		10.2				12.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

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)	626	1197	285	51	924	147	341	132	64	179	88	626
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		0.97	1.00		0.98	1.00		0.98	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	659	1260	208	54	973	58	359	139	53	140	159	597
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	743	2232	910	95	1422	435	506	188	72	340	357	1290
Arrive On Green	0.22	0.44	0.44	0.05	0.28	0.28	0.15	0.15	0.15	0.19	0.19	0.19
Sat Flow, veh/h	3408	5036	1528	1757	5036	1542	3408	1264	482	1757	1845	3136
Grp Volume(v), veh/h	659	1260	208	54	973	58	359	0	192	140	159	597
Grp Sat Flow(s),veh/h/ln	1704	1679	1528	1757	1679	1542	1704	0	1746	1757	1845	1568
Q Serve(g_s), s	18.9	18.7	6.5	3.0	17.3	2.8	10.1	0.0	10.6	7.0	7.7	14.0
Cycle Q Clear(g_c), s	18.9	18.7	6.5	3.0	17.3	2.8	10.1	0.0	10.6	7.0	7.7	14.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	743	2232	910	95	1422	435	506	0	259	340	357	1290
V/C Ratio(X)	0.89	0.56	0.23	0.57	0.68	0.13	0.71	0.00	0.74	0.41	0.45	0.46
Avail Cap(c_a), veh/h	845	2232	910	436	1998	612	1014	0	520	523	549	1617
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	20.8	9.7	46.5	32.2	27.0	40.8	0.0	41.1	35.6	35.9	21.6
Incr Delay (d2), s/veh	10.4	0.3	0.1	5.2	0.6	0.1	1.8	0.0	4.1	0.8	0.9	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	9.9	8.7	3.7	1.6	8.1	1.2	4.9	0.0	5.4	3.5	4.0	6.0
LnGrp Delay(d),s/veh	48.6	21.2	9.9	51.8	32.8	27.1	42.7	0.0	45.2	36.4	36.8	21.8
LnGrp LOS	D	C	A	D	C	C	D		D	D	D	C
Approach Vol, veh/h		2127			1085			551			896	
Approach Delay, s/veh		28.6			33.4			43.6			26.8	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	49.5		23.2	25.7	33.3		18.7
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.0	20.7		16.0	20.9	19.3		12.6
Green Ext Time (p_c), s	0.1	15.0		3.5	1.1	9.1		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	31.1
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)	45	827	259	562	652	94	205	18	508	103	26	49
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	46	844	164	573	665	90	222	0	386	74	71	15
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	64	1019	447	660	1384	187	799	0	653	197	165	35
Arrive On Green	0.04	0.29	0.29	0.19	0.45	0.45	0.23	0.00	0.23	0.11	0.11	0.11
Sat Flow, veh/h	1757	3505	1539	3408	3092	418	3514	0	1536	1757	1469	310
Grp Volume(v), veh/h	46	844	164	573	377	378	222	0	386	74	0	86
Grp Sat Flow(s),veh/h/ln	1757	1752	1539	1704	1752	1757	1757	0	1536	1757	0	1779
Q Serve(g_s), s	2.5	21.8	8.2	15.8	14.7	14.7	5.1	0.0	18.9	3.8	0.0	4.4
Cycle Q Clear(g_c), s	2.5	21.8	8.2	15.8	14.7	14.7	5.1	0.0	18.9	3.8	0.0	4.4
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	64	1019	447	660	785	787	799	0	653	197	0	199
V/C Ratio(X)	0.71	0.83	0.37	0.87	0.48	0.48	0.28	0.00	0.59	0.38	0.00	0.43
Avail Cap(c_a), veh/h	362	1446	635	1054	785	787	1087	0	779	453	0	459
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.2	32.1	27.3	37.9	18.8	18.9	30.9	0.0	21.7	39.9	0.0	40.2
Incr Delay (d2), s/veh	5.4	2.0	0.2	2.8	0.2	0.2	0.1	0.0	0.3	0.4	0.0	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	1.3	10.8	3.5	7.7	7.0	7.2	2.4	0.0	8.0	1.9	0.0	2.2
LnGrp Delay(d),s/veh	51.6	34.1	27.5	40.7	19.0	19.0	31.0	0.0	22.0	40.4	0.0	40.7
LnGrp LOS	D	C	C	D	B	B	C		C	D		D
Approach Vol, veh/h		1054			1328			608			160	
Approach Delay, s/veh		33.8			28.4			25.3			40.5	
Approach LOS		C			C			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	21.8	32.8		15.4	6.6	48.0		27.0
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	17.8	23.8		6.4	4.5	16.7		20.9
Green Ext Time (p_c), s	1.0	4.4		0.4	0.0	8.1		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1359	79	163	749	0	0	0	0	994	4	559
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1387	51	166	764	0				1017	0	326
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1521	674	253	1955	0				1120	0	999
Arrive On Green	0.00	0.43	0.43	0.07	0.56	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	3597	1554	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1387	51	166	764	0				1017	0	326
Grp Sat Flow(s),veh/h/ln	0	1752	1554	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	26.1	1.4	3.3	8.7	0.0				19.6	0.0	5.6
Cycle Q Clear(g_c), s	0.0	26.1	1.4	3.3	8.7	0.0				19.6	0.0	5.6
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1521	674	253	1955	0				1120	0	999
V/C Ratio(X)	0.00	0.91	0.08	0.66	0.39	0.00				0.91	0.00	0.33
Avail Cap(c_a), veh/h	0	1716	761	1209	1955	0				1496	0	1335
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.7	11.7	31.7	8.8	0.0				23.0	0.0	18.3
Incr Delay (d2), s/veh	0.0	6.8	0.0	1.1	0.0	0.0				5.7	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
%ile BackOfQ(50%),veh/ln	0.0	14.0	0.6	1.6	4.2	0.0				10.4	0.0	2.4
LnGrp Delay(d),s/veh	0.0	25.5	11.7	32.8	8.9	0.0				28.8	0.0	18.3
LnGrp LOS		C	B	C	A					C		B
Approach Vol, veh/h		1438			930						1343	
Approach Delay, s/veh		25.0			13.1						26.2	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.7	35.2		26.6		43.9		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	5.3	28.1		21.6		10.7		
Green Ext Time (p_c), s	0.1	2.5		0.9		7.1		

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
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)	412	1937	0	0	828	809	84	2	260	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	420	1977	0	0	845	425	87	0	219			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	569	2300	0	0	1490	665	623	0	278			
Arrive On Green	0.17	0.66	0.00	0.00	0.43	0.43	0.18	0.00	0.18			
Sat Flow, veh/h	3408	3597	0	0	3597	1565	3514	0	1568			
Grp Volume(v), veh/h	420	1977	0	0	845	425	87	0	219			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1565	1757	0	1568			
Q Serve(g_s), s	6.4	24.3	0.0	0.0	10.0	11.7	1.1	0.0	7.3			
Cycle Q Clear(g_c), s	6.4	24.3	0.0	0.0	10.0	11.7	1.1	0.0	7.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	569	2300	0	0	1490	665	623	0	278			
V/C Ratio(X)	0.74	0.86	0.00	0.00	0.57	0.64	0.14	0.00	0.79			
Avail Cap(c_a), veh/h	1560	2300	0	0	2247	1003	1930	0	861			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	21.6	7.4	0.0	0.0	11.9	12.4	19.0	0.0	21.5			
Incr Delay (d2), s/veh	0.7	3.4	0.0	0.0	0.1	0.4	0.0	0.0	1.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.0	12.3	0.0	0.0	4.8	5.0	0.6	0.0	3.3			
LnGrp Delay(d),s/veh	22.3	10.8	0.0	0.0	12.0	12.8	19.0	0.0	23.4			
LnGrp LOS	C	B			B	B	B		C			
Approach Vol, veh/h		2397			1270			306				
Approach Delay, s/veh		12.8			12.3			22.1				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		40.8			12.6	28.2		13.8
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		26.3			8.4	13.7		9.3
Green Ext Time (p_c), s		6.2			0.7	9.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
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.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1484	713	0	1637	0	53
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1514	728	0	1670	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1519	0	2354	762
Stage 1	-	-	-	-	1519	-
Stage 2	-	-	-	-	835	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	216	-	42	296
Stage 1	-	0	-	-	116	-
Stage 2	-	0	-	-	374	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	216	-	42	295
Mov Cap-2 Maneuver	-	-	-	-	42	-
Stage 1	-	-	-	-	116	-
Stage 2	-	-	-	-	374	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	295	-	216	-
HCM Lane V/C Ratio	0.183	-	-	-
HCM Control Delay (s)	19.9	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.7	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	477	960	100	82	1035	89	314	61	24	122	53	288
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		0.97	1.00		1.00	1.00		0.99	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	487	980	97	84	1056	87	201	229	20	124	54	37
Adj No. of Lanes	2	2	0	1	2	0	1	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	572	1504	149	108	1168	96	305	290	25	157	68	340
Arrive On Green	0.17	0.47	0.47	0.06	0.36	0.36	0.17	0.17	0.17	0.13	0.13	0.13
Sat Flow, veh/h	3408	3213	318	1757	3278	270	1757	1671	146	1242	541	2696
Grp Volume(v), veh/h	487	534	543	84	564	579	201	0	249	178	0	37
Grp Sat Flow(s),veh/h/ln	1704	1752	1778	1757	1752	1796	1757	0	1817	1783	0	1348
Q Serve(g_s), s	12.3	20.7	20.7	4.2	27.1	27.1	9.5	0.0	11.6	8.6	0.0	1.1
Cycle Q Clear(g_c), s	12.3	20.7	20.7	4.2	27.1	27.1	9.5	0.0	11.6	8.6	0.0	1.1
Prop In Lane	1.00		0.18	1.00		0.15	1.00		0.08	0.70		1.00
Lane Grp Cap(c), veh/h	572	821	833	108	625	640	305	0	315	225	0	340
V/C Ratio(X)	0.85	0.65	0.65	0.78	0.90	0.90	0.66	0.00	0.79	0.79	0.00	0.11
Avail Cap(c_a), veh/h	770	821	833	397	693	710	496	0	513	503	0	761
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	18.0	18.0	40.9	27.0	27.1	34.1	0.0	35.0	37.6	0.0	34.3
Incr Delay (d2), s/veh	5.4	1.7	1.7	4.4	14.0	13.8	0.9	0.0	1.7	2.4	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	6.2	10.3	10.5	2.2	15.4	15.8	4.7	0.0	6.0	4.4	0.0	0.4
LnGrp Delay(d),s/veh	41.2	19.7	19.7	45.4	41.1	40.9	35.1	0.0	36.7	39.9	0.0	34.3
LnGrp LOS	D	B	B	D	D	D	D		D	D		C
Approach Vol, veh/h		1564			1227			450			215	
Approach Delay, s/veh		26.4			41.3			36.0			39.0	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	45.6		15.2	18.3	35.7		19.4
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	6.2	22.7		10.6	14.3	29.1		13.6
Green Ext Time (p_c), s	0.1	8.8		0.6	0.6	2.5		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.7
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)	324	478	259	126	440	134	549	319	96	104	319	207
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	327	483	209	127	444	43	555	322	25	105	322	133
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	350	559	240	490	1104	488	350	1025	455	129	404	163
Arrive On Green	0.20	0.24	0.24	0.28	0.32	0.32	0.20	0.29	0.29	0.07	0.17	0.17
Sat Flow, veh/h	1757	2375	1021	1757	3505	1547	1757	3505	1557	1757	2416	975
Grp Volume(v), veh/h	327	355	337	127	444	43	555	322	25	105	232	224
Grp Sat Flow(s),veh/h/ln	1757	1752	1644	1757	1752	1547	1757	1752	1557	1757	1752	1638
Q Serve(g_s), s	23.0	24.4	24.7	7.1	12.5	2.5	25.0	9.0	1.4	7.4	15.9	16.5
Cycle Q Clear(g_c), s	23.0	24.4	24.7	7.1	12.5	2.5	25.0	9.0	1.4	7.4	15.9	16.5
Prop In Lane	1.00		0.62	1.00		1.00	1.00		1.00	1.00		0.60
Lane Grp Cap(c), veh/h	350	412	387	490	1104	488	350	1025	455	129	293	274
V/C Ratio(X)	0.93	0.86	0.87	0.26	0.40	0.09	1.59	0.31	0.05	0.81	0.79	0.82
Avail Cap(c_a), veh/h	350	628	590	490	1104	488	350	1025	455	350	419	392
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	46.0	46.1	35.2	33.7	30.3	50.2	34.6	31.9	57.3	50.2	50.4
Incr Delay (d2), s/veh	31.4	5.1	5.9	1.3	0.1	0.0	276.9	0.1	0.0	4.6	4.0	5.8
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	14.2	12.4	11.9	3.6	6.1	1.1	39.0	4.3	0.6	3.8	8.0	7.9
LnGrp Delay(d),s/veh	80.8	51.1	52.1	36.5	33.8	30.3	327.1	34.6	31.9	61.8	54.1	56.2
LnGrp LOS	F	D	D	D	C	C	F	C	C	E	D	E
Approach Vol, veh/h		1019			614			902			560	
Approach Delay, s/veh		61.0			34.1			214.5			56.4	
Approach LOS		E			C			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	28.0	44.0	12.2	41.2	38.0	34.0	28.0	25.5
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	25.0	35.0	25.0	20.0	35.0	45.0	25.0	30.0
Max Q Clear Time (g_c+I1), s	25.0	14.5	9.4	11.0	9.1	26.7	27.0	18.5
Green Ext Time (p_c), s	0.0	4.9	0.1	2.3	0.2	2.8	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	99.6
HCM 2010 LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	324	478	259	126	440	134	549	319	96	104	319	207
Future Volume (veh/h)	324	478	259	126	440	134	549	319	96	104	319	207
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	327	483	209	127	444	43	555	322	25	105	322	133
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	353	594	255	248	667	292	539	1440	641	130	430	174
Arrive On Green	0.20	0.25	0.25	0.14	0.19	0.19	0.31	0.41	0.41	0.07	0.18	0.18
Sat Flow, veh/h	1757	2376	1021	1757	3505	1533	1757	3505	1560	1757	2417	975
Grp Volume(v), veh/h	327	355	337	127	444	43	555	322	25	105	231	224
Grp Sat Flow(s),veh/h/ln	1757	1752	1644	1757	1752	1533	1757	1752	1560	1757	1752	1639
Q Serve(g_s), s	22.1	23.0	23.3	8.1	14.2	2.8	37.0	7.2	1.2	7.1	15.1	15.7
Cycle Q Clear(g_c), s	22.1	23.0	23.3	8.1	14.2	2.8	37.0	7.2	1.2	7.1	15.1	15.7
Prop In Lane	1.00		0.62	1.00		1.00	1.00		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	353	438	411	248	667	292	539	1440	641	130	312	292
V/C Ratio(X)	0.93	0.81	0.82	0.51	0.67	0.15	1.03	0.22	0.04	0.81	0.74	0.77
Avail Cap(c_a), veh/h	393	661	620	248	1031	451	539	1467	653	248	443	414
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	42.6	42.7	48.0	45.3	40.7	41.8	23.1	21.3	55.1	47.0	47.2
Incr Delay (d2), s/veh	25.3	2.6	3.0	7.4	0.4	0.1	46.8	0.0	0.0	4.5	2.0	3.0
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	13.2	11.5	10.9	4.4	6.9	1.2	24.8	3.5	0.5	3.6	7.5	7.3
LnGrp Delay(d),s/veh	72.7	45.1	45.7	55.4	45.7	40.8	88.6	23.1	21.3	59.6	48.9	50.2
LnGrp LOS	E	D	D	E	D	D	F	C	C	E	D	D
Approach Vol, veh/h		1019			614			902			560	
Approach Delay, s/veh		54.1			47.4			63.3			51.4	
Approach LOS		D			D			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	27.2	27.5	11.9	54.1	20.0	34.7	40.0	26.0
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	27.0	35.5	17.0	50.5	17.0	45.5	37.0	30.5
Max Q Clear Time (g_c+I1), s	24.1	16.2	9.1	9.2	10.1	25.3	39.0	17.7
Green Ext Time (p_c), s	0.2	4.8	0.1	3.4	0.1	4.9	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	55.0
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	450	35	177	35	25	29	189	451	16	24	454	185
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		0.97	1.00		1.00	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	495	38	41	38	27	0	208	496	16	26	499	62
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	721	169	182	106	112	0	240	1812	58	64	1482	647
Arrive On Green	0.21	0.21	0.21	0.06	0.06	0.00	0.14	0.52	0.52	0.04	0.42	0.42
Sat Flow, veh/h	3408	799	862	1757	1845	0	1757	3463	112	1757	3505	1530
Grp Volume(v), veh/h	495	0	79	38	27	0	208	251	261	26	499	62
Grp Sat Flow(s),veh/h/ln	1704	0	1660	1757	1845	0	1757	1752	1822	1757	1752	1530
Q Serve(g_s), s	12.7	0.0	3.7	2.0	1.3	0.0	11.0	7.5	7.6	1.4	9.1	2.3
Cycle Q Clear(g_c), s	12.7	0.0	3.7	2.0	1.3	0.0	11.0	7.5	7.6	1.4	9.1	2.3
Prop In Lane	1.00		0.52	1.00		0.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	721	0	351	106	112	0	240	917	953	64	1482	647
V/C Ratio(X)	0.69	0.00	0.23	0.36	0.24	0.00	0.87	0.27	0.27	0.40	0.34	0.10
Avail Cap(c_a), veh/h	721	0	351	372	390	0	372	917	953	279	1482	647
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	0.0	30.9	42.7	42.3	0.0	40.0	12.5	12.6	44.5	18.4	16.4
Incr Delay (d2), s/veh	5.3	0.0	1.5	0.8	0.4	0.0	8.1	0.7	0.7	1.5	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	6.5	0.0	1.9	1.0	0.7	0.0	5.9	3.8	4.0	0.7	4.5	1.0
LnGrp Delay(d),s/veh	39.7	0.0	32.4	43.4	42.8	0.0	48.0	13.3	13.3	46.1	19.0	16.7
LnGrp LOS	D		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		574			65			720			587	
Approach Delay, s/veh		38.7			43.1			23.3			19.9	
Approach LOS		D			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	7.0	53.7		24.1	16.4	44.2		9.8
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.4	9.6		14.7	13.0	11.1		4.0
Green Ext Time (p_c), s	0.0	14.1		0.8	0.0	13.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	27.5
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	141	0	652	560	108
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	152	0	701	602	116

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1011	359	718	0	-	0
Stage 1	660	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	234	635	872	-	-	-
Stage 1	473	-	-	-	-	-
Stage 2	681	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	234	635	872	-	-	-
Mov Cap-2 Maneuver	234	-	-	-	-	-
Stage 1	473	-	-	-	-	-
Stage 2	681	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	872	-	635	-	-
HCM Lane V/C Ratio	-	-	0.239	-	-
HCM Control Delay (s)	0	-	12.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	6	108	1	11	14	127	513	2	22	625	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		0.99	1.00		0.99	1.00		0.97	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	128	6	15	1	12	2	135	546	2	23	665	33
Adj No. of Lanes	2	1	0	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	396	97	242	4	144	24	208	1621	6	67	1266	63
Arrive On Green	0.12	0.21	0.21	0.00	0.09	0.09	0.12	0.45	0.45	0.04	0.37	0.37
Sat Flow, veh/h	3408	466	1164	1757	1540	257	1757	3581	13	1757	3398	168
Grp Volume(v), veh/h	128	0	21	1	0	14	135	267	281	23	343	355
Grp Sat Flow(s),veh/h/ln	1704	0	1629	1757	0	1796	1757	1752	1842	1757	1752	1814
Q Serve(g_s), s	1.7	0.0	0.5	0.0	0.0	0.4	3.7	4.9	4.9	0.6	7.6	7.7
Cycle Q Clear(g_c), s	1.7	0.0	0.5	0.0	0.0	0.4	3.7	4.9	4.9	0.6	7.6	7.7
Prop In Lane	1.00		0.71	1.00		0.14	1.00		0.01	1.00		0.09
Lane Grp Cap(c), veh/h	396	0	339	4	0	168	208	793	834	67	653	676
V/C Ratio(X)	0.32	0.00	0.06	0.29	0.00	0.08	0.65	0.34	0.34	0.34	0.53	0.53
Avail Cap(c_a), veh/h	782	0	1008	403	0	1111	403	1259	1323	403	1259	1303
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	15.9	25.0	0.0	20.7	21.1	8.9	8.9	23.5	12.3	12.3
Incr Delay (d2), s/veh	0.5	0.0	0.1	39.4	0.0	0.2	3.4	0.2	0.2	3.0	0.7	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	0.8	0.0	0.2	0.1	0.0	0.2	2.0	2.4	2.6	0.4	3.7	3.9
LnGrp Delay(d),s/veh	20.8	0.0	16.0	64.4	0.0	21.0	24.5	9.1	9.1	26.5	12.9	12.9
LnGrp LOS	C		B	E		C	C	A	A	C	B	B
Approach Vol, veh/h		149			15			683			721	
Approach Delay, s/veh		20.1			23.9			12.1			13.3	
Approach LOS		C			C			B			B	

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	5.4	26.7	3.6	14.4	9.4	22.7	9.3	8.7
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	11.5	36.0	11.5	31.0	11.5	36.0	11.5	31.0
Max Q Clear Time (g_c+I1), s	2.6	6.9	2.0	2.5	5.7	9.7	3.7	2.4
Green Ext Time (p_c), s	0.0	8.7	0.0	0.1	0.1	8.4	0.2	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	57	70	583	14	58	29	504	220	9	17	138	38
Number	1	6	16	5	2	12	7	4	14	3	8	18
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		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	62	76	84	15	63	14	548	239	9	18	150	19
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	143	368	549	46	212	47	603	1573	59	55	454	57
Arrive On Green	0.08	0.20	0.20	0.03	0.14	0.14	0.34	0.46	0.46	0.03	0.15	0.15
Sat Flow, veh/h	1757	1845	2747	1757	1462	325	1757	3442	129	1757	3131	390
Grp Volume(v), veh/h	62	76	84	15	0	77	548	121	127	18	83	86
Grp Sat Flow(s),veh/h/ln	1757	1845	1374	1757	0	1787	1757	1752	1818	1757	1752	1769
Q Serve(g_s), s	1.6	1.7	1.2	0.4	0.0	1.9	14.6	2.0	2.0	0.5	2.1	2.1
Cycle Q Clear(g_c), s	1.6	1.7	1.2	0.4	0.0	1.9	14.6	2.0	2.0	0.5	2.1	2.1
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.07	1.00		0.22
Lane Grp Cap(c), veh/h	143	368	549	46	0	259	603	801	831	55	254	257
V/C Ratio(X)	0.43	0.21	0.15	0.32	0.00	0.30	0.91	0.15	0.15	0.33	0.33	0.34
Avail Cap(c_a), veh/h	789	1017	1514	610	0	1241	968	1145	1188	610	966	975
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	16.4	16.2	23.4	0.0	18.7	15.4	7.8	7.8	23.2	18.8	18.8
Incr Delay (d2), s/veh	0.8	0.1	0.0	1.5	0.0	0.2	5.3	0.0	0.0	1.3	0.3	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	0.8	0.9	0.5	0.2	0.0	0.9	7.9	0.9	1.0	0.3	1.0	1.0
LnGrp Delay(d),s/veh	22.2	16.5	16.2	24.9	0.0	19.0	20.7	7.8	7.8	24.5	19.1	19.1
LnGrp LOS	C	B	B	C		B	C	A	A	C	B	B
Approach Vol, veh/h		222			92			796			187	
Approach Delay, s/veh		18.0			19.9			16.7			19.6	
Approach LOS		B			B			B			B	

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	7.0	11.1	4.5	26.4	4.3	13.8	19.8	11.1
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	34.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	3.6	3.9	2.5	4.0	2.4	3.7	16.6	4.1
Green Ext Time (p_c), s	0.0	0.7	0.0	1.6	0.0	0.7	0.2	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	104	694	14	7	623	311	9	5	13	342	7	137
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	108	723	14	7	649	0	9	5	0	361	0	24
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	138	1669	32	23	1434	641	28	16	0	500	0	223
Arrive On Green	0.08	0.47	0.47	0.01	0.41	0.00	0.02	0.02	0.00	0.14	0.00	0.14
Sat Flow, veh/h	1757	3516	68	1757	3505	1568	1149	638	0	3514	0	1568
Grp Volume(v), veh/h	108	360	377	7	649	0	14	0	0	361	0	24
Grp Sat Flow(s),veh/h/ln	1757	1752	1832	1757	1752	1568	1787	0	0	1757	0	1568
Q Serve(g_s), s	3.0	6.7	6.7	0.2	6.6	0.0	0.4	0.0	0.0	4.8	0.0	0.7
Cycle Q Clear(g_c), s	3.0	6.7	6.7	0.2	6.6	0.0	0.4	0.0	0.0	4.8	0.0	0.7
Prop In Lane	1.00		0.04	1.00		1.00	0.64		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	832	869	23	1434	641	44	0	0	500	0	223
V/C Ratio(X)	0.78	0.43	0.43	0.31	0.45	0.00	0.32	0.00	0.00	0.72	0.00	0.11
Avail Cap(c_a), veh/h	714	1495	1563	964	2848	1274	690	0	0	1784	0	796
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.3	8.5	8.6	24.1	10.5	0.0	23.6	0.0	0.0	20.2	0.0	18.4
Incr Delay (d2), s/veh	3.6	0.4	0.4	2.8	0.2	0.0	1.5	0.0	0.0	0.7	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	1.6	3.3	3.4	0.1	3.2	0.0	0.2	0.0	0.0	2.4	0.0	0.3
LnGrp Delay(d),s/veh	25.9	9.0	9.0	26.9	10.8	0.0	25.1	0.0	0.0	20.9	0.0	18.5
LnGrp LOS	C	A	A	C	B		C			C		B
Approach Vol, veh/h		845			656			14			385	
Approach Delay, s/veh		11.1			10.9			25.1			20.8	
Approach LOS		B			B			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	4.1	28.4		5.2	7.4	25.1		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	8.7		2.4	5.0	8.6		6.8
Green Ext Time (p_c), s	0.0	11.8		0.0	0.0	11.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
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)	0	962	159	0	756	209	0	0	0	564	0	262
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	1002	0	0	788	0				588	0	163
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1452	650	0	1452	650				825	0	379
Arrive On Green	0.00	0.41	0.00	0.00	0.41	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	1002	0	0	788	0				588	0	163
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	6.8	0.0	0.0	4.9	0.0				4.6	0.0	2.6
Cycle Q Clear(g_c), s	0.0	6.8	0.0	0.0	4.9	0.0				4.6	0.0	2.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1452	650	0	1452	650				825	0	379
V/C Ratio(X)	0.00	0.69	0.00	0.00	0.54	0.00				0.71	0.00	0.43
Avail Cap(c_a), veh/h	0	6022	2694	0	6022	2694				4099	0	1886
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.0	0.0	0.0	6.4	0.0				10.1	0.0	9.3
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0				0.4	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	3.2	0.0	0.0	2.3	0.0				2.2	0.0	1.1
LnGrp Delay(d),s/veh	0.0	7.2	0.0	0.0	6.6	0.0				10.5	0.0	9.6
LnGrp LOS		A			A					B		A
Approach Vol, veh/h		1002			788						751	
Approach Delay, s/veh		7.2			6.6						10.3	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		17.1		12.0		17.1		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		8.8		6.6		6.9		
Green Ext Time (p_c), s		3.2		0.5		3.2		

Intersection Summary	
HCM 2010 Ctrl Delay	7.9
HCM 2010 LOS	A

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)	0	1249	277	0	842	671	123	0	172	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1301	0	0	877	0	128	0	111			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	1991	891	0	1991	891	409	0	188			
Arrive On Green	0.00	0.57	0.00	0.00	0.57	0.00	0.12	0.00	0.12			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1301	0	0	877	0	128	0	111			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	7.4	0.0	0.0	4.2	0.0	1.0	0.0	1.9			
Cycle Q Clear(g_c), s	0.0	7.4	0.0	0.0	4.2	0.0	1.0	0.0	1.9			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1991	891	0	1991	891	409	0	188			
V/C Ratio(X)	0.00	0.65	0.00	0.00	0.44	0.00	0.31	0.00	0.59			
Avail Cap(c_a), veh/h	0	6074	2717	0	6074	2717	2953	0	1359			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.3	0.0	0.0	3.6	0.0	11.6	0.0	12.0			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.0	1.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	3.5	0.0	0.0	2.0	0.0	0.5	0.0	0.9			
LnGrp Delay(d),s/veh	0.0	4.4	0.0	0.0	3.6	0.0	11.8	0.0	13.1			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1301			877			239				
Approach Delay, s/veh		4.4			3.6			12.4				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		21.4				21.4		7.5
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		9.4				6.2		3.9
Green Ext Time (p_c), s		7.0				7.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A

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)	518	630	256	75	716	211	231	150	72	197	98	548
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		0.97	1.00		1.00	1.00		0.97	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	540	656	149	78	746	47	241	156	61	154	174	432
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	658	2055	882	122	1450	451	569	209	82	290	304	1123
Arrive On Green	0.19	0.41	0.41	0.07	0.29	0.29	0.17	0.17	0.17	0.16	0.16	0.16
Sat Flow, veh/h	3408	5036	1520	1757	5036	1566	3408	1252	489	1757	1845	3136
Grp Volume(v), veh/h	540	656	149	78	746	47	241	0	217	154	174	432
Grp Sat Flow(s),veh/h/ln	1704	1679	1520	1757	1679	1566	1704	0	1741	1757	1845	1568
Q Serve(g_s), s	12.9	7.5	3.9	3.7	10.5	1.9	5.4	0.0	10.1	6.8	7.4	8.7
Cycle Q Clear(g_c), s	12.9	7.5	3.9	3.7	10.5	1.9	5.4	0.0	10.1	6.8	7.4	8.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	658	2055	882	122	1450	451	569	0	291	290	304	1123
V/C Ratio(X)	0.82	0.32	0.17	0.64	0.51	0.10	0.42	0.00	0.75	0.53	0.57	0.38
Avail Cap(c_a), veh/h	1003	2372	977	517	2372	738	1204	0	615	621	652	1713
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.9	17.1	8.5	38.5	25.3	22.2	31.7	0.0	33.7	32.5	32.7	20.3
Incr Delay (d2), s/veh	3.3	0.1	0.1	5.5	0.3	0.1	0.5	0.0	3.8	1.5	1.7	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	6.4	3.5	2.3	2.0	4.9	0.8	2.6	0.0	5.1	3.4	3.9	3.8
LnGrp Delay(d),s/veh	36.2	17.2	8.6	44.0	25.6	22.3	32.2	0.0	37.5	34.0	34.4	20.5
LnGrp LOS	D	B	A	D	C	C	C		D	C	C	C
Approach Vol, veh/h		1345			871			458			760	
Approach Delay, s/veh		23.9			27.0			34.7			26.4	
Approach LOS		C			C			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	9.9	39.5		17.7	20.1	29.3		17.9
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.7	9.5		10.7	14.9	12.5		12.1
Green Ext Time (p_c), s	0.1	12.4		3.3	1.5	11.9		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	26.7
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)	22	572	78	135	612	70	49	5	70	64	7	24
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		0.98	1.00		0.97	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	724	22	171	775	83	66	0	7	87	0	0
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	2	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	55	1206	530	281	1259	135	467	0	333	502	263	0
Arrive On Green	0.03	0.34	0.34	0.08	0.40	0.40	0.13	0.00	0.13	0.14	0.00	0.00
Sat Flow, veh/h	1757	3505	1540	3408	3184	341	3514	0	1532	3514	1845	0
Grp Volume(v), veh/h	28	724	22	171	426	432	66	0	7	87	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1540	1704	1752	1773	1757	0	1532	1757	1845	0
Q Serve(g_s), s	0.9	9.8	0.5	2.8	11.2	11.2	1.0	0.0	0.2	1.3	0.0	0.0
Cycle Q Clear(g_c), s	0.9	9.8	0.5	2.8	11.2	11.2	1.0	0.0	0.2	1.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	55	1206	530	281	693	701	467	0	333	502	263	0
V/C Ratio(X)	0.51	0.60	0.04	0.61	0.62	0.62	0.14	0.00	0.02	0.17	0.00	0.00
Avail Cap(c_a), veh/h	611	2440	1072	1779	1220	1234	1834	0	929	1529	803	0
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.4	15.6	12.5	25.5	13.9	13.9	22.0	0.0	17.8	21.6	0.0	0.0
Incr Delay (d2), s/veh	2.7	0.2	0.0	0.8	0.3	0.3	0.1	0.0	0.0	0.1	0.0	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	0.5	4.8	0.2	1.3	5.4	5.5	0.5	0.0	0.1	0.6	0.0	0.0
LnGrp Delay(d),s/veh	30.1	15.8	12.6	26.3	14.2	14.2	22.1	0.0	17.8	21.7	0.0	0.0
LnGrp LOS	C	B	B	C	B	B	C		B	C		
Approach Vol, veh/h		774			1029			73			87	
Approach Delay, s/veh		16.2			16.2			21.6			21.7	
Approach LOS		B			B			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	7.7	24.4		12.7	4.8	27.3		12.6
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	4.8	11.8		3.3	2.9	13.2		3.0
Green Ext Time (p_c), s	0.3	7.9		0.1	0.0	7.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	593	113	172	496	0	0	0	0	754	0	321
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	751	48	218	628	0				954	0	103
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79				0.79	0.79	0.79
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1101	493	346	1728	0				1108	0	989
Arrive On Green	0.00	0.31	0.31	0.10	0.49	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	3597	1568	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	751	48	218	628	0				954	0	103
Grp Sat Flow(s),veh/h/ln	0	1752	1568	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	8.5	1.0	2.8	5.0	0.0				11.6	0.0	1.1
Cycle Q Clear(g_c), s	0.0	8.5	1.0	2.8	5.0	0.0				11.6	0.0	1.1
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1101	493	346	1728	0				1108	0	989
V/C Ratio(X)	0.00	0.68	0.10	0.63	0.36	0.00				0.86	0.00	0.10
Avail Cap(c_a), veh/h	0	2666	1192	1878	2666	0				2324	0	2074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.6	11.0	19.6	7.1	0.0				14.6	0.0	11.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.7	0.0	0.0				0.8	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	4.1	0.4	1.3	2.4	0.0				5.7	0.0	0.5
LnGrp Delay(d),s/veh	0.0	13.9	11.0	20.3	7.2	0.0				15.4	0.0	11.0
LnGrp LOS		B	B	C	A					B		B
Approach Vol, veh/h		799			846						1057	
Approach Delay, s/veh		13.7			10.5						15.0	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.1	18.9		18.4		27.0		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	4.8	10.5		13.6		7.0		
Green Ext Time (p_c), s	0.1	3.8		0.7		3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
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)	202	1145	0	0	571	624	97	0	264	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	256	1449	0	0	723	184	123	0	282			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	410	2002	0	0	1309	585	797	0	356			
Arrive On Green	0.12	0.57	0.00	0.00	0.37	0.37	0.23	0.00	0.23			
Sat Flow, veh/h	3408	3597	0	0	3597	1568	3514	0	1568			
Grp Volume(v), veh/h	256	1449	0	0	723	184	123	0	282			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	3.2	13.6	0.0	0.0	7.3	3.8	1.3	0.0	7.6			
Cycle Q Clear(g_c), s	3.2	13.6	0.0	0.0	7.3	3.8	1.3	0.0	7.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	410	2002	0	0	1309	585	797	0	356			
V/C Ratio(X)	0.62	0.72	0.00	0.00	0.55	0.31	0.15	0.00	0.79			
Avail Cap(c_a), veh/h	1890	2721	0	0	2721	1217	2338	0	1043			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	18.9	7.1	0.0	0.0	11.2	10.0	14.0	0.0	16.4			
Incr Delay (d2), s/veh	0.6	0.3	0.0	0.0	0.1	0.1	0.0	0.0	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			
%ile BackOfQ(50%),veh/ln	1.5	6.5	0.0	0.0	3.5	1.6	0.6	0.0	3.4			
LnGrp Delay(d),s/veh	19.4	7.4	0.0	0.0	11.3	10.1	14.0	0.0	18.0			
LnGrp LOS	B	A			B	B	B		B			
Approach Vol, veh/h		1705			907			405				
Approach Delay, s/veh		9.2			11.1			16.8				
Approach LOS		A			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		30.8			8.9	21.8		14.3
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		15.6			5.2	9.3		9.6
Green Ext Time (p_c), s		6.9			0.4	7.5		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
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.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1131	278	0	1195	0	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1488	366	0	1572	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1489	0	2275	745
Stage 1	-	-	-	-	1489	-
Stage 2	-	-	-	-	786	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	223	-	47	304
Stage 1	-	0	-	-	121	-
Stage 2	-	0	-	-	396	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	223	-	47	304
Mov Cap-2 Maneuver	-	-	-	-	47	-
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	396	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	304	-	223	-
HCM Lane V/C Ratio	0.061	-	-	-
HCM Control Delay (s)	17.6	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.2	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	1068	34	27	1050	26	113	7	8	19	6	32
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		0.99	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	54	1352	42	34	1329	32	154	0	0	24	8	0
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	172	1989	62	64	1925	46	316	166	0	47	16	96
Arrive On Green	0.05	0.57	0.57	0.04	0.55	0.55	0.09	0.00	0.00	0.03	0.03	0.00
Sat Flow, veh/h	3408	3470	108	1757	3497	84	3514	1845	0	1333	445	2760
Grp Volume(v), veh/h	54	682	712	34	666	695	154	0	0	32	0	0
Grp Sat Flow(s),veh/h/ln	1704	1752	1825	1757	1752	1829	1757	1845	0	1778	0	1380
Q Serve(g_s), s	0.9	15.5	15.5	1.1	15.7	15.7	2.4	0.0	0.0	1.0	0.0	0.0
Cycle Q Clear(g_c), s	0.9	15.5	15.5	1.1	15.7	15.7	2.4	0.0	0.0	1.0	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.05	1.00		0.00	0.75		1.00
Lane Grp Cap(c), veh/h	172	1005	1047	64	965	1007	316	166	0	62	0	96
V/C Ratio(X)	0.31	0.68	0.68	0.53	0.69	0.69	0.49	0.00	0.00	0.52	0.00	0.00
Avail Cap(c_a), veh/h	1198	1078	1123	618	1078	1125	1544	811	0	781	0	1213
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.1	8.5	8.5	26.9	9.3	9.3	24.6	0.0	0.0	27.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	1.4	1.4	2.5	1.5	1.4	0.4	0.0	0.0	2.5	0.0	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	0.4	7.8	8.1	0.6	7.8	8.1	1.2	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	26.4	9.9	9.9	29.4	10.7	10.7	25.1	0.0	0.0	29.4	0.0	0.0
LnGrp LOS	C	A	A	C	B	B	C			C		
Approach Vol, veh/h		1448			1395			154			32	
Approach Delay, s/veh		10.5			11.2			25.1			29.4	
Approach LOS		B			B			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	5.1	36.7		6.0	6.4	35.4		9.1
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	3.1	17.5		3.0	2.9	17.7		4.4
Green Ext Time (p_c), s	0.0	13.7		0.1	0.1	13.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.8
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)	226	595	241	66	616	122	160	105	24	92	282	339
Number	1	6	16	5	2	12	7	4	14	3	8	18
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		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	286	753	243	84	780	1	203	133	2	116	357	87
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	253	1004	324	176	1263	564	243	788	348	147	474	114
Arrive On Green	0.14	0.39	0.39	0.10	0.36	0.36	0.14	0.22	0.22	0.08	0.17	0.17
Sat Flow, veh/h	1757	2605	841	1757	3505	1564	1757	3505	1549	1757	2787	670
Grp Volume(v), veh/h	286	507	489	84	780	1	203	133	2	116	223	221
Grp Sat Flow(s),veh/h/ln	1757	1752	1693	1757	1752	1564	1757	1752	1549	1757	1752	1705
Q Serve(g_s), s	11.5	20.0	20.0	3.6	14.6	0.0	9.0	2.4	0.1	5.2	9.7	9.9
Cycle Q Clear(g_c), s	11.5	20.0	20.0	3.6	14.6	0.0	9.0	2.4	0.1	5.2	9.7	9.9
Prop In Lane	1.00		0.50	1.00		1.00	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	253	675	652	176	1263	564	243	788	348	147	298	290
V/C Ratio(X)	1.13	0.75	0.75	0.48	0.62	0.00	0.84	0.17	0.01	0.79	0.75	0.76
Avail Cap(c_a), veh/h	253	675	652	187	1263	564	439	1051	465	275	372	362
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)	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	21.3	21.3	34.0	21.1	16.4	33.6	25.0	12.7	36.0	31.6	31.7
Incr Delay (d2), s/veh	89.1	3.0	3.1	0.8	2.3	0.0	2.9	0.0	0.0	3.6	4.4	5.4
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	11.8	10.1	9.8	1.8	7.4	0.0	4.5	1.2	0.0	2.7	5.0	5.1
LnGrp Delay(d),s/veh	123.3	24.3	24.4	34.8	23.3	16.4	36.5	25.0	12.7	39.5	36.0	37.1
LnGrp LOS	F	C	C	C	C	B	D	C	B	D	D	D
Approach Vol, veh/h		1282			865			338			560	
Approach Delay, s/veh		46.4			24.4			31.8			37.2	
Approach LOS		D			C			C			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	14.5	33.3	9.7	22.5	12.5	35.3	14.1	18.1
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	4.5	* 4.5	3.0	4.5
Max Green Setting (Gmax), s	11.5	16.5	12.5	24.0	8.5	* 19	20.0	17.0
Max Q Clear Time (g_c+I1), s	13.5	16.6	7.2	4.4	5.6	22.0	11.0	11.9
Green Ext Time (p_c), s	0.0	0.0	0.1	2.1	1.1	0.0	0.2	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	36.9
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
* 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)	56	20	137	17	8	33	58	176	10	29	461	43
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		0.99	1.00		1.00	1.00		0.98	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	69	25	23	21	10	0	72	217	8	36	569	13
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	790	204	188	94	99	0	117	1665	61	82	1625	702
Arrive On Green	0.23	0.23	0.23	0.05	0.05	0.00	0.07	0.48	0.48	0.05	0.46	0.46
Sat Flow, veh/h	3408	881	811	1757	1845	0	1757	3445	126	1757	3505	1515
Grp Volume(v), veh/h	69	0	48	21	10	0	72	110	115	36	569	13
Grp Sat Flow(s),veh/h/ln	1704	0	1692	1757	1845	0	1757	1752	1819	1757	1752	1515
Q Serve(g_s), s	1.4	0.0	1.9	1.0	0.4	0.0	3.4	3.0	3.0	1.7	9.0	0.4
Cycle Q Clear(g_c), s	1.4	0.0	1.9	1.0	0.4	0.0	3.4	3.0	3.0	1.7	9.0	0.4
Prop In Lane	1.00		0.48	1.00		0.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	790	0	392	94	99	0	117	847	879	82	1625	702
V/C Ratio(X)	0.09	0.00	0.12	0.22	0.10	0.00	0.61	0.13	0.13	0.44	0.35	0.02
Avail Cap(c_a), veh/h	790	0	392	407	428	0	407	847	879	305	1625	702
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	0.0	26.2	39.1	38.8	0.0	39.2	12.3	12.3	40.0	14.8	12.5
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.4	0.2	0.0	1.9	0.3	0.3	1.3	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	0.7	0.0	1.0	0.5	0.2	0.0	1.7	1.5	1.6	0.9	4.5	0.2
LnGrp Delay(d),s/veh	26.2	0.0	26.8	39.5	39.0	0.0	41.1	12.6	12.6	41.4	15.4	12.6
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		117			31			297			618	
Approach Delay, s/veh		26.5			39.4			19.5			16.9	
Approach LOS		C			D			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	7.5	45.9		24.1	9.3	44.2		8.7
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.7	5.0		3.9	5.4	11.0		3.0
Green Ext Time (p_c), s	0.0	11.2		0.2	0.0	10.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	22	0	247	611	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	28	0	309	764	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	920	384	769	0	-	0
Stage 1	766	-	-	-	-	-
Stage 2	154	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	268	611	834	-	-	-
Stage 1	417	-	-	-	-	-
Stage 2	855	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	268	611	834	-	-	-
Mov Cap-2 Maneuver	268	-	-	-	-	-
Stage 1	417	-	-	-	-	-
Stage 2	855	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	834	-	611	-	-
HCM Lane V/C Ratio	-	-	0.045	-	-
HCM Control Delay (s)	0	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	0	10	0	0	25	17	221	21	81	509	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	9	0	13	0	0	32	22	280	27	103	644	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1060	1226	352	863	1240	154	699	0	0	306	0	0
Stage 1	877	877	-	336	336	-	-	-	-	-	-	-
Stage 2	183	349	-	527	904	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	177	176	641	247	172	861	887	-	-	1244	-	-
Stage 1	308	362	-	649	638	-	-	-	-	-	-	-
Stage 2	798	629	-	500	352	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	157	157	639	222	154	860	885	-	-	1243	-	-
Mov Cap-2 Maneuver	157	157	-	222	154	-	-	-	-	-	-	-
Stage 1	300	332	-	633	622	-	-	-	-	-	-	-
Stage 2	749	613	-	448	323	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.8	9.3	0.6	1
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	885	-	-	282	-	860	1243	-	-
HCM Lane V/C Ratio	0.024	-	-	0.076	-	0.037	0.082	-	-
HCM Control Delay (s)	9.2	-	-	18.8	0	9.3	8.2	-	-
HCM Lane LOS	A	-	-	C	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0.1	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	50	266	19	71	38	281	159	34	42	171	16
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	49	60	36	23	85	25	335	189	25	50	204	12
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	128	372	548	69	230	68	408	1078	140	130	634	37
Arrive On Green	0.07	0.20	0.20	0.04	0.17	0.17	0.23	0.35	0.35	0.07	0.19	0.19
Sat Flow, veh/h	1757	1845	2719	1757	1368	402	1757	3107	404	1757	3361	196
Grp Volume(v), veh/h	49	60	36	23	0	110	335	105	109	50	106	110
Grp Sat Flow(s),veh/h/ln	1757	1845	1360	1757	0	1770	1757	1752	1758	1757	1752	1805
Q Serve(g_s), s	1.1	1.1	0.4	0.5	0.0	2.3	7.5	1.7	1.8	1.1	2.2	2.2
Cycle Q Clear(g_c), s	1.1	1.1	0.4	0.5	0.0	2.3	7.5	1.7	1.8	1.1	2.2	2.2
Prop In Lane	1.00		1.00	1.00		0.23	1.00		0.23	1.00		0.11
Lane Grp Cap(c), veh/h	128	372	548	69	0	297	408	608	610	130	330	340
V/C Ratio(X)	0.38	0.16	0.07	0.33	0.00	0.37	0.82	0.17	0.18	0.38	0.32	0.32
Avail Cap(c_a), veh/h	934	1204	1775	722	0	1027	1147	1356	1360	722	1144	1178
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.3	13.6	13.4	19.3	0.0	15.3	15.1	9.4	9.4	18.3	14.5	14.5
Incr Delay (d2), s/veh	0.7	0.1	0.0	1.0	0.0	0.3	1.6	0.0	0.1	0.7	0.2	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	0.6	0.6	0.2	0.3	0.0	1.1	3.8	0.8	0.9	0.6	1.0	1.1
LnGrp Delay(d),s/veh	19.0	13.7	13.4	20.4	0.0	15.6	16.6	9.4	9.5	18.9	14.7	14.7
LnGrp LOS	B	B	B	C		B	B	A	A	B	B	B
Approach Vol, veh/h		145			133			549			266	
Approach Delay, s/veh		15.4			16.4			13.8			15.5	
Approach LOS		B			B			B			B	

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	6.0	10.9	6.1	18.3	4.6	12.3	12.6	11.8
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	3.1	4.3	3.1	3.8	2.5	3.1	9.5	4.2
Green Ext Time (p_c), s	0.0	0.6	0.0	1.6	0.0	0.7	0.1	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	727	2	6	912	192	3	1	4	103	3	35
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	38	865	2	7	1086	0	4	1	0	126	0	6
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	1.00
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	70	1991	5	23	1851	828	13	3	0	433	0	193
Arrive On Green	0.04	0.55	0.55	0.01	0.53	0.00	0.01	0.01	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1757	3587	8	1757	3505	1568	1419	355	0	3514	0	1568
Grp Volume(v), veh/h	38	423	444	7	1086	0	5	0	0	126	0	6
Grp Sat Flow(s),veh/h/ln	1757	1752	1843	1757	1752	1568	1774	0	0	1757	0	1568
Q Serve(g_s), s	1.2	8.0	8.0	0.2	12.0	0.0	0.2	0.0	0.0	1.9	0.0	0.2
Cycle Q Clear(g_c), s	1.2	8.0	8.0	0.2	12.0	0.0	0.2	0.0	0.0	1.9	0.0	0.2
Prop In Lane	1.00		0.00	1.00		1.00	0.80		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	972	1023	23	1851	828	17	0	0	433	0	193
V/C Ratio(X)	0.54	0.43	0.43	0.31	0.59	0.00	0.30	0.00	0.00	0.29	0.00	0.03
Avail Cap(c_a), veh/h	619	1297	1364	836	2470	1105	594	0	0	1548	0	691
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.7	7.4	7.4	27.8	9.2	0.0	27.9	0.0	0.0	22.6	0.0	21.9
Incr Delay (d2), s/veh	2.4	0.4	0.4	2.8	0.3	0.0	3.7	0.0	0.0	0.1	0.0	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	0.6	4.0	4.2	0.1	5.8	0.0	0.1	0.0	0.0	0.9	0.0	0.1
LnGrp Delay(d),s/veh	29.2	7.8	7.8	30.6	9.5	0.0	31.6	0.0	0.0	22.8	0.0	21.9
LnGrp LOS	C	A	A	C	A		C			C		C
Approach Vol, veh/h		905			1093			5			132	
Approach Delay, s/veh		8.7			9.6			31.6			22.7	
Approach LOS		A			A			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	4.2	36.5		4.5	5.8	35.0		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	10.0		2.2	3.2	14.0		3.9
Green Ext Time (p_c), s	0.0	18.1		0.0	0.0	15.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
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)	0	746	183	0	738	206	0	0	0	894	0	545
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	888	0	0	879	0				1064	0	581
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1210	541	0	1210	541				1420	0	653
Arrive On Green	0.00	0.35	0.00	0.00	0.35	0.00				0.42	0.00	0.42
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	888	0	0	879	0				1064	0	581
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	9.3	0.0	0.0	9.2	0.0				11.1	0.0	14.4
Cycle Q Clear(g_c), s	0.0	9.3	0.0	0.0	9.2	0.0				11.1	0.0	14.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1210	541	0	1210	541				1420	0	653
V/C Ratio(X)	0.00	0.73	0.00	0.00	0.73	0.00				0.75	0.00	0.89
Avail Cap(c_a), veh/h	0	4172	1866	0	4172	1866				2840	0	1307
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.1	0.0	0.0	12.0	0.0				10.4	0.0	11.4
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0				0.3	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	4.5	0.0	0.0	4.4	0.0				5.2	0.0	6.4
LnGrp Delay(d),s/veh	0.0	12.4	0.0	0.0	12.3	0.0				10.7	0.0	13.1
LnGrp LOS		B			B					B		B
Approach Vol, veh/h		888			879						1645	
Approach Delay, s/veh		12.4			12.3						11.5	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		19.5		22.5		19.5		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		11.3		16.4		11.2		
Green Ext Time (p_c), s		3.2		1.1		3.2		

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

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)	0	1365	275	0	796	991	148	0	227	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1625	0	0	948	0	176	0	213			
Adj No. of Lanes	0	2	1	0	2	1	2	0	1			
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2130	953	0	2130	953	611	0	281			
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00	0.18	0.00	0.18			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1625	0	0	948	0	176	0	213			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	14.3	0.0	0.0	6.1	0.0	1.9	0.0	5.5			
Cycle Q Clear(g_c), s	0.0	14.3	0.0	0.0	6.1	0.0	1.9	0.0	5.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2130	953	0	2130	953	611	0	281			
V/C Ratio(X)	0.00	0.76	0.00	0.00	0.45	0.00	0.29	0.00	0.76			
Avail Cap(c_a), veh/h	0	4146	1855	0	4146	1855	2016	0	927			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	6.1	0.0	0.0	4.5	0.0	15.0	0.0	16.5			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	6.8	0.0	0.0	2.9	0.0	0.9	0.0	2.4			
LnGrp Delay(d),s/veh	0.0	6.3	0.0	0.0	4.5	0.0	15.1	0.0	18.0			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1625			948			389				
Approach Delay, s/veh		6.3			4.5			16.7				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		30.7				30.7		11.6
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		16.3				8.1		7.5
Green Ext Time (p_c), s		9.3				9.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

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)	505	738	349	77	1176	64	275	77	50	56	66	336
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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	601	879	233	92	1400	27	327	92	39	67	79	315
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	708	2512	994	122	1833	570	460	166	70	208	218	1022
Arrive On Green	0.21	0.50	0.50	0.07	0.36	0.36	0.13	0.13	0.13	0.12	0.12	0.12
Sat Flow, veh/h	3408	5036	1568	1757	5036	1565	3408	1229	521	1757	1845	3136
Grp Volume(v), veh/h	601	879	233	92	1400	27	327	0	131	67	79	315
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1757	1679	1565	1704	0	1750	1757	1845	1568
Q Serve(g_s), s	15.4	9.6	5.8	4.7	22.2	1.0	8.3	0.0	6.4	3.2	3.6	6.8
Cycle Q Clear(g_c), s	15.4	9.6	5.8	4.7	22.2	1.0	8.3	0.0	6.4	3.2	3.6	6.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	708	2512	994	122	1833	570	460	0	236	208	218	1022
V/C Ratio(X)	0.85	0.35	0.23	0.75	0.76	0.05	0.71	0.00	0.55	0.32	0.36	0.31
Avail Cap(c_a), veh/h	938	2512	994	484	2218	689	1126	0	578	580	609	1687
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.6	13.8	7.2	41.5	25.4	18.7	37.6	0.0	36.7	36.7	36.9	22.9
Incr Delay (d2), s/veh	5.8	0.1	0.1	9.0	1.3	0.0	2.0	0.0	2.0	0.9	1.0	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	7.8	4.5	3.5	2.6	10.5	0.4	4.0	0.0	3.2	1.6	1.9	3.0
LnGrp Delay(d),s/veh	40.4	13.9	7.3	50.5	26.8	18.7	39.6	0.0	38.8	37.6	37.9	23.1
LnGrp LOS	D	B	A	D	C	B	D		D	D	D	C
Approach Vol, veh/h		1713			1519			458			461	
Approach Delay, s/veh		22.3			28.1			39.4			27.7	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.3	50.1		14.4	22.6	37.9		16.0
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	6.7	11.6		8.8	17.4	24.2		10.3
Green Ext Time (p_c), s	0.2	20.5		1.9	1.5	8.8		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	1018	254	454	817	61	211	17	494	48	11	15
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	1049	194	468	842	60	231	0	299	30	37	1
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	49	1229	540	560	1613	115	680	0	555	179	182	5
Arrive On Green	0.03	0.35	0.35	0.16	0.49	0.49	0.19	0.00	0.19	0.10	0.10	0.10
Sat Flow, veh/h	1757	3505	1541	3408	3312	236	3514	0	1534	1757	1786	48
Grp Volume(v), veh/h	28	1049	194	468	445	457	231	0	299	30	0	38
Grp Sat Flow(s),veh/h/ln	1757	1752	1541	1704	1752	1795	1757	0	1534	1757	0	1834
Q Serve(g_s), s	1.4	25.1	8.5	12.0	15.8	15.8	5.1	0.0	14.0	1.4	0.0	1.7
Cycle Q Clear(g_c), s	1.4	25.1	8.5	12.0	15.8	15.8	5.1	0.0	14.0	1.4	0.0	1.7
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	49	1229	540	560	854	874	680	0	555	179	0	187
V/C Ratio(X)	0.57	0.85	0.36	0.84	0.52	0.52	0.34	0.00	0.54	0.17	0.00	0.20
Avail Cap(c_a), veh/h	389	1552	682	1132	854	874	1167	0	767	486	0	508
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.4	27.2	21.8	36.6	15.9	15.9	31.4	0.0	23.1	37.1	0.0	37.2
Incr Delay (d2), s/veh	3.8	3.3	0.1	1.3	0.3	0.3	0.1	0.0	0.3	0.2	0.0	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	0.7	12.7	3.6	5.8	7.6	7.8	2.5	0.0	5.9	0.7	0.0	0.9
LnGrp Delay(d),s/veh	47.2	30.5	21.9	37.9	16.2	16.2	31.6	0.0	23.4	37.2	0.0	37.4
LnGrp LOS	D	C	C	D	B	B	C		C	D		D
Approach Vol, veh/h		1271			1370			530			68	
Approach Delay, s/veh		29.5			23.6			27.0			37.3	
Approach LOS		C			C			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	17.8	36.3		13.7	5.5	48.6		22.5
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	14.0	27.1		3.7	3.4	17.8		16.0
Green Ext Time (p_c), s	0.8	4.6		0.1	0.0	10.3		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	26.8
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1353	207	354	785	0	0	0	0	900	5	547
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1395	160	365	809	0				932	0	324
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1478	661	451	2097	0				1024	0	914
Arrive On Green	0.00	0.42	0.42	0.13	0.60	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3597	1567	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1395	160	365	809	0				932	0	324
Grp Sat Flow(s),veh/h/ln	0	1752	1567	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	30.2	5.2	8.2	9.5	0.0				20.2	0.0	6.4
Cycle Q Clear(g_c), s	0.0	30.2	5.2	8.2	9.5	0.0				20.2	0.0	6.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1478	661	451	2097	0				1024	0	914
V/C Ratio(X)	0.00	0.94	0.24	0.81	0.39	0.00				0.91	0.00	0.35
Avail Cap(c_a), veh/h	0	1531	685	1079	2097	0				1335	0	1191
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	21.9	14.7	33.3	8.3	0.0				27.0	0.0	22.1
Incr Delay (d2), s/veh	0.0	11.7	0.1	1.3	0.0	0.0				6.8	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
%ile BackOfQ(50%),veh/ln	0.0	16.9	2.2	3.9	4.6	0.0				10.7	0.0	2.8
LnGrp Delay(d),s/veh	0.0	33.6	14.8	34.6	8.3	0.0				33.7	0.0	22.2
LnGrp LOS		C	B	C	A					C		C
Approach Vol, veh/h		1555			1174						1256	
Approach Delay, s/veh		31.7			16.5						30.8	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	13.9	37.9		27.1		51.8		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	10.2	32.2		22.2		11.5		
Green Ext Time (p_c), s	0.2	1.1		0.8		7.4		

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
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)	474	1779	0	0	1016	904	123	3	334	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	489	1834	0	0	1047	560	129	0	299			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	613	2248	0	0	1435	640	783	0	349			
Arrive On Green	0.18	0.64	0.00	0.00	0.41	0.41	0.22	0.00	0.22			
Sat Flow, veh/h	3408	3597	0	0	3597	1562	3514	0	1568			
Grp Volume(v), veh/h	489	1834	0	0	1047	560	129	0	299			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1562	1757	0	1568			
Q Serve(g_s), s	9.2	26.4	0.0	0.0	16.9	22.1	2.0	0.0	12.3			
Cycle Q Clear(g_c), s	9.2	26.4	0.0	0.0	16.9	22.1	2.0	0.0	12.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	613	2248	0	0	1435	640	783	0	349			
V/C Ratio(X)	0.80	0.82	0.00	0.00	0.73	0.88	0.16	0.00	0.86			
Avail Cap(c_a), veh/h	1272	2248	0	0	1831	816	1573	0	702			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	26.3	9.0	0.0	0.0	16.7	18.2	21.0	0.0	25.0			
Incr Delay (d2), s/veh	0.9	2.3	0.0	0.0	0.7	7.4	0.0	0.0	2.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.4	13.2	0.0	0.0	8.3	10.8	1.0	0.0	5.5			
LnGrp Delay(d),s/veh	27.2	11.3	0.0	0.0	17.4	25.6	21.0	0.0	27.4			
LnGrp LOS	C	B			B	C	C		C			
Approach Vol, veh/h		2323			1607			428				
Approach Delay, s/veh		14.7			20.2			25.5				
Approach LOS		B			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		48.0			15.5	32.4		19.0
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		28.4			11.2	24.1		14.3
Green Ext Time (p_c), s		5.0			0.8	3.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
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.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1599	514	0	1920	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1648	530	0	1979	0	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1648	0	2638	824
Stage 1	-	-	-	-	1648	-
Stage 2	-	-	-	-	990	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	186	-	28	270
Stage 1	-	0	-	-	96	-
Stage 2	-	0	-	-	310	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	186	-	28	270
Mov Cap-2 Maneuver	-	-	-	-	28	-
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	310	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	270	-	186	-
HCM Lane V/C Ratio	0.126	-	-	-
HCM Control Delay (s)	20.2	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.4	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	325	1233	74	47	1290	88	378	40	22	119	24	252
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		0.98	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	335	1271	73	48	1330	87	438	0	0	123	25	27
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	420	1749	100	69	1435	94	569	299	0	159	32	292
Arrive On Green	0.12	0.52	0.52	0.04	0.43	0.43	0.16	0.00	0.00	0.11	0.11	0.11
Sat Flow, veh/h	3408	3365	193	1757	3337	218	3514	1845	0	1472	299	2695
Grp Volume(v), veh/h	335	661	683	48	697	720	438	0	0	148	0	27
Grp Sat Flow(s),veh/h/ln	1704	1752	1805	1757	1752	1802	1757	1845	0	1771	0	1347
Q Serve(g_s), s	8.5	25.7	25.9	2.4	33.3	33.6	10.6	0.0	0.0	7.2	0.0	0.8
Cycle Q Clear(g_c), s	8.5	25.7	25.9	2.4	33.3	33.6	10.6	0.0	0.0	7.2	0.0	0.8
Prop In Lane	1.00		0.11	1.00		0.12	1.00		0.00	0.83		1.00
Lane Grp Cap(c), veh/h	420	911	938	69	754	775	569	299	0	192	0	292
V/C Ratio(X)	0.80	0.73	0.73	0.70	0.92	0.93	0.77	0.00	0.00	0.77	0.00	0.09
Avail Cap(c_a), veh/h	770	911	938	397	810	833	993	521	0	500	0	761
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.7	16.4	16.4	42.0	23.9	23.9	35.5	0.0	0.0	38.4	0.0	35.5
Incr Delay (d2), s/veh	1.3	2.8	2.7	4.7	15.4	15.8	0.8	0.0	0.0	2.5	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	4.0	13.0	13.4	1.2	19.3	20.0	5.2	0.0	0.0	3.7	0.0	0.3
LnGrp Delay(d),s/veh	39.0	19.1	19.1	46.7	39.3	39.7	36.3	0.0	0.0	40.9	0.0	35.6
LnGrp LOS	D	B	B	D	D	D	D			D		D
Approach Vol, veh/h		1679			1465			438			175	
Approach Delay, s/veh		23.1			39.8			36.3			40.1	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	50.1		13.6	14.4	42.1		18.3
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	40.9		25.0	20.0	40.9		25.0
Max Q Clear Time (g_c+I1), s	4.4	27.9		9.2	10.5	35.6		12.6
Green Ext Time (p_c), s	0.0	10.8		0.5	0.5	2.5		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.9
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)	427	795	220	104	738	124	401	364	104	96	249	309
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		0.95
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	454	846	211	111	785	35	427	387	31	102	265	107
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	413	1027	256	220	915	407	413	1130	503	125	383	149
Arrive On Green	0.24	0.37	0.37	0.13	0.26	0.26	0.24	0.32	0.32	0.07	0.16	0.16
Sat Flow, veh/h	1757	2766	690	1757	3505	1559	1757	3505	1561	1757	2424	946
Grp Volume(v), veh/h	454	536	521	111	785	35	427	387	31	102	189	183
Grp Sat Flow(s),veh/h/ln	1757	1752	1703	1757	1752	1559	1757	1752	1561	1757	1752	1618
Q Serve(g_s), s	32.0	37.6	37.7	8.0	29.0	2.3	32.0	11.4	1.9	7.8	13.8	14.6
Cycle Q Clear(g_c), s	32.0	37.6	37.7	8.0	29.0	2.3	32.0	11.4	1.9	7.8	13.8	14.6
Prop In Lane	1.00		0.40	1.00		1.00	1.00		1.00	1.00		0.58
Lane Grp Cap(c), veh/h	413	651	633	220	915	407	413	1130	503	125	277	255
V/C Ratio(X)	1.10	0.82	0.82	0.51	0.86	0.09	1.03	0.34	0.06	0.82	0.68	0.72
Avail Cap(c_a), veh/h	413	651	633	220	915	407	413	1173	522	220	393	363
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	38.7	38.7	55.6	47.8	38.0	52.0	35.1	31.9	62.3	54.0	54.4
Incr Delay (d2), s/veh	73.4	7.9	8.2	8.1	10.2	0.4	52.9	0.1	0.0	5.0	1.1	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	23.9	19.6	19.1	4.4	15.4	1.0	21.6	5.5	0.8	4.0	6.8	6.6
LnGrp Delay(d),s/veh	125.4	46.6	46.9	63.6	58.1	38.4	104.9	35.2	31.9	67.3	55.2	55.9
LnGrp LOS	F	D	D	E	E	D	F	D	C	E	E	E
Approach Vol, veh/h		1511			931			845			474	
Approach Delay, s/veh		70.4			58.0			70.3			58.1	
Approach LOS		E			E			E			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	35.0	40.0	12.6	48.3	20.0	55.0	35.0	26.0
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	32.0	35.5	17.0	45.5	17.0	50.5	32.0	30.5
Max Q Clear Time (g_c+I1), s	34.0	31.0	9.8	13.4	10.0	39.7	34.0	16.6
Green Ext Time (p_c), s	0.0	3.2	0.1	3.3	0.1	6.2	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	65.7
HCM 2010 LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	177	46	172	39	29	51	134	529	9	45	368	90
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		0.98	1.00		0.95	1.00		0.97	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	192	50	78	42	32	1	146	575	9	49	400	32
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	733	138	215	146	147	5	177	1684	26	95	1507	651
Arrive On Green	0.22	0.22	0.22	0.08	0.08	0.08	0.10	0.48	0.48	0.05	0.43	0.43
Sat Flow, veh/h	3408	640	999	1757	1776	55	1757	3530	55	1757	3505	1513
Grp Volume(v), veh/h	192	0	128	42	0	33	146	285	299	49	400	32
Grp Sat Flow(s),veh/h/ln	1704	0	1640	1757	0	1831	1757	1752	1833	1757	1752	1513
Q Serve(g_s), s	4.4	0.0	6.2	2.1	0.0	1.6	7.6	9.5	9.5	2.5	6.8	1.1
Cycle Q Clear(g_c), s	4.4	0.0	6.2	2.1	0.0	1.6	7.6	9.5	9.5	2.5	6.8	1.1
Prop In Lane	1.00		0.61	1.00		0.03	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	733	0	353	146	0	152	177	836	874	95	1507	651
V/C Ratio(X)	0.26	0.00	0.36	0.29	0.00	0.22	0.82	0.34	0.34	0.52	0.27	0.05
Avail Cap(c_a), veh/h	733	0	353	378	0	394	378	836	874	283	1507	651
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	0.0	31.1	40.1	0.0	39.8	41.0	15.2	15.2	42.8	17.0	15.4
Incr Delay (d2), s/veh	0.9	0.0	2.9	0.4	0.0	0.3	3.6	1.1	1.1	1.6	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	2.1	0.0	3.1	1.0	0.0	0.8	3.9	4.8	5.0	1.3	3.4	0.5
LnGrp Delay(d),s/veh	31.2	0.0	34.0	40.5	0.0	40.1	44.6	16.3	16.3	44.4	17.5	15.6
LnGrp LOS	C		C	D		D	D	B	B	D	B	B
Approach Vol, veh/h		320			75			730			481	
Approach Delay, s/veh		32.3			40.3			22.0			20.1	
Approach LOS		C			D			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	8.5	48.6		24.1	12.9	44.2		11.8
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	4.5	11.5		8.2	9.6	8.8		4.1
Green Ext Time (p_c), s	0.0	13.0		0.7	0.0	13.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.3
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	55	0	661	572	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	62	0	743	643	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1018	325	651	0	-	0
Stage 1	647	-	-	-	-	-
Stage 2	371	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	232	668	925	-	-	-
Stage 1	480	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	232	668	925	-	-	-
Mov Cap-2 Maneuver	232	-	-	-	-	-
Stage 1	480	-	-	-	-	-
Stage 2	665	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	925	-	668	-	-
HCM Lane V/C Ratio	-	-	0.093	-	-
HCM Control Delay (s)	0	-	10.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	0	38	8	1	46	13	563	7	44	564	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	29	0	44	9	1	53	15	647	8	51	648	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1114	1445	335	1106	1452	337	670	0	0	655	0	0
Stage 1	760	760	-	681	681	-	-	-	-	-	-	-
Stage 2	354	685	-	425	771	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	162	130	658	164	128	656	909	-	-	921	-	-
Stage 1	362	410	-	404	446	-	-	-	-	-	-	-
Stage 2	633	444	-	575	405	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	139	121	658	145	119	651	909	-	-	914	-	-
Mov Cap-2 Maneuver	139	121	-	145	119	-	-	-	-	-	-	-
Stage 1	356	387	-	397	439	-	-	-	-	-	-	-
Stage 2	566	437	-	507	382	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.6	14.6	0.2	0.6
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	909	-	-	265	145	594	914	-	-
HCM Lane V/C Ratio	0.016	-	-	0.273	0.063	0.091	0.055	-	-
HCM Control Delay (s)	9	-	-	23.6	31.5	11.7	9.2	-	-
HCM Lane LOS	A	-	-	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	0.2	0.3	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	98	492	33	76	62	414	290	23	33	210	46
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	34	104	56	35	81	36	440	309	21	35	223	30
Adj No. of Lanes	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	306	452	97	201	89	505	1348	91	97	537	71
Arrive On Green	0.05	0.17	0.17	0.06	0.17	0.17	0.29	0.40	0.40	0.06	0.17	0.17
Sat Flow, veh/h	1757	1845	2723	1757	1203	535	1757	3331	225	1757	3110	413
Grp Volume(v), veh/h	34	104	56	35	0	117	440	162	168	35	124	129
Grp Sat Flow(s),veh/h/ln	1757	1845	1361	1757	0	1737	1757	1752	1804	1757	1752	1771
Q Serve(g_s), s	0.8	2.2	0.8	0.8	0.0	2.6	10.5	2.7	2.7	0.8	2.8	2.8
Cycle Q Clear(g_c), s	0.8	2.2	0.8	0.8	0.0	2.6	10.5	2.7	2.7	0.8	2.8	2.8
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.12	1.00		0.23
Lane Grp Cap(c), veh/h	95	306	452	97	0	290	505	709	730	97	303	306
V/C Ratio(X)	0.36	0.34	0.12	0.36	0.00	0.40	0.87	0.23	0.23	0.36	0.41	0.42
Avail Cap(c_a), veh/h	879	1133	1673	680	0	949	1079	1276	1313	680	1077	1088
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	16.2	15.6	20.0	0.0	16.3	14.9	8.6	8.6	20.0	16.2	16.2
Incr Delay (d2), s/veh	0.8	0.2	0.0	0.8	0.0	0.3	1.9	0.1	0.1	0.8	0.3	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	0.4	1.1	0.3	0.4	0.0	1.3	5.3	1.3	1.3	0.4	1.4	1.4
LnGrp Delay(d),s/veh	20.9	16.4	15.7	20.8	0.0	16.7	16.8	8.6	8.6	20.8	16.5	16.6
LnGrp LOS	C	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		194			152			770			288	
Approach Delay, s/veh		17.0			17.6			13.3			17.1	
Approach LOS		B			B			B			B	

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	5.4	11.3	5.4	21.8	5.4	11.3	15.6	11.6
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.8	4.6	2.8	4.7	2.8	4.2	12.5	4.8
Green Ext Time (p_c), s	0.0	0.9	0.0	2.3	0.0	0.9	0.2	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	146	1109	4	15	720	273	4	4	14	325	7	92
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	154	1167	4	16	758	0	4	4	0	347	0	12
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	194	1964	7	48	1630	729	13	13	0	454	0	203
Arrive On Green	0.11	0.55	0.55	0.03	0.47	0.00	0.01	0.01	0.00	0.13	0.00	0.13
Sat Flow, veh/h	1757	3582	12	1757	3505	1568	900	900	0	3514	0	1568
Grp Volume(v), veh/h	154	571	600	16	758	0	8	0	0	347	0	12
Grp Sat Flow(s),veh/h/ln	1757	1752	1842	1757	1752	1568	1800	0	0	1757	0	1568
Q Serve(g_s), s	5.2	13.2	13.2	0.5	8.9	0.0	0.3	0.0	0.0	5.8	0.0	0.4
Cycle Q Clear(g_c), s	5.2	13.2	13.2	0.5	8.9	0.0	0.3	0.0	0.0	5.8	0.0	0.4
Prop In Lane	1.00		0.01	1.00		1.00	0.50		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	194	961	1010	48	1630	729	26	0	0	454	0	203
V/C Ratio(X)	0.79	0.59	0.59	0.33	0.47	0.00	0.31	0.00	0.00	0.76	0.00	0.06
Avail Cap(c_a), veh/h	580	1215	1277	783	2314	1035	564	0	0	1450	0	647
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.3	9.2	9.2	28.9	11.1	0.0	29.6	0.0	0.0	25.5	0.0	23.1
Incr Delay (d2), s/veh	2.8	0.7	0.7	1.5	0.2	0.0	2.4	0.0	0.0	1.0	0.0	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	6.5	6.9	0.3	4.4	0.0	0.1	0.0	0.0	2.9	0.0	0.2
LnGrp Delay(d),s/veh	29.0	9.9	9.8	30.4	11.3	0.0	32.0	0.0	0.0	26.5	0.0	23.2
LnGrp LOS	C	A	A	C	B		C			C		C
Approach Vol, veh/h		1325			774			8			359	
Approach Delay, s/veh		12.1			11.7			32.0			26.4	
Approach LOS		B			B			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	5.2	38.2		4.9	10.2	33.2		12.3
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.0	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.5	15.2		2.3	7.2	10.9		7.8
Green Ext Time (p_c), s	0.0	16.4		0.0	0.1	17.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	14.1
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)	0	1415	303	0	760	244	0	0	0	966	0	301
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	1489	0	0	800	0				1017	0	218
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1725	772	0	1725	772				1135	0	522
Arrive On Green	0.00	0.49	0.00	0.00	0.49	0.00				0.33	0.00	0.33
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	1489	0	0	800	0				1017	0	218
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	21.4	0.0	0.0	8.6	0.0				16.2	0.0	6.2
Cycle Q Clear(g_c), s	0.0	21.4	0.0	0.0	8.6	0.0				16.2	0.0	6.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1725	772	0	1725	772				1135	0	522
V/C Ratio(X)	0.00	0.86	0.00	0.00	0.46	0.00				0.90	0.00	0.42
Avail Cap(c_a), veh/h	0	3065	1371	0	3065	1371				2086	0	960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.8	0.0	0.0	9.6	0.0				18.1	0.0	14.8
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.1	0.0				1.1	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	10.3	0.0	0.0	4.1	0.0				7.8	0.0	2.7
LnGrp Delay(d),s/veh	0.0	13.3	0.0	0.0	9.6	0.0				19.2	0.0	15.0
LnGrp LOS		B			A					B		B
Approach Vol, veh/h		1489			800						1235	
Approach Delay, s/veh		13.3			9.6						18.5	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		33.1		24.0		33.1		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		23.4		18.2		10.6		
Green Ext Time (p_c), s		4.7		0.8		4.8		

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

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)	0	1805	576	0	847	1023	157	0	305	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1900	0	0	892	0	165	0	266			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2240	1002	0	2240	1002	689	0	317			
Arrive On Green	0.00	0.64	0.00	0.00	0.64	0.00	0.20	0.00	0.20			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1900	0	0	892	0	165	0	266			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	24.2	0.0	0.0	7.0	0.0	2.3	0.0	9.2			
Cycle Q Clear(g_c), s	0.0	24.2	0.0	0.0	7.0	0.0	2.3	0.0	9.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2240	1002	0	2240	1002	689	0	317			
V/C Ratio(X)	0.00	0.85	0.00	0.00	0.40	0.00	0.24	0.00	0.84			
Avail Cap(c_a), veh/h	0	3093	1384	0	3093	1384	1504	0	692			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	8.1	0.0	0.0	5.0	0.0	19.0	0.0	21.7			
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.0	0.0	0.0	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	11.7	0.0	0.0	3.4	0.0	1.1	0.0	4.2			
LnGrp Delay(d),s/veh	0.0	9.3	0.0	0.0	5.0	0.0	19.0	0.0	24.0			
LnGrp LOS		A			A		B		C			
Approach Vol, veh/h		1900			892			431				
Approach Delay, s/veh		9.3			5.0			22.1				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		41.2				41.2		15.4
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		26.2				9.0		11.2
Green Ext Time (p_c), s		10.0				11.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

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)	626	1199	285	53	942	118	341	130	64	138	157	587
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		0.97	1.00		0.98	1.00		0.98	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	659	1262	206	56	992	47	359	137	53	145	165	557
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	746	2261	918	97	1453	445	505	186	72	324	340	1265
Arrive On Green	0.22	0.45	0.45	0.06	0.29	0.29	0.15	0.15	0.15	0.18	0.18	0.18
Sat Flow, veh/h	3408	5036	1528	1757	5036	1542	3408	1258	487	1757	1845	3136
Grp Volume(v), veh/h	659	1262	206	56	992	47	359	0	190	145	165	557
Grp Sat Flow(s),veh/h/ln	1704	1679	1528	1757	1679	1542	1704	0	1745	1757	1845	1568
Q Serve(g_s), s	18.6	18.3	6.2	3.1	17.3	2.2	10.0	0.0	10.3	7.3	8.0	12.8
Cycle Q Clear(g_c), s	18.6	18.3	6.2	3.1	17.3	2.2	10.0	0.0	10.3	7.3	8.0	12.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	746	2261	918	97	1453	445	505	0	258	324	340	1265
V/C Ratio(X)	0.88	0.56	0.22	0.58	0.68	0.11	0.71	0.00	0.74	0.45	0.48	0.44
Avail Cap(c_a), veh/h	858	2261	918	442	2027	621	1029	0	527	530	557	1633
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	20.1	9.3	45.8	31.3	25.9	40.3	0.0	40.5	36.0	36.3	21.5
Incr Delay (d2), s/veh	9.9	0.3	0.1	5.3	0.6	0.1	1.9	0.0	4.0	1.0	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	9.8	8.5	3.6	1.6	8.1	1.0	4.8	0.0	5.3	3.6	4.1	5.6
LnGrp Delay(d),s/veh	47.4	20.4	9.4	51.0	31.9	26.0	42.2	0.0	44.5	37.0	37.4	21.8
LnGrp LOS	D	C	A	D	C	C	D		D	D	D	C
Approach Vol, veh/h		2127			1095			549			867	
Approach Delay, s/veh		27.7			32.6			43.0			27.3	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	49.4		22.0	25.4	33.5		18.4
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.1	20.3		14.8	20.6	19.3		12.3
Green Ext Time (p_c), s	0.1	15.3		3.5	1.1	9.3		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	30.6
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)	45	882	258	587	689	93	204	25	628	154	26	49
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	46	900	171	599	703	90	227	0	553	106	98	29
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	59	1018	447	670	1412	181	920	0	711	179	138	41
Arrive On Green	0.03	0.29	0.29	0.20	0.45	0.45	0.26	0.00	0.26	0.10	0.10	0.10
Sat Flow, veh/h	1757	3505	1539	3408	3115	398	3514	0	1538	1757	1357	402
Grp Volume(v), veh/h	46	900	171	599	395	398	227	0	553	106	0	127
Grp Sat Flow(s),veh/h/ln	1757	1752	1539	1704	1752	1761	1757	0	1538	1757	0	1759
Q Serve(g_s), s	3.0	28.1	10.2	19.6	18.2	18.3	5.8	0.0	30.0	6.6	0.0	8.0
Cycle Q Clear(g_c), s	3.0	28.1	10.2	19.6	18.2	18.3	5.8	0.0	30.0	6.6	0.0	8.0
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	59	1018	447	670	794	799	920	0	711	179	0	179
V/C Ratio(X)	0.78	0.88	0.38	0.89	0.50	0.50	0.25	0.00	0.78	0.59	0.00	0.71
Avail Cap(c_a), veh/h	307	1224	537	893	794	799	920	0	711	383	0	384
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.9	38.8	32.4	44.8	22.1	22.1	33.3	0.0	26.2	49.2	0.0	49.8
Incr Delay (d2), s/veh	8.0	6.2	0.2	7.7	0.2	0.2	0.1	0.0	5.0	1.2	0.0	1.9
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	1.6	14.5	4.3	10.0	8.8	8.9	2.8	0.0	15.7	3.3	0.0	4.0
LnGrp Delay(d),s/veh	62.9	45.0	32.6	52.6	22.3	22.3	33.4	0.0	31.2	50.3	0.0	51.7
LnGrp LOS	E	D	C	D	C	C	C		C	D		D
Approach Vol, veh/h		1117			1392			780			233	
Approach Delay, s/veh		43.8			35.3			31.8			51.1	
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	25.5	37.9		16.2	6.8	56.5		35.0
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	21.6	30.1		10.0	5.0	20.3		32.0
Green Ext Time (p_c), s	0.9	3.2		0.5	0.0	8.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	38.3
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1497	167	362	807	0	0	0	0	946	4	562
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1528	132	369	823	0				968	0	351
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1542	684	444	2136	0				1031	0	920
Arrive On Green	0.00	0.44	0.44	0.13	0.61	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3597	1554	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1528	132	369	823	0				968	0	351
Grp Sat Flow(s),veh/h/ln	0	1752	1554	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	38.8	4.7	9.5	10.7	0.0				24.1	0.0	8.0
Cycle Q Clear(g_c), s	0.0	38.8	4.7	9.5	10.7	0.0				24.1	0.0	8.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1542	684	444	2136	0				1031	0	920
V/C Ratio(X)	0.00	0.99	0.19	0.83	0.39	0.00				0.94	0.00	0.38
Avail Cap(c_a), veh/h	0	1542	684	818	2136	0				1056	0	942
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	24.9	15.3	38.0	8.9	0.0				30.9	0.0	25.2
Incr Delay (d2), s/veh	0.0	20.6	0.1	1.6	0.0	0.0				14.8	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
%ile BackOfQ(50%),veh/ln	0.0	23.1	2.0	4.6	5.2	0.0				13.7	0.0	3.5
LnGrp Delay(d),s/veh	0.0	45.5	15.4	39.5	9.0	0.0				45.6	0.0	25.3
LnGrp LOS		D	B	D	A					D		C
Approach Vol, veh/h		1660			1192						1319	
Approach Delay, s/veh		43.1			18.4						40.2	
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	15.2	44.0		30.4		59.2		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	21.5	39.4		26.9		39.4		
Max Q Clear Time (g_c+I1), s	11.5	40.8		26.1		12.7		
Green Ext Time (p_c), s	0.2	0.0		0.2		8.5		

Intersection Summary	
HCM 2010 Ctrl Delay	35.2
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)	430	2013	0	0	1064	853	105	2	355	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	439	2054	0	0	1086	477	108	0	318			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	570	2163	0	0	1379	616	832	0	371			
Arrive On Green	0.17	0.62	0.00	0.00	0.39	0.39	0.24	0.00	0.24			
Sat Flow, veh/h	3408	3597	0	0	3597	1564	3514	0	1568			
Grp Volume(v), veh/h	439	2054	0	0	1086	477	108	0	318			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1564	1757	0	1568			
Q Serve(g_s), s	7.7	33.7	0.0	0.0	17.0	16.6	1.5	0.0	12.1			
Cycle Q Clear(g_c), s	7.7	33.7	0.0	0.0	17.0	16.6	1.5	0.0	12.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	570	2163	0	0	1379	616	832	0	371			
V/C Ratio(X)	0.77	0.95	0.00	0.00	0.79	0.77	0.13	0.00	0.86			
Avail Cap(c_a), veh/h	1369	2163	0	0	1970	879	1693	0	756			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	24.8	11.0	0.0	0.0	16.6	16.5	18.7	0.0	22.7			
Incr Delay (d2), s/veh	0.8	9.9	0.0	0.0	0.8	1.6	0.0	0.0	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			
%ile BackOfQ(50%),veh/ln	3.7	19.0	0.0	0.0	8.3	7.3	0.7	0.0	5.4			
LnGrp Delay(d),s/veh	25.6	20.9	0.0	0.0	17.4	18.0	18.7	0.0	25.0			
LnGrp LOS	C	C			B	B	B		C			
Approach Vol, veh/h		2493			1563			426				
Approach Delay, s/veh		21.8			17.6			23.4				
Approach LOS		C			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		43.4			13.9	29.5		18.8
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		35.7			9.7	19.0		14.1
Green Ext Time (p_c), s		0.0			0.8	5.5		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
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.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1741	627	0	1917	0	53
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1777	640	0	1956	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1782	0	2760	893
Stage 1	-	-	-	-	1782	-
Stage 2	-	-	-	-	978	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	159	-	23	243
Stage 1	-	0	-	-	79	-
Stage 2	-	0	-	-	315	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	159	-	23	242
Mov Cap-2 Maneuver	-	-	-	-	23	-
Stage 1	-	-	-	-	79	-
Stage 2	-	-	-	-	315	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	242	-	159	-
HCM Lane V/C Ratio	0.223	-	-	-
HCM Control Delay (s)	24.1	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.8	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	477	1217	100	82	1221	126	408	61	24	145	53	288
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		0.97	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	487	1242	98	84	1246	123	480	0	0	148	54	41
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	549	1659	131	107	1290	127	570	299	0	176	64	363
Arrive On Green	0.16	0.51	0.51	0.06	0.40	0.40	0.16	0.00	0.00	0.13	0.13	0.13
Sat Flow, veh/h	3408	3285	259	1757	3223	317	3514	1845	0	1304	476	2697
Grp Volume(v), veh/h	487	661	679	84	676	693	480	0	0	202	0	41
Grp Sat Flow(s),veh/h/ln	1704	1752	1791	1757	1752	1788	1757	1845	0	1779	0	1348
Q Serve(g_s), s	15.4	33.0	33.3	5.2	41.5	41.8	14.6	0.0	0.0	12.2	0.0	1.5
Cycle Q Clear(g_c), s	15.4	33.0	33.3	5.2	41.5	41.8	14.6	0.0	0.0	12.2	0.0	1.5
Prop In Lane	1.00		0.14	1.00		0.18	1.00		0.00	0.73		1.00
Lane Grp Cap(c), veh/h	549	885	904	107	702	716	570	299	0	240	0	363
V/C Ratio(X)	0.89	0.75	0.75	0.79	0.96	0.97	0.84	0.00	0.00	0.84	0.00	0.11
Avail Cap(c_a), veh/h	619	885	904	327	707	721	798	419	0	404	0	612
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.2	21.7	21.7	51.0	32.2	32.3	44.8	0.0	0.0	46.5	0.0	41.9
Incr Delay (d2), s/veh	12.6	3.4	3.4	4.7	24.9	25.7	4.2	0.0	0.0	3.1	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	8.2	16.8	17.2	2.7	24.8	25.7	7.4	0.0	0.0	6.2	0.0	0.6
LnGrp Delay(d),s/veh	57.8	25.0	25.1	55.7	57.1	58.0	49.0	0.0	0.0	49.6	0.0	41.9
LnGrp LOS	E	C	C	E	E	E	D			D		D
Approach Vol, veh/h		1827			1453			480			243	
Approach Delay, s/veh		33.8			57.5			49.0			48.3	
Approach LOS		C			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.7	59.7		18.8	21.2	48.2		21.9
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.5	44.4		25.0	20.0	44.4		25.0
Max Q Clear Time (g_c+I1), s	7.2	35.3		14.2	17.4	43.8		16.6
Green Ext Time (p_c), s	0.1	7.8		0.6	0.3	0.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	45.1
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)	450	723	202	112	740	128	340	297	83	97	278	367
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	455	730	187	113	747	60	343	300	22	98	281	206
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	475	1076	276	222	864	380	352	1063	472	120	332	235
Arrive On Green	0.27	0.39	0.39	0.13	0.25	0.25	0.20	0.30	0.30	0.07	0.17	0.17
Sat Flow, veh/h	1757	2755	706	1757	3505	1541	1757	3505	1557	1757	1938	1370
Grp Volume(v), veh/h	455	464	453	113	747	60	343	300	22	98	253	234
Grp Sat Flow(s),veh/h/ln	1757	1752	1708	1757	1752	1541	1757	1752	1557	1757	1752	1555
Q Serve(g_s), s	34.3	29.6	29.6	8.1	27.5	4.1	26.1	8.8	1.3	7.4	18.8	19.8
Cycle Q Clear(g_c), s	34.3	29.6	29.6	8.1	27.5	4.1	26.1	8.8	1.3	7.4	18.8	19.8
Prop In Lane	1.00		0.41	1.00		1.00	1.00		1.00	1.00		0.88
Lane Grp Cap(c), veh/h	475	685	667	222	864	380	352	1063	472	120	300	266
V/C Ratio(X)	0.96	0.68	0.68	0.51	0.86	0.16	0.97	0.28	0.05	0.81	0.84	0.88
Avail Cap(c_a), veh/h	483	722	704	222	924	406	352	1063	472	222	332	294
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	34.0	34.0	54.9	48.6	39.8	53.5	35.8	33.2	61.9	54.1	54.4
Incr Delay (d2), s/veh	29.9	1.9	1.9	8.1	7.7	0.1	40.6	0.1	0.0	5.0	15.1	21.7
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	20.6	14.7	14.3	4.4	14.2	1.8	16.6	4.3	0.6	3.8	10.4	10.1
LnGrp Delay(d),s/veh	78.3	35.9	35.9	63.1	56.2	39.8	94.1	35.8	33.2	66.8	69.1	76.1
LnGrp LOS	E	D	D	E	E	D	F	D	C	E	E	E
Approach Vol, veh/h		1372			920			665			585	
Approach Delay, s/veh		50.0			56.0			65.8			71.5	
Approach LOS		D			E			E			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	39.4	37.7	12.2	45.3	20.0	57.1	30.0	27.6
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	37.0	35.5	17.0	35.5	17.0	55.5	27.0	25.5
Max Q Clear Time (g_c+I1), s	36.3	29.5	9.4	10.8	10.1	31.6	28.1	21.8
Green Ext Time (p_c), s	0.1	3.7	0.1	3.3	0.1	8.3	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	58.1
HCM 2010 LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	232	31	172	29	21	29	157	414	10	24	386	128
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		0.97	1.00		1.00	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	255	34	40	32	23	0	173	455	10	26	424	44
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	741	165	194	101	106	0	206	1805	40	65	1525	666
Arrive On Green	0.22	0.22	0.22	0.06	0.06	0.00	0.12	0.52	0.52	0.04	0.44	0.44
Sat Flow, veh/h	3408	760	894	1757	1845	0	1757	3505	77	1757	3505	1530
Grp Volume(v), veh/h	255	0	74	32	23	0	173	227	238	26	424	44
Grp Sat Flow(s),veh/h/ln	1704	0	1654	1757	1845	0	1757	1752	1829	1757	1752	1530
Q Serve(g_s), s	5.8	0.0	3.4	1.6	1.1	0.0	8.9	6.6	6.7	1.3	7.1	1.5
Cycle Q Clear(g_c), s	5.8	0.0	3.4	1.6	1.1	0.0	8.9	6.6	6.7	1.3	7.1	1.5
Prop In Lane	1.00		0.54	1.00		0.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	741	0	360	101	106	0	206	903	942	65	1525	666
V/C Ratio(X)	0.34	0.00	0.21	0.32	0.22	0.00	0.84	0.25	0.25	0.40	0.28	0.07
Avail Cap(c_a), veh/h	741	0	360	382	401	0	382	903	942	287	1525	666
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	0.0	29.5	41.6	41.4	0.0	39.8	12.4	12.4	43.3	16.7	15.1
Incr Delay (d2), s/veh	1.3	0.0	1.3	0.7	0.4	0.0	3.5	0.7	0.6	1.5	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	2.9	0.0	1.7	0.8	0.6	0.0	4.5	3.4	3.5	0.7	3.6	0.7
LnGrp Delay(d),s/veh	31.7	0.0	30.8	42.3	41.7	0.0	43.3	13.1	13.1	44.8	17.1	15.3
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		329			55			638			494	
Approach Delay, s/veh		31.5			42.0			21.3			18.4	
Approach LOS		C			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	6.9	51.6		24.1	14.3	44.2		9.4
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.3	8.7		7.8	10.9	9.1		3.6
Green Ext Time (p_c), s	0.0	12.2		0.6	0.0	12.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	74	0	571	582	5
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	80	0	614	626	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	935	316	631	0	-	0
Stage 1	628	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	262	677	941	-	-	-
Stage 1	491	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	262	677	941	-	-	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	491	-	-	-	-	-
Stage 2	717	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	941	-	677	-	-
HCM Lane V/C Ratio	-	-	0.118	-	-
HCM Control Delay (s)	0	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	0	7	1	0	14	10	537	2	27	615	14
Conflicting Peds, #/hr	0	0	2	0	0	0	0	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	0	7	1	0	15	11	571	2	29	654	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1028	1316	337	981	1323	288	671	0	0	573	0	0
Stage 1	721	721	-	594	594	-	-	-	-	-	-	-
Stage 2	307	595	-	387	729	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	187	155	656	202	154	706	909	-	-	989	-	-
Stage 1	382	427	-	456	489	-	-	-	-	-	-	-
Stage 2	675	488	-	605	424	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	177	148	655	193	147	705	909	-	-	988	-	-
Mov Cap-2 Maneuver	177	148	-	193	147	-	-	-	-	-	-	-
Stage 1	377	414	-	450	483	-	-	-	-	-	-	-
Stage 2	652	482	-	581	411	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.3	11.1	0.2	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	909	-	-	253	193	705	988	-	-
HCM Lane V/C Ratio	0.012	-	-	0.071	0.006	0.021	0.029	-	-
HCM Control Delay (s)	9	-	-	20.3	23.8	10.2	8.8	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0.1	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	82	470	14	82	44	429	266	9	31	181	64
Number	1	6	16	5	2	12	7	4	14	3	8	18
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		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	38	89	58	15	89	28	466	289	9	34	197	37
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	104	355	529	47	216	68	530	1418	44	95	476	88
Arrive On Green	0.06	0.19	0.19	0.03	0.16	0.16	0.30	0.41	0.41	0.05	0.16	0.16
Sat Flow, veh/h	1757	1845	2747	1757	1346	424	1757	3468	108	1757	2949	543
Grp Volume(v), veh/h	38	89	58	15	0	117	466	146	152	34	115	119
Grp Sat Flow(s),veh/h/ln	1757	1845	1373	1757	0	1770	1757	1752	1823	1757	1752	1740
Q Serve(g_s), s	0.9	1.8	0.8	0.4	0.0	2.6	11.1	2.4	2.4	0.8	2.6	2.7
Cycle Q Clear(g_c), s	0.9	1.8	0.8	0.4	0.0	2.6	11.1	2.4	2.4	0.8	2.6	2.7
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.06	1.00		0.31
Lane Grp Cap(c), veh/h	104	355	529	47	0	283	530	717	745	95	283	281
V/C Ratio(X)	0.37	0.25	0.11	0.32	0.00	0.41	0.88	0.20	0.20	0.36	0.41	0.42
Avail Cap(c_a), veh/h	877	1131	1684	678	0	1366	1077	1273	1324	678	1074	1067
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	15.1	14.7	21.0	0.0	16.6	14.6	8.4	8.4	20.1	16.6	16.6
Incr Delay (d2), s/veh	0.8	0.1	0.0	1.4	0.0	0.4	1.9	0.1	0.0	0.8	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	0.5	0.9	0.3	0.2	0.0	1.3	5.6	1.1	1.2	0.4	1.3	1.3
LnGrp Delay(d),s/veh	20.7	15.2	14.7	22.5	0.0	17.0	16.5	8.4	8.4	20.9	16.9	17.0
LnGrp LOS	C	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		185			132			764			268	
Approach Delay, s/veh		16.2			17.6			13.4			17.5	
Approach LOS		B			B			B			B	

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	5.6	11.1	5.4	22.0	4.2	12.5	16.3	11.1
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	34.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.9	4.6	2.8	4.4	2.4	3.8	13.1	4.7
Green Ext Time (p_c), s	0.0	0.9	0.0	2.1	0.0	0.9	0.2	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	149	687	14	7	608	317	9	5	13	398	7	137
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	155	716	14	7	633	0	9	5	0	420	0	23
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	197	1707	33	23	1354	606	28	16	0	541	0	242
Arrive On Green	0.11	0.49	0.49	0.01	0.39	0.00	0.02	0.02	0.00	0.15	0.00	0.15
Sat Flow, veh/h	1757	3515	69	1757	3505	1568	1149	638	0	3514	0	1568
Grp Volume(v), veh/h	155	357	373	7	633	0	14	0	0	420	0	23
Grp Sat Flow(s),veh/h/ln	1757	1752	1831	1757	1752	1568	1787	0	0	1757	0	1568
Q Serve(g_s), s	4.5	6.9	6.9	0.2	7.1	0.0	0.4	0.0	0.0	6.0	0.0	0.7
Cycle Q Clear(g_c), s	4.5	6.9	6.9	0.2	7.1	0.0	0.4	0.0	0.0	6.0	0.0	0.7
Prop In Lane	1.00		0.04	1.00		1.00	0.64		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	197	851	889	23	1354	606	44	0	0	541	0	242
V/C Ratio(X)	0.79	0.42	0.42	0.31	0.47	0.00	0.32	0.00	0.00	0.78	0.00	0.10
Avail Cap(c_a), veh/h	667	1398	1461	901	2663	1191	645	0	0	1668	0	745
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.8	8.8	8.8	25.8	12.1	0.0	25.2	0.0	0.0	21.4	0.0	19.1
Incr Delay (d2), s/veh	2.6	0.4	0.4	2.8	0.3	0.0	1.5	0.0	0.0	0.9	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	2.3	3.4	3.5	0.1	3.5	0.0	0.2	0.0	0.0	3.0	0.0	0.3
LnGrp Delay(d),s/veh	25.4	9.1	9.1	28.6	12.4	0.0	26.8	0.0	0.0	22.3	0.0	19.2
LnGrp LOS	C	A	A	C	B		C			C		B
Approach Vol, veh/h		885			640			14			443	
Approach Delay, s/veh		12.0			12.5			26.8			22.1	
Approach LOS		B			B			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	4.2	30.6		5.3	9.4	25.3		12.6
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	8.9		2.4	6.5	9.1		8.0
Green Ext Time (p_c), s	0.0	11.5		0.0	0.1	11.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
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)	0	952	210	0	747	169	0	0	0	574	0	261
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	992	0	0	778	0				598	0	160
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1441	644	0	1441	644				835	0	384
Arrive On Green	0.00	0.41	0.00	0.00	0.41	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	992	0	0	778	0				598	0	160
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	6.8	0.0	0.0	4.9	0.0				4.7	0.0	2.5
Cycle Q Clear(g_c), s	0.0	6.8	0.0	0.0	4.9	0.0				4.7	0.0	2.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1441	644	0	1441	644				835	0	384
V/C Ratio(X)	0.00	0.69	0.00	0.00	0.54	0.00				0.72	0.00	0.42
Avail Cap(c_a), veh/h	0	6030	2698	0	6030	2698				4105	0	1888
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.0	0.0	0.0	6.5	0.0				10.0	0.0	9.2
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0				0.4	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	3.2	0.0	0.0	2.3	0.0				2.2	0.0	1.1
LnGrp Delay(d),s/veh	0.0	7.3	0.0	0.0	6.6	0.0				10.5	0.0	9.5
LnGrp LOS		A			A					B		A
Approach Vol, veh/h		992			778						758	
Approach Delay, s/veh		7.3			6.6						10.3	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		16.9		12.1		16.9		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		8.8		6.7		6.9		
Green Ext Time (p_c), s		3.2		0.5		3.2		

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

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)	0	1239	287	0	793	676	123	0	172	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1291	0	0	826	0	128	0	108			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	1973	883	0	1973	883	406	0	187			
Arrive On Green	0.00	0.56	0.00	0.00	0.56	0.00	0.12	0.00	0.12			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1291	0	0	826	0	128	0	108			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	7.2	0.0	0.0	3.8	0.0	1.0	0.0	1.8			
Cycle Q Clear(g_c), s	0.0	7.2	0.0	0.0	3.8	0.0	1.0	0.0	1.8			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1973	883	0	1973	883	406	0	187			
V/C Ratio(X)	0.00	0.65	0.00	0.00	0.42	0.00	0.32	0.00	0.58			
Avail Cap(c_a), veh/h	0	6190	2769	0	6190	2769	3010	0	1385			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.3	0.0	0.0	3.5	0.0	11.4	0.0	11.8			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	3.4	0.0	0.0	1.7	0.0	0.5	0.0	0.8			
LnGrp Delay(d),s/veh	0.0	4.4	0.0	0.0	3.6	0.0	11.6	0.0	12.8			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1291			826			236				
Approach Delay, s/veh		4.4			3.6			12.2				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		20.9				20.9		7.4
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		9.2				5.8		3.8
Green Ext Time (p_c), s		6.7				6.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A

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)	512	643	256	86	746	168	231	148	72	153	166	492
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		0.97	1.00		1.00	1.00		0.97	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	533	670	146	90	777	38	241	154	61	159	173	377
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	654	2085	891	129	1507	469	568	208	82	265	279	1075
Arrive On Green	0.19	0.41	0.41	0.07	0.30	0.30	0.17	0.17	0.17	0.15	0.15	0.15
Sat Flow, veh/h	3408	5036	1520	1757	5036	1566	3408	1246	494	1757	1845	3136
Grp Volume(v), veh/h	533	670	146	90	777	38	241	0	215	159	173	377
Grp Sat Flow(s),veh/h/ln	1704	1679	1520	1757	1679	1566	1704	0	1740	1757	1845	1568
Q Serve(g_s), s	12.5	7.5	3.7	4.2	10.6	1.4	5.3	0.0	9.8	7.0	7.3	7.5
Cycle Q Clear(g_c), s	12.5	7.5	3.7	4.2	10.6	1.4	5.3	0.0	9.8	7.0	7.3	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	654	2085	891	129	1507	469	568	0	290	265	279	1075
V/C Ratio(X)	0.81	0.32	0.16	0.70	0.52	0.08	0.42	0.00	0.74	0.60	0.62	0.35
Avail Cap(c_a), veh/h	1024	2420	992	528	2420	753	1229	0	627	633	665	1732
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.2	16.5	8.1	37.6	24.2	20.9	31.1	0.0	33.0	33.0	33.1	20.4
Incr Delay (d2), s/veh	2.9	0.1	0.1	6.6	0.3	0.1	0.5	0.0	3.7	2.2	2.3	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	6.1	3.5	2.2	2.3	4.9	0.6	2.5	0.0	5.0	3.6	3.9	3.3
LnGrp Delay(d),s/veh	35.1	16.6	8.2	44.2	24.4	21.0	31.6	0.0	36.7	35.1	35.4	20.6
LnGrp LOS	D	B	A	D	C	C	C		D	D	D	C
Approach Vol, veh/h		1349			905			456			709	
Approach Delay, s/veh		23.0			26.3			34.0			27.5	
Approach LOS		C			C			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	10.1	39.3		16.3	19.7	29.7		17.6
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	16.2	9.5		9.5	14.5	12.6		11.8
Green Ext Time (p_c), s	0.2	12.9		3.1	1.5	12.3		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
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)	22	588	78	135	624	70	49	5	71	64	7	24
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		0.98	1.00		0.97	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	744	22	171	790	83	66	0	6	87	0	0
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	2	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	55	1227	539	280	1280	134	462	0	330	499	262	0
Arrive On Green	0.03	0.35	0.35	0.08	0.40	0.40	0.13	0.00	0.13	0.14	0.00	0.00
Sat Flow, veh/h	1757	3505	1541	3408	3191	335	3514	0	1532	3514	1845	0
Grp Volume(v), veh/h	28	744	22	171	434	439	66	0	6	87	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1541	1704	1752	1774	1757	0	1532	1757	1845	0
Q Serve(g_s), s	0.9	10.2	0.5	2.8	11.4	11.5	1.0	0.0	0.2	1.3	0.0	0.0
Cycle Q Clear(g_c), s	0.9	10.2	0.5	2.8	11.4	11.5	1.0	0.0	0.2	1.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	55	1227	539	280	703	711	462	0	330	499	262	0
V/C Ratio(X)	0.51	0.61	0.04	0.61	0.62	0.62	0.14	0.00	0.02	0.17	0.00	0.00
Avail Cap(c_a), veh/h	605	2412	1060	1759	1206	1221	1814	0	920	1512	794	0
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.7	15.6	12.5	25.8	13.9	13.9	22.3	0.0	18.0	21.9	0.0	0.0
Incr Delay (d2), s/veh	2.7	0.2	0.0	0.8	0.3	0.3	0.1	0.0	0.0	0.1	0.0	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	0.5	4.9	0.2	1.4	5.6	5.7	0.5	0.0	0.1	0.6	0.0	0.0
LnGrp Delay(d),s/veh	30.4	15.8	12.5	26.6	14.2	14.2	22.4	0.0	18.0	22.0	0.0	0.0
LnGrp LOS	C	B	B	C	B	B	C		B	C		
Approach Vol, veh/h		794			1044			72			87	
Approach Delay, s/veh		16.2			16.2			22.0			22.0	
Approach LOS		B			B			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	7.8	24.9		12.7	4.8	27.9		12.6
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	4.8	12.2		3.3	2.9	13.5		3.0
Green Ext Time (p_c), s	0.3	8.2		0.1	0.0	8.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	610	113	173	508	0	0	0	0	777	0	321
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	772	51	219	643	0				984	0	110
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79				0.79	0.79	0.79
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1114	498	344	1728	0				1132	0	1010
Arrive On Green	0.00	0.32	0.32	0.10	0.49	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	3597	1568	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	772	51	219	643	0				984	0	110
Grp Sat Flow(s),veh/h/ln	0	1752	1568	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	9.1	1.1	2.9	5.4	0.0				12.4	0.0	1.2
Cycle Q Clear(g_c), s	0.0	9.1	1.1	2.9	5.4	0.0				12.4	0.0	1.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1114	498	344	1728	0				1132	0	1010
V/C Ratio(X)	0.00	0.69	0.10	0.64	0.37	0.00				0.87	0.00	0.11
Avail Cap(c_a), veh/h	0	2568	1149	1809	2568	0				2238	0	1998
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.1	11.3	20.3	7.4	0.0				15.0	0.0	11.2
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.7	0.0	0.0				0.8	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	4.4	0.5	1.4	2.6	0.0				6.1	0.0	0.5
LnGrp Delay(d),s/veh	0.0	14.3	11.4	21.1	7.5	0.0				15.9	0.0	11.2
LnGrp LOS		B	B	C	A					B		B
Approach Vol, veh/h		823			862						1094	
Approach Delay, s/veh		14.2			10.9						15.4	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.3	19.6		19.3		27.8		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	4.9	11.1		14.4		7.4		
Green Ext Time (p_c), s	0.1	3.9		0.8		3.9		

Intersection Summary	
HCM 2010 Ctrl Delay	13.6
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)	202	1185	0	0	584	638	97	0	269	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	256	1500	0	0	739	204	123	0	289			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	407	2010	0	0	1327	594	809	0	361			
Arrive On Green	0.12	0.57	0.00	0.00	0.38	0.38	0.23	0.00	0.23			
Sat Flow, veh/h	3408	3597	0	0	3597	1568	3514	0	1568			
Grp Volume(v), veh/h	256	1500	0	0	739	204	123	0	289			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	3.3	14.8	0.0	0.0	7.7	4.3	1.3	0.0	8.1			
Cycle Q Clear(g_c), s	3.3	14.8	0.0	0.0	7.7	4.3	1.3	0.0	8.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	407	2010	0	0	1327	594	809	0	361			
V/C Ratio(X)	0.63	0.75	0.00	0.00	0.56	0.34	0.15	0.00	0.80			
Avail Cap(c_a), veh/h	1838	2647	0	0	2647	1184	2274	0	1015			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.4	7.4	0.0	0.0	11.3	10.3	14.2	0.0	16.8			
Incr Delay (d2), s/veh	0.6	0.5	0.0	0.0	0.1	0.1	0.0	0.0	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			
%ile BackOfQ(50%),veh/ln	1.6	7.0	0.0	0.0	3.7	1.9	0.6	0.0	3.6			
LnGrp Delay(d),s/veh	20.0	7.9	0.0	0.0	11.5	10.4	14.3	0.0	18.4			
LnGrp LOS	C	A			B	B	B		B			
Approach Vol, veh/h		1756			943			412				
Approach Delay, s/veh		9.7			11.2			17.2				
Approach LOS		A			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		31.6			9.0	22.6		14.8
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		16.8			5.3	9.7		10.1
Green Ext Time (p_c), s		7.1			0.4	7.9		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
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.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1149	305	0	1222	0	14
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1512	401	0	1608	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1513	0	2317	757
Stage 1	-	-	-	-	1513	-
Stage 2	-	-	-	-	804	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	217	-	44	299
Stage 1	-	0	-	-	117	-
Stage 2	-	0	-	-	388	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	217	-	44	299
Mov Cap-2 Maneuver	-	-	-	-	44	-
Stage 1	-	-	-	-	117	-
Stage 2	-	-	-	-	388	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	299	-	217	-
HCM Lane V/C Ratio	0.062	-	-	-
HCM Control Delay (s)	17.8	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.2	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	1086	34	27	1108	26	82	7	8	19	6	32
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		0.99	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	52	1375	42	34	1403	32	113	0	0	24	8	0
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	168	2020	62	64	1963	45	291	153	0	46	15	96
Arrive On Green	0.05	0.58	0.58	0.04	0.56	0.56	0.08	0.00	0.00	0.03	0.03	0.00
Sat Flow, veh/h	3408	3472	106	1757	3502	80	3514	1845	0	1333	445	2760
Grp Volume(v), veh/h	52	693	724	34	701	734	113	0	0	32	0	0
Grp Sat Flow(s),veh/h/ln	1704	1752	1826	1757	1752	1829	1757	1845	0	1778	0	1380
Q Serve(g_s), s	0.8	15.7	15.7	1.1	16.8	16.8	1.7	0.0	0.0	1.0	0.0	0.0
Cycle Q Clear(g_c), s	0.8	15.7	15.7	1.1	16.8	16.8	1.7	0.0	0.0	1.0	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.04	1.00		0.00	0.75		1.00
Lane Grp Cap(c), veh/h	168	1020	1062	64	982	1025	291	153	0	62	0	96
V/C Ratio(X)	0.31	0.68	0.68	0.53	0.71	0.72	0.39	0.00	0.00	0.52	0.00	0.00
Avail Cap(c_a), veh/h	1192	1072	1117	614	1072	1119	1536	806	0	777	0	1206
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.3	8.3	8.3	27.1	9.2	9.2	24.9	0.0	0.0	27.1	0.0	0.0
Incr Delay (d2), s/veh	0.4	1.5	1.5	2.5	1.9	1.8	0.3	0.0	0.0	2.5	0.0	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	0.4	7.9	8.3	0.6	8.5	8.9	0.9	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	26.6	9.8	9.8	29.6	11.1	11.1	25.2	0.0	0.0	29.6	0.0	0.0
LnGrp LOS	C	A	A	C	B	B	C			C		
Approach Vol, veh/h		1469			1469			113			32	
Approach Delay, s/veh		10.4			11.5			25.2			29.6	
Approach LOS		B			B			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	5.1	37.4		6.0	6.3	36.2		8.7
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	35.0		25.0	20.0	35.0		25.0
Max Q Clear Time (g_c+I1), s	3.1	17.7		3.0	2.8	18.8		3.7
Green Ext Time (p_c), s	0.0	14.0		0.1	0.1	13.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
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)	226	589	265	81	610	122	223	128	38	92	305	339
Number	1	6	16	5	2	12	7	4	14	3	8	18
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		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	286	746	259	103	772	0	282	162	6	116	386	114
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	291	836	290	132	832	372	329	1042	462	148	518	151
Arrive On Green	0.17	0.33	0.33	0.07	0.24	0.00	0.19	0.30	0.30	0.08	0.19	0.19
Sat Flow, veh/h	1757	2551	886	1757	3505	1568	1757	3505	1554	1757	2661	775
Grp Volume(v), veh/h	286	512	493	103	772	0	282	162	6	116	252	248
Grp Sat Flow(s),veh/h/ln	1757	1752	1685	1757	1752	1568	1757	1752	1554	1757	1752	1684
Q Serve(g_s), s	11.3	19.3	19.3	4.0	15.0	0.0	10.8	2.4	0.2	4.5	9.4	9.7
Cycle Q Clear(g_c), s	11.3	19.3	19.3	4.0	15.0	0.0	10.8	2.4	0.2	4.5	9.4	9.7
Prop In Lane	1.00		0.53	1.00		1.00	1.00		1.00	1.00		0.46
Lane Grp Cap(c), veh/h	291	574	552	132	832	372	329	1042	462	148	341	328
V/C Ratio(X)	0.98	0.89	0.89	0.78	0.93	0.00	0.86	0.16	0.01	0.78	0.74	0.76
Avail Cap(c_a), veh/h	291	574	552	215	832	372	505	1210	536	316	428	412
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.9	22.2	22.2	31.6	25.9	0.0	27.4	18.0	17.2	31.2	26.4	26.4
Incr Delay (d2), s/veh	48.2	15.7	16.2	3.8	18.0	0.0	5.7	0.0	0.0	3.4	3.6	4.4
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	9.3	11.8	11.4	2.1	9.3	0.0	5.8	1.2	0.1	2.3	4.9	4.9
LnGrp Delay(d),s/veh	77.1	37.9	38.4	35.4	43.9	0.0	33.1	18.0	17.2	34.6	29.9	30.8
LnGrp LOS	E	D	D	D	D		C	B	B	C	C	C
Approach Vol, veh/h		1291			875			450			616	
Approach Delay, s/veh		46.8			42.9			27.4			31.2	
Approach LOS		D			D			C			C	

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	14.5	21.0	8.9	25.2	8.2	27.3	16.0	18.0
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	11.5	16.5	12.5	24.0	8.5	18.5	20.0	17.0
Max Q Clear Time (g_c+I1), s	13.3	17.0	6.5	4.4	6.0	21.3	12.8	11.7
Green Ext Time (p_c), s	0.0	0.0	0.1	2.5	0.0	0.0	0.3	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	40.1
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	117	21	139	21	9	33	65	214	14	28	506	60
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		0.99	1.00		1.00	1.00		0.98	1.00		0.97
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	144	26	24	26	11	0	80	264	12	35	625	18
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	784	202	187	103	108	0	121	1647	75	81	1612	697
Arrive On Green	0.23	0.23	0.23	0.06	0.06	0.00	0.07	0.48	0.48	0.05	0.46	0.46
Sat Flow, veh/h	3408	879	812	1757	1845	0	1757	3411	154	1757	3505	1515
Grp Volume(v), veh/h	144	0	50	26	11	0	80	135	141	35	625	18
Grp Sat Flow(s),veh/h/ln	1704	0	1691	1757	1845	0	1757	1752	1813	1757	1752	1515
Q Serve(g_s), s	3.0	0.0	2.0	1.2	0.5	0.0	3.9	3.8	3.8	1.7	10.2	0.6
Cycle Q Clear(g_c), s	3.0	0.0	2.0	1.2	0.5	0.0	3.9	3.8	3.8	1.7	10.2	0.6
Prop In Lane	1.00		0.48	1.00		0.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	784	0	389	103	108	0	121	846	875	81	1612	697
V/C Ratio(X)	0.18	0.00	0.13	0.25	0.10	0.00	0.66	0.16	0.16	0.43	0.39	0.03
Avail Cap(c_a), veh/h	784	0	389	404	424	0	404	846	875	303	1612	697
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	26.6	39.1	38.8	0.0	39.5	12.6	12.6	40.4	15.4	12.8
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.5	0.2	0.0	2.3	0.4	0.4	1.4	0.7	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	1.4	0.0	1.0	0.6	0.3	0.0	1.9	1.9	2.0	0.8	5.0	0.2
LnGrp Delay(d),s/veh	27.4	0.0	27.3	39.6	38.9	0.0	41.8	13.0	13.0	41.7	16.1	12.9
LnGrp LOS	C		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		194			37			356			678	
Approach Delay, s/veh		27.4			39.4			19.5			17.4	
Approach LOS		C			D			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	7.5	46.2		24.1	9.5	44.2		9.2
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.7	5.8		5.0	5.9	12.2		3.2
Green Ext Time (p_c), s	0.0	12.9		0.4	0.0	11.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	43	0	296	608	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	54	0	370	760	72

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	981	416	833	0	-	0
Stage 1	796	-	-	-	-	-
Stage 2	185	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	245	583	789	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	245	583	789	-	-	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	825	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	789	-	583	-	-
HCM Lane V/C Ratio	-	-	0.092	-	-
HCM Control Delay (s)	0	-	11.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	4	47	0	5	25	68	221	21	79	518	53
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		0.99	1.00		0.96
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	71	5	0	0	6	0	86	280	14	100	656	52
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	321	442	0	4	114	0	186	1255	62	202	1241	98
Arrive On Green	0.09	0.24	0.00	0.00	0.06	0.00	0.11	0.37	0.37	0.12	0.38	0.38
Sat Flow, veh/h	3408	1845	0	1757	1845	0	1757	3397	169	1757	3279	260
Grp Volume(v), veh/h	71	5	0	0	6	0	86	144	150	100	350	358
Grp Sat Flow(s),veh/h/ln	1704	1845	0	1757	1845	0	1757	1752	1813	1757	1752	1786
Q Serve(g_s), s	0.8	0.1	0.0	0.0	0.1	0.0	1.9	2.4	2.4	2.2	6.5	6.5
Cycle Q Clear(g_c), s	0.8	0.1	0.0	0.0	0.1	0.0	1.9	2.4	2.4	2.2	6.5	6.5
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.09	1.00		0.15
Lane Grp Cap(c), veh/h	321	442	0	4	114	0	186	647	670	202	664	676
V/C Ratio(X)	0.22	0.01	0.00	0.00	0.05	0.00	0.46	0.22	0.22	0.49	0.53	0.53
Avail Cap(c_a), veh/h	940	1372	0	485	1372	0	485	1513	1566	485	1513	1542
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	12.1	0.0	0.0	18.4	0.0	17.5	9.0	9.0	17.3	10.1	10.1
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.2	0.0	1.8	0.2	0.2	1.9	0.7	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	0.4	0.0	0.0	0.0	0.1	0.0	1.0	1.1	1.2	1.2	3.2	3.3
LnGrp Delay(d),s/veh	17.8	12.1	0.0	0.0	18.6	0.0	19.3	9.2	9.2	19.2	10.7	10.7
LnGrp LOS	B	B			B		B	A	A	B	B	B
Approach Vol, veh/h		76			6			380			808	
Approach Delay, s/veh		17.4			18.6			11.5			11.8	
Approach LOS		B			B			B			B	

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	8.3	19.4	0.0	14.0	7.9	19.8	7.4	6.6
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	11.5	36.0	11.5	31.0	11.5	36.0	11.5	31.0
Max Q Clear Time (g_c+I1), s	4.2	4.4	0.0	2.1	3.9	8.5	2.8	2.1
Green Ext Time (p_c), s	0.1	6.8	0.0	0.0	0.1	6.6	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	50	311	19	71	38	330	159	34	42	171	17
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	49	60	32	23	85	25	393	189	26	50	204	13
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	126	359	529	69	221	65	461	1144	155	128	605	38
Arrive On Green	0.07	0.19	0.19	0.04	0.16	0.16	0.26	0.37	0.37	0.07	0.18	0.18
Sat Flow, veh/h	1757	1845	2719	1757	1368	402	1757	3090	418	1757	3343	211
Grp Volume(v), veh/h	49	60	32	23	0	110	393	106	109	50	106	111
Grp Sat Flow(s),veh/h/ln	1757	1845	1360	1757	0	1770	1757	1752	1756	1757	1752	1802
Q Serve(g_s), s	1.2	1.2	0.4	0.6	0.0	2.4	9.2	1.8	1.8	1.2	2.3	2.3
Cycle Q Clear(g_c), s	1.2	1.2	0.4	0.6	0.0	2.4	9.2	1.8	1.8	1.2	2.3	2.3
Prop In Lane	1.00		1.00	1.00		0.23	1.00		0.24	1.00		0.12
Lane Grp Cap(c), veh/h	126	359	529	69	0	286	461	649	650	128	317	326
V/C Ratio(X)	0.39	0.17	0.06	0.34	0.00	0.38	0.85	0.16	0.17	0.39	0.33	0.34
Avail Cap(c_a), veh/h	892	1150	1695	689	0	981	1095	1294	1297	689	1092	1123
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	14.5	14.2	20.3	0.0	16.2	15.2	9.1	9.2	19.2	15.5	15.5
Incr Delay (d2), s/veh	0.7	0.1	0.0	1.1	0.0	0.3	1.8	0.0	0.0	0.7	0.2	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	0.6	0.6	0.2	0.3	0.0	1.2	4.6	0.8	0.9	0.6	1.1	1.2
LnGrp Delay(d),s/veh	19.9	14.6	14.2	21.3	0.0	16.6	17.0	9.2	9.2	19.9	15.7	15.7
LnGrp LOS	B	B	B	C		B	B	A	A	B	B	B
Approach Vol, veh/h		141			133			608			267	
Approach Delay, s/veh		16.4			17.4			14.2			16.5	
Approach LOS		B			B			B			B	

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	6.1	11.0	6.2	20.0	4.7	12.4	14.4	11.8
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	3.2	4.4	3.2	3.8	2.6	3.2	11.2	4.3
Green Ext Time (p_c), s	0.0	0.6	0.0	1.7	0.0	0.7	0.2	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	734	2	6	916	192	3	1	4	104	3	35
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	38	874	2	7	1090	0	4	1	0	127	0	6
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	1.00
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	70	1995	5	23	1855	830	13	3	0	432	0	193
Arrive On Green	0.04	0.56	0.56	0.01	0.53	0.00	0.01	0.01	0.00	0.12	0.00	0.12
Sat Flow, veh/h	1757	3587	8	1757	3505	1568	1419	355	0	3514	0	1568
Grp Volume(v), veh/h	38	427	449	7	1090	0	5	0	0	127	0	6
Grp Sat Flow(s),veh/h/ln	1757	1752	1843	1757	1752	1568	1774	0	0	1757	0	1568
Q Serve(g_s), s	1.2	8.1	8.1	0.2	12.1	0.0	0.2	0.0	0.0	1.9	0.0	0.2
Cycle Q Clear(g_c), s	1.2	8.1	8.1	0.2	12.1	0.0	0.2	0.0	0.0	1.9	0.0	0.2
Prop In Lane	1.00		0.00	1.00		1.00	0.80		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	975	1025	23	1855	830	17	0	0	432	0	193
V/C Ratio(X)	0.55	0.44	0.44	0.31	0.59	0.00	0.30	0.00	0.00	0.29	0.00	0.03
Avail Cap(c_a), veh/h	617	1293	1360	833	2463	1102	592	0	0	1543	0	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	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.8	7.4	7.4	27.8	9.2	0.0	28.0	0.0	0.0	22.7	0.0	22.0
Incr Delay (d2), s/veh	2.4	0.4	0.4	2.8	0.3	0.0	3.7	0.0	0.0	0.1	0.0	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	0.6	4.0	4.2	0.1	5.8	0.0	0.1	0.0	0.0	0.9	0.0	0.1
LnGrp Delay(d),s/veh	29.3	7.8	7.8	30.7	9.4	0.0	31.7	0.0	0.0	22.9	0.0	22.0
LnGrp LOS	C	A	A	C	A		C			C		C
Approach Vol, veh/h		914			1097			5			133	
Approach Delay, s/veh		8.7			9.6			31.7			22.8	
Approach LOS		A			A			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	4.2	36.7		4.5	5.8	35.1		11.5
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	10.1		2.2	3.2	14.1		3.9
Green Ext Time (p_c), s	0.0	18.2		0.0	0.0	16.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
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)	0	754	183	0	742	221	0	0	0	894	0	545
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	898	0	0	883	0				1064	0	582
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1218	545	0	1218	545				1421	0	654
Arrive On Green	0.00	0.35	0.00	0.00	0.35	0.00				0.42	0.00	0.42
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	898	0	0	883	0				1064	0	582
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	9.5	0.0	0.0	9.3	0.0				11.2	0.0	14.6
Cycle Q Clear(g_c), s	0.0	9.5	0.0	0.0	9.3	0.0				11.2	0.0	14.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1218	545	0	1218	545				1421	0	654
V/C Ratio(X)	0.00	0.74	0.00	0.00	0.73	0.00				0.75	0.00	0.89
Avail Cap(c_a), veh/h	0	4131	1848	0	4131	1848				2812	0	1294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.1	0.0	0.0	12.1	0.0				10.5	0.0	11.5
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0				0.3	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	4.5	0.0	0.0	4.5	0.0				5.2	0.0	6.5
LnGrp Delay(d),s/veh	0.0	12.5	0.0	0.0	12.4	0.0				10.8	0.0	13.2
LnGrp LOS		B			B					B		B
Approach Vol, veh/h		898			883						1646	
Approach Delay, s/veh		12.5			12.4						11.6	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		19.7		22.7		19.7		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		11.5		16.6		11.3		
Green Ext Time (p_c), s		3.2		1.1		3.2		

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

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)	0	1373	275	0	815	991	148	0	236	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1635	0	0	970	0	176	0	224			
Adj No. of Lanes	0	2	1	0	2	1	2	0	1			
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2130	953	0	2130	953	631	0	290			
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00	0.19	0.00	0.19			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1635	0	0	970	0	176	0	224			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	14.9	0.0	0.0	6.5	0.0	1.9	0.0	5.9			
Cycle Q Clear(g_c), s	0.0	14.9	0.0	0.0	6.5	0.0	1.9	0.0	5.9			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2130	953	0	2130	953	631	0	290			
V/C Ratio(X)	0.00	0.77	0.00	0.00	0.46	0.00	0.28	0.00	0.77			
Avail Cap(c_a), veh/h	0	4030	1803	0	4030	1803	1959	0	901			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	6.3	0.0	0.0	4.6	0.0	15.2	0.0	16.8			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	7.1	0.0	0.0	3.1	0.0	0.9	0.0	2.7			
LnGrp Delay(d),s/veh	0.0	6.5	0.0	0.0	4.7	0.0	15.3	0.0	18.5			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1635			970			400				
Approach Delay, s/veh		6.5			4.7			17.1				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		31.4				31.4		12.1
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		16.9				8.5		7.9
Green Ext Time (p_c), s		9.5				9.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

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)	529	731	349	69	1165	87	275	79	50	71	67	364
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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	630	870	398	82	1387	55	327	94	39	82	83	348
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	733	2501	990	117	1770	550	458	166	69	223	234	1072
Arrive On Green	0.21	0.50	0.50	0.07	0.35	0.35	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	3408	5036	1568	1757	5036	1565	3408	1238	514	1757	1845	3136
Grp Volume(v), veh/h	630	870	398	82	1387	55	327	0	133	82	83	348
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1757	1679	1565	1704	0	1751	1757	1845	1568
Q Serve(g_s), s	16.4	9.7	11.6	4.2	22.7	2.2	8.5	0.0	6.6	3.9	3.8	7.6
Cycle Q Clear(g_c), s	16.4	9.7	11.6	4.2	22.7	2.2	8.5	0.0	6.6	3.9	3.8	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	733	2501	990	117	1770	550	458	0	235	223	234	1072
V/C Ratio(X)	0.86	0.35	0.40	0.70	0.78	0.10	0.71	0.00	0.56	0.37	0.35	0.32
Avail Cap(c_a), veh/h	923	2501	990	476	2183	678	1108	0	569	571	600	1694
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	14.1	8.4	42.2	26.8	20.1	38.2	0.0	37.4	36.9	36.8	22.5
Incr Delay (d2), s/veh	6.8	0.1	0.3	7.4	1.6	0.1	2.1	0.0	2.1	1.0	0.9	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	8.4	4.5	6.8	2.3	10.8	1.0	4.1	0.0	3.3	2.0	2.0	3.3
LnGrp Delay(d),s/veh	41.7	14.2	8.7	49.6	28.3	20.2	40.3	0.0	39.5	37.9	37.8	22.7
LnGrp LOS	D	B	A	D	C	C	D		D	D	D	C
Approach Vol, veh/h		1898			1524			460			513	
Approach Delay, s/veh		22.2			29.2			40.1			27.5	
Approach LOS		C			C			D			C	

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	50.6		15.4	23.5	37.2		16.1
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	6.2	13.6		9.6	18.4	24.7		10.5
Green Ext Time (p_c), s	0.2	20.0		2.1	1.4	7.7		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	1042	254	457	842	61	211	17	496	48	11	15
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	1074	196	471	868	60	231	0	301	30	37	1
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	49	1238	544	562	1628	112	682	0	556	178	181	5
Arrive On Green	0.03	0.35	0.35	0.16	0.49	0.49	0.19	0.00	0.19	0.10	0.10	0.10
Sat Flow, veh/h	1757	3505	1541	3408	3320	229	3514	0	1534	1757	1786	48
Grp Volume(v), veh/h	28	1074	196	471	458	470	231	0	301	30	0	38
Grp Sat Flow(s),veh/h/ln	1757	1752	1541	1704	1752	1797	1757	0	1534	1757	0	1834
Q Serve(g_s), s	1.4	26.2	8.6	12.3	16.5	16.5	5.2	0.0	14.3	1.4	0.0	1.7
Cycle Q Clear(g_c), s	1.4	26.2	8.6	12.3	16.5	16.5	5.2	0.0	14.3	1.4	0.0	1.7
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	49	1238	544	562	859	881	682	0	556	178	0	186
V/C Ratio(X)	0.57	0.87	0.36	0.84	0.53	0.53	0.34	0.00	0.54	0.17	0.00	0.20
Avail Cap(c_a), veh/h	383	1530	672	1116	859	881	1150	0	760	479	0	500
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.0	27.6	22.0	37.1	16.1	16.1	31.9	0.0	23.4	37.7	0.0	37.8
Incr Delay (d2), s/veh	3.9	4.0	0.1	1.3	0.3	0.3	0.1	0.0	0.3	0.2	0.0	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	0.8	13.4	3.7	5.9	8.1	8.3	2.5	0.0	6.1	0.7	0.0	0.9
LnGrp Delay(d),s/veh	47.9	31.7	22.1	38.4	16.5	16.5	32.0	0.0	23.7	37.8	0.0	38.0
LnGrp LOS	D	C	C	D	B	B	C		C	D		D
Approach Vol, veh/h		1298			1399			532			68	
Approach Delay, s/veh		30.6			23.8			27.3			37.9	
Approach LOS		C			C			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	18.1	37.0		13.8	5.5	49.5		22.8
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	14.3	28.2		3.7	3.4	18.5		16.3
Green Ext Time (p_c), s	0.8	4.2		0.1	0.0	10.4		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.3
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1379	207	357	813	0	0	0	0	947	5	547
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1422	161	368	838	0				980	0	343
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1462	654	450	2073	0				1065	0	951
Arrive On Green	0.00	0.42	0.42	0.13	0.59	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	3597	1567	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1422	161	368	838	0				980	0	343
Grp Sat Flow(s),veh/h/ln	0	1752	1567	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	32.9	5.5	8.7	10.6	0.0				22.3	0.0	7.1
Cycle Q Clear(g_c), s	0.0	32.9	5.5	8.7	10.6	0.0				22.3	0.0	7.1
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1462	654	450	2073	0				1065	0	951
V/C Ratio(X)	0.00	0.97	0.25	0.82	0.40	0.00				0.92	0.00	0.36
Avail Cap(c_a), veh/h	0	1462	654	1030	2073	0				1275	0	1138
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	23.6	15.7	34.9	9.1	0.0				27.8	0.0	22.5
Incr Delay (d2), s/veh	0.0	17.3	0.1	1.4	0.0	0.0				8.9	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
%ile BackOfQ(50%),veh/ln	0.0	19.3	2.4	4.2	5.1	0.0				12.1	0.0	3.1
LnGrp Delay(d),s/veh	0.0	40.9	15.7	36.3	9.1	0.0				36.8	0.0	22.6
LnGrp LOS		D	B	D	A					D		C
Approach Vol, veh/h		1583			1206						1323	
Approach Delay, s/veh		38.3			17.4						33.1	
Approach LOS		D			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.4	39.1		29.2		53.5		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	25.0	34.5		30.0		34.5		
Max Q Clear Time (g_c+I1), s	10.7	34.9		24.3		12.6		
Green Ext Time (p_c), s	0.2	0.0		0.8		7.5		

Intersection Summary	
HCM 2010 Ctrl Delay	30.5
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)	471	1855	0	0	1050	949	123	3	349	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	486	1912	0	0	1082	603	129	0	315			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	599	2262	0	0	1479	659	808	0	361			
Arrive On Green	0.18	0.65	0.00	0.00	0.42	0.42	0.23	0.00	0.23			
Sat Flow, veh/h	3408	3597	0	0	3597	1562	3514	0	1568			
Grp Volume(v), veh/h	486	1912	0	0	1082	603	129	0	315			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1562	1757	0	1568			
Q Serve(g_s), s	10.0	31.1	0.0	0.0	18.9	26.6	2.1	0.0	14.1			
Cycle Q Clear(g_c), s	10.0	31.1	0.0	0.0	18.9	26.6	2.1	0.0	14.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	599	2262	0	0	1479	659	808	0	361			
V/C Ratio(X)	0.81	0.85	0.00	0.00	0.73	0.91	0.16	0.00	0.87			
Avail Cap(c_a), veh/h	1166	2262	0	0	1678	748	1442	0	644			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.0	10.1	0.0	0.0	17.7	19.9	22.5	0.0	27.1			
Incr Delay (d2), s/veh	1.0	3.0	0.0	0.0	1.1	13.8	0.0	0.0	2.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.8	15.8	0.0	0.0	9.3	13.9	1.0	0.0	6.4			
LnGrp Delay(d),s/veh	30.0	13.1	0.0	0.0	18.8	33.7	22.5	0.0	29.7			
LnGrp LOS	C	B			B	C	C		C			
Approach Vol, veh/h		2398			1685			444				
Approach Delay, s/veh		16.5			24.1			27.6				
Approach LOS		B			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		52.2			16.3	35.8		20.9
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		33.1			12.0	28.6		16.1
Green Ext Time (p_c), s		1.7			0.8	2.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
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.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1627	577	0	1999	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1677	595	0	2061	0	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1677	0	2707	839
Stage 1	-	-	-	-	1677	-
Stage 2	-	-	-	-	1030	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	180	-	25	264
Stage 1	-	0	-	-	92	-
Stage 2	-	0	-	-	296	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	180	-	25	264
Mov Cap-2 Maneuver	-	-	-	-	25	-
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	296	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	264	-	180	-
HCM Lane V/C Ratio	0.129	-	-	-
HCM Control Delay (s)	20.6	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.4	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	324	1261	74	47	1463	88	284	40	22	119	24	252
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		0.98	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	334	1300	73	48	1508	88	339	0	0	123	25	27
Adj No. of Lanes	2	2	0	1	2	0	2	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	415	1877	105	67	1575	91	473	248	0	158	32	289
Arrive On Green	0.12	0.56	0.56	0.04	0.47	0.47	0.13	0.00	0.00	0.11	0.11	0.11
Sat Flow, veh/h	3408	3369	189	1757	3364	195	3514	1845	0	1472	299	2695
Grp Volume(v), veh/h	334	675	698	48	782	814	339	0	0	148	0	27
Grp Sat Flow(s),veh/h/ln	1704	1752	1806	1757	1752	1807	1757	1845	0	1771	0	1347
Q Serve(g_s), s	8.9	25.8	25.9	2.5	39.8	40.4	8.6	0.0	0.0	7.6	0.0	0.8
Cycle Q Clear(g_c), s	8.9	25.8	25.9	2.5	39.8	40.4	8.6	0.0	0.0	7.6	0.0	0.8
Prop In Lane	1.00		0.10	1.00		0.11	1.00		0.00	0.83		1.00
Lane Grp Cap(c), veh/h	415	976	1006	67	820	846	473	248	0	190	0	289
V/C Ratio(X)	0.80	0.69	0.69	0.71	0.95	0.96	0.72	0.00	0.00	0.78	0.00	0.09
Avail Cap(c_a), veh/h	734	976	1006	379	838	864	946	497	0	477	0	726
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.7	14.8	14.8	44.1	23.7	23.9	38.5	0.0	0.0	40.4	0.0	37.4
Incr Delay (d2), s/veh	1.4	2.0	1.9	5.2	20.3	21.5	0.8	0.0	0.0	2.6	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	4.3	12.9	13.3	1.3	23.8	25.2	4.2	0.0	0.0	3.8	0.0	0.3
LnGrp Delay(d),s/veh	41.1	16.8	16.8	49.3	44.0	45.4	39.2	0.0	0.0	43.0	0.0	37.4
LnGrp LOS	D	B	B	D	D	D	D			D		D
Approach Vol, veh/h		1707			1644			339			175	
Approach Delay, s/veh		21.5			44.8			39.2			42.1	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	55.8		14.0	14.8	47.6		16.5
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	44.9		25.0	20.0	44.4		25.0
Max Q Clear Time (g_c+I1), s	4.5	27.9		9.6	10.9	42.4		10.6
Green Ext Time (p_c), s	0.0	14.2		0.5	0.5	1.0		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	33.9
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)	427	778	265	131	723	124	589	402	135	96	289	309
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		1.00	1.00		0.95
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	454	828	249	139	769	33	627	428	51	102	307	138
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	441	904	272	202	725	322	500	1299	579	123	364	159
Arrive On Green	0.25	0.34	0.34	0.12	0.21	0.21	0.28	0.37	0.37	0.07	0.16	0.16
Sat Flow, veh/h	1757	2640	793	1757	3505	1557	1757	3505	1562	1757	2334	1018
Grp Volume(v), veh/h	454	549	528	139	769	33	627	428	51	102	228	217
Grp Sat Flow(s),veh/h/ln	1757	1752	1681	1757	1752	1557	1757	1752	1562	1757	1752	1600
Q Serve(g_s), s	37.0	44.3	44.4	11.2	30.5	2.5	42.0	12.9	3.1	8.5	18.6	19.5
Cycle Q Clear(g_c), s	37.0	44.3	44.4	11.2	30.5	2.5	42.0	12.9	3.1	8.5	18.6	19.5
Prop In Lane	1.00		0.47	1.00		1.00	1.00		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	441	600	575	202	725	322	500	1299	579	123	274	250
V/C Ratio(X)	1.03	0.92	0.92	0.69	1.06	0.10	1.25	0.33	0.09	0.83	0.83	0.87
Avail Cap(c_a), veh/h	441	600	575	202	725	322	500	1299	579	202	303	276
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.3	46.5	46.5	62.7	58.5	47.4	52.8	33.3	30.2	67.7	60.4	60.8
Incr Delay (d2), s/veh	50.9	18.6	19.3	17.3	50.9	0.6	129.8	0.1	0.0	5.7	15.1	21.1
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	24.1	24.5	23.7	6.4	19.8	1.1	38.3	6.3	1.4	4.3	10.1	10.1
LnGrp Delay(d),s/veh	106.2	65.0	65.8	80.1	109.4	48.1	182.5	33.3	30.2	73.4	75.5	81.9
LnGrp LOS	F	E	E	F	F	D	F	C	C	E	E	F
Approach Vol, veh/h		1531			941			1106			547	
Approach Delay, s/veh		77.5			102.9			117.8			77.6	
Approach LOS		E			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	40.0	35.0	13.4	59.2	20.0	55.0	45.0	27.5
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	37.0	30.5	17.0	50.5	17.0	50.5	42.0	25.5
Max Q Clear Time (g_c+I1), s	39.0	32.5	10.5	14.9	13.2	46.4	44.0	21.5
Green Ext Time (p_c), s	0.0	0.0	0.1	4.0	0.1	2.9	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	94.1
HCM 2010 LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	427	778	265	131	723	124	589	402	135	96	289	309
Future Volume (veh/h)	427	778	265	131	723	124	589	402	135	96	289	309
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.95
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	454	828	249	139	769	33	627	428	51	102	307	138
Adj No. of Lanes	1	2	0	1	2	1	2	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	473	973	292	219	784	348	786	412	348	285	379	166
Arrive On Green	0.27	0.37	0.37	0.12	0.22	0.22	0.22	0.22	0.22	0.16	0.16	0.16
Sat Flow, veh/h	1757	2640	794	1757	3505	1557	3514	1845	1557	1757	2335	1019
Grp Volume(v), veh/h	454	549	528	139	769	33	627	428	51	102	228	217
Grp Sat Flow(s),veh/h/ln	1757	1752	1682	1757	1752	1557	1757	1845	1557	1757	1752	1601
Q Serve(g_s), s	34.7	39.3	39.4	10.3	29.8	2.3	23.0	30.5	3.6	7.0	17.1	17.9
Cycle Q Clear(g_c), s	34.7	39.3	39.4	10.3	29.8	2.3	23.0	30.5	3.6	7.0	17.1	17.9
Prop In Lane	1.00		0.47	1.00		1.00	1.00		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	473	646	620	219	784	348	786	412	348	285	285	260
V/C Ratio(X)	0.96	0.85	0.85	0.63	0.98	0.09	0.80	1.04	0.15	0.36	0.80	0.83
Avail Cap(c_a), veh/h	476	649	622	219	784	348	786	412	348	328	328	299
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	39.6	39.7	56.8	52.7	42.0	50.1	53.0	42.5	50.8	55.0	55.3
Incr Delay (d2), s/veh	30.6	9.9	10.4	13.2	27.9	0.5	5.4	54.4	0.1	0.3	10.1	14.4
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	20.9	20.9	20.1	5.8	17.5	1.0	11.7	21.7	1.5	3.5	9.1	9.0
LnGrp Delay(d),s/veh	79.7	49.6	50.0	70.0	80.6	42.5	55.4	107.4	42.6	51.1	65.1	69.7
LnGrp LOS	E	D	D	E	F	D	E	F	D	D	E	E
Approach Vol, veh/h		1531			941			1106			547	
Approach Delay, s/veh		58.7			77.7			74.9			64.3	
Approach LOS		E			E			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	39.8	35.0		35.0	20.0	54.8		26.7
Change Period (Y+Rc), s	3.0	4.5		4.5	3.0	4.5		4.5
Max Green Setting (Gmax), s	37.0	30.5		30.5	17.0	50.5		25.5
Max Q Clear Time (g_c+I1), s	36.7	31.8		32.5	12.3	41.4		19.9
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	5.5		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	68.1
HCM 2010 LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	372	49	177	44	32	51	160	593	15	45	441	129
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		0.98	1.00		0.95	1.00		0.97	1.00		0.96
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	404	53	85	48	35	1	174	645	15	49	479	44
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	717	132	212	147	149	4	206	1696	39	94	1476	637
Arrive On Green	0.21	0.21	0.21	0.08	0.08	0.08	0.12	0.48	0.48	0.05	0.42	0.42
Sat Flow, veh/h	3408	629	1008	1757	1781	51	1757	3499	81	1757	3505	1513
Grp Volume(v), veh/h	404	0	138	48	0	36	174	323	337	49	479	44
Grp Sat Flow(s),veh/h/ln	1704	0	1637	1757	0	1832	1757	1752	1827	1757	1752	1513
Q Serve(g_s), s	10.1	0.0	6.9	2.4	0.0	1.7	9.2	11.1	11.1	2.6	8.7	1.6
Cycle Q Clear(g_c), s	10.1	0.0	6.9	2.4	0.0	1.7	9.2	11.1	11.1	2.6	8.7	1.6
Prop In Lane	1.00		0.62	1.00		0.03	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	717	0	345	147	0	154	206	850	886	94	1476	637
V/C Ratio(X)	0.56	0.00	0.40	0.33	0.00	0.23	0.85	0.38	0.38	0.52	0.32	0.07
Avail Cap(c_a), veh/h	717	0	345	370	0	386	370	850	886	277	1476	637
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	32.3	41.0	0.0	40.7	41.1	15.5	15.5	43.8	18.4	16.4
Incr Delay (d2), s/veh	3.2	0.0	3.4	0.5	0.0	0.3	3.6	1.3	1.2	1.7	0.6	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	5.1	0.0	3.4	1.2	0.0	0.9	4.7	5.6	5.8	1.3	4.3	0.7
LnGrp Delay(d),s/veh	36.8	0.0	35.8	41.5	0.0	41.0	44.7	16.8	16.7	45.4	19.0	16.6
LnGrp LOS	D		D	D		D	D	B	B	D	B	B
Approach Vol, veh/h		542			84			834			572	
Approach Delay, s/veh		36.5			41.2			22.6			21.1	
Approach LOS		D			D			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	8.6	50.3		24.1	14.6	44.2		12.1
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	4.6	13.1		12.1	11.2	10.7		4.4
Green Ext Time (p_c), s	0.0	14.7		1.0	0.0	15.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	106	0	757	574	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	119	0	851	645	99

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1119	372	744	0	-	0
Stage 1	694	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	199	622	853	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	624	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	199	622	853	-	-	-
Mov Cap-2 Maneuver	199	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	624	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	853	-	622	-	-
HCM Lane V/C Ratio	-	-	0.191	-	-
HCM Control Delay (s)	0	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	6	127	8	9	46	106	563	7	42	594	38
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		0.99	1.00		0.99	1.00		0.97	1.00		0.96
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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	139	7	47	9	10	5	122	647	6	48	683	34
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	385	46	306	29	144	72	190	1496	14	117	1284	64
Arrive On Green	0.11	0.22	0.22	0.02	0.12	0.12	0.11	0.42	0.42	0.07	0.38	0.38
Sat Flow, veh/h	3408	206	1383	1757	1156	578	1757	3557	33	1757	3391	169
Grp Volume(v), veh/h	139	0	54	9	0	15	122	319	334	48	353	364
Grp Sat Flow(s),veh/h/ln	1704	0	1589	1757	0	1735	1757	1752	1838	1757	1752	1807
Q Serve(g_s), s	2.1	0.0	1.5	0.3	0.0	0.4	3.6	7.0	7.0	1.4	8.5	8.5
Cycle Q Clear(g_c), s	2.1	0.0	1.5	0.3	0.0	0.4	3.6	7.0	7.0	1.4	8.5	8.5
Prop In Lane	1.00		0.87	1.00		0.33	1.00		0.02	1.00		0.09
Lane Grp Cap(c), veh/h	385	0	352	29	0	216	190	737	773	117	664	684
V/C Ratio(X)	0.36	0.00	0.15	0.31	0.00	0.07	0.64	0.43	0.43	0.41	0.53	0.53
Avail Cap(c_a), veh/h	720	0	905	371	0	987	371	1159	1215	371	1159	1194
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	17.1	26.5	0.0	21.0	23.3	11.2	11.2	24.4	13.2	13.2
Incr Delay (d2), s/veh	0.6	0.0	0.2	6.0	0.0	0.1	3.6	0.4	0.4	2.3	0.7	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	1.0	0.0	0.7	0.2	0.0	0.2	2.0	3.4	3.6	0.8	4.2	4.4
LnGrp Delay(d),s/veh	22.9	0.0	17.3	32.5	0.0	21.2	26.8	11.6	11.6	26.7	13.8	13.8
LnGrp LOS	C		B	C		C	C	B	B	C	B	B
Approach Vol, veh/h		193			24			775			765	
Approach Delay, s/veh		21.3			25.4			14.0			14.6	
Approach LOS		C			C			B			B	

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	7.1	26.9	4.4	16.0	9.4	24.6	9.6	10.8
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	11.5	36.0	11.5	31.0	11.5	36.0	11.5	31.0
Max Q Clear Time (g_c+I1), s	3.4	9.0	2.3	3.5	5.6	10.5	4.1	2.4
Green Ext Time (p_c), s	0.0	9.6	0.0	0.4	0.1	9.4	0.2	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	98	607	33	76	62	505	290	23	33	210	47
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	35	104	67	35	81	36	537	309	21	35	223	31
Adj No. of Lanes	1	1	2	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	283	417	95	184	82	593	1492	101	95	511	70
Arrive On Green	0.05	0.15	0.15	0.05	0.15	0.15	0.34	0.45	0.45	0.05	0.16	0.16
Sat Flow, veh/h	1757	1845	2722	1757	1202	534	1757	3331	225	1757	3096	425
Grp Volume(v), veh/h	35	104	67	35	0	117	537	162	168	35	125	129
Grp Sat Flow(s),veh/h/ln	1757	1845	1361	1757	0	1737	1757	1752	1804	1757	1752	1769
Q Serve(g_s), s	0.9	2.4	1.0	0.9	0.0	3.0	14.1	2.7	2.7	0.9	3.1	3.2
Cycle Q Clear(g_c), s	0.9	2.4	1.0	0.9	0.0	3.0	14.1	2.7	2.7	0.9	3.1	3.2
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.12	1.00		0.24
Lane Grp Cap(c), veh/h	95	283	417	95	0	266	593	785	808	95	289	292
V/C Ratio(X)	0.37	0.37	0.16	0.37	0.00	0.44	0.91	0.21	0.21	0.37	0.43	0.44
Avail Cap(c_a), veh/h	801	1032	1523	619	0	864	983	1162	1196	619	980	990
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.0	18.3	17.7	22.0	0.0	18.5	15.3	8.1	8.1	22.0	18.1	18.2
Incr Delay (d2), s/veh	0.9	0.3	0.1	0.9	0.0	0.4	4.4	0.0	0.0	0.9	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	0.5	1.3	0.4	0.5	0.0	1.4	7.4	1.3	1.4	0.5	1.5	1.6
LnGrp Delay(d),s/veh	22.9	18.6	17.8	22.9	0.0	19.0	19.6	8.1	8.2	22.9	18.5	18.5
LnGrp LOS	C	B	B	C		B	B	A	A	C	B	B
Approach Vol, veh/h		206			152			867			289	
Approach Delay, s/veh		19.1			19.9			15.3			19.1	
Approach LOS		B			B			B			B	

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	5.6	11.4	5.6	25.6	5.6	11.4	19.3	12.0
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	24.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	2.9	5.0	2.9	4.7	2.9	4.4	16.1	5.2
Green Ext Time (p_c), s	0.0	0.9	0.0	2.3	0.0	0.9	0.2	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	146	1118	4	15	730	274	4	4	14	326	7	92
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	154	1177	4	16	768	0	4	4	0	348	0	12
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	194	1972	7	48	1637	732	13	13	0	454	0	203
Arrive On Green	0.11	0.55	0.55	0.03	0.47	0.00	0.01	0.01	0.00	0.13	0.00	0.13
Sat Flow, veh/h	1757	3583	12	1757	3505	1568	900	900	0	3514	0	1568
Grp Volume(v), veh/h	154	576	605	16	768	0	8	0	0	348	0	12
Grp Sat Flow(s),veh/h/ln	1757	1752	1842	1757	1752	1568	1800	0	0	1757	0	1568
Q Serve(g_s), s	5.2	13.4	13.4	0.5	9.1	0.0	0.3	0.0	0.0	5.8	0.0	0.4
Cycle Q Clear(g_c), s	5.2	13.4	13.4	0.5	9.1	0.0	0.3	0.0	0.0	5.8	0.0	0.4
Prop In Lane	1.00		0.01	1.00		1.00	0.50		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	194	964	1014	48	1637	732	26	0	0	454	0	203
V/C Ratio(X)	0.79	0.60	0.60	0.33	0.47	0.00	0.31	0.00	0.00	0.77	0.00	0.06
Avail Cap(c_a), veh/h	576	1206	1268	777	2297	1028	560	0	0	1439	0	642
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.5	9.2	9.2	29.1	11.1	0.0	29.8	0.0	0.0	25.7	0.0	23.3
Incr Delay (d2), s/veh	2.8	0.7	0.7	1.5	0.2	0.0	2.4	0.0	0.0	1.0	0.0	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	6.6	6.9	0.3	4.4	0.0	0.2	0.0	0.0	2.9	0.0	0.2
LnGrp Delay(d),s/veh	29.2	9.9	9.9	30.6	11.3	0.0	32.2	0.0	0.0	26.7	0.0	23.4
LnGrp LOS	C	A	A	C	B		C			C		C
Approach Vol, veh/h		1335			784			8			360	
Approach Delay, s/veh		12.1			11.7			32.2			26.6	
Approach LOS		B			B			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	5.2	38.6		4.9	10.2	33.5		12.4
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.0	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.5	15.4		2.3	7.2	11.1		7.8
Green Ext Time (p_c), s	0.0	16.5		0.0	0.1	17.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	14.1
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)	0	1425	303	0	771	282	0	0	0	966	0	301
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	1500	0	0	812	0				1017	0	221
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1734	776	0	1734	776				1133	0	521
Arrive On Green	0.00	0.49	0.00	0.00	0.49	0.00				0.33	0.00	0.33
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	1500	0	0	812	0				1017	0	221
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	21.9	0.0	0.0	8.8	0.0				16.4	0.0	6.3
Cycle Q Clear(g_c), s	0.0	21.9	0.0	0.0	8.8	0.0				16.4	0.0	6.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1734	776	0	1734	776				1133	0	521
V/C Ratio(X)	0.00	0.86	0.00	0.00	0.47	0.00				0.90	0.00	0.42
Avail Cap(c_a), veh/h	0	3027	1354	0	3027	1354				2060	0	948
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.9	0.0	0.0	9.6	0.0				18.4	0.0	15.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.1	0.0				1.1	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	10.5	0.0	0.0	4.2	0.0				7.8	0.0	2.7
LnGrp Delay(d),s/veh	0.0	13.4	0.0	0.0	9.7	0.0				19.5	0.0	15.2
LnGrp LOS		B			A					B		B
Approach Vol, veh/h		1500			812						1238	
Approach Delay, s/veh		13.4			9.7						18.7	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		33.6		24.2		33.6		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		23.9		18.4		10.8		
Green Ext Time (p_c), s		4.8		0.8		4.9		

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B

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)	0	1815	576	0	896	1023	157	0	325	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1911	0	0	943	0	165	0	285			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	2232	998	0	2232	998	724	0	333			
Arrive On Green	0.00	0.64	0.00	0.00	0.64	0.00	0.21	0.00	0.21			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1911	0	0	943	0	165	0	285			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	26.0	0.0	0.0	8.0	0.0	2.4	0.0	10.4			
Cycle Q Clear(g_c), s	0.0	26.0	0.0	0.0	8.0	0.0	2.4	0.0	10.4			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2232	998	0	2232	998	724	0	333			
V/C Ratio(X)	0.00	0.86	0.00	0.00	0.42	0.00	0.23	0.00	0.86			
Avail Cap(c_a), veh/h	0	2940	1315	0	2940	1315	1429	0	658			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	8.7	0.0	0.0	5.4	0.0	19.4	0.0	22.6			
Incr Delay (d2), s/veh	0.0	1.7	0.0	0.0	0.0	0.0	0.1	0.0	2.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	12.7	0.0	0.0	3.8	0.0	1.1	0.0	4.7			
LnGrp Delay(d),s/veh	0.0	10.3	0.0	0.0	5.4	0.0	19.5	0.0	25.1			
LnGrp LOS		B			A		B		C			
Approach Vol, veh/h		1911			943			450				
Approach Delay, s/veh		10.3			5.4			23.0				
Approach LOS		B			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		43.0				43.0		16.7
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		28.0				10.0		12.4
Green Ext Time (p_c), s		10.0				12.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B

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)	679	1176	285	51	926	154	341	132	64	182	159	656
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		0.97	1.00		0.98	1.00		0.98	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	715	1238	204	54	975	60	359	139	53	180	184	629
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	784	2225	906	94	1350	413	503	187	71	351	369	1348
Arrive On Green	0.23	0.44	0.44	0.05	0.27	0.27	0.15	0.15	0.15	0.20	0.20	0.20
Sat Flow, veh/h	3408	5036	1528	1757	5036	1541	3408	1264	482	1757	1845	3136
Grp Volume(v), veh/h	715	1238	204	54	975	60	359	0	192	180	184	629
Grp Sat Flow(s),veh/h/ln	1704	1679	1528	1757	1679	1541	1704	0	1746	1757	1845	1568
Q Serve(g_s), s	21.1	18.7	6.5	3.1	18.1	3.1	10.3	0.0	10.8	9.4	9.1	14.7
Cycle Q Clear(g_c), s	21.1	18.7	6.5	3.1	18.1	3.1	10.3	0.0	10.8	9.4	9.1	14.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	784	2225	906	94	1350	413	503	0	258	351	369	1348
V/C Ratio(X)	0.91	0.56	0.23	0.57	0.72	0.15	0.71	0.00	0.74	0.51	0.50	0.47
Avail Cap(c_a), veh/h	827	2225	906	426	1955	598	992	0	509	512	537	1634
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	21.3	10.0	47.6	34.2	28.7	41.8	0.0	42.0	36.7	36.6	20.9
Incr Delay (d2), s/veh	13.9	0.3	0.1	5.4	0.7	0.2	1.9	0.0	4.2	1.2	1.0	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	11.4	8.8	3.8	1.6	8.5	1.3	5.0	0.0	5.5	4.7	4.8	6.4
LnGrp Delay(d),s/veh	52.5	21.6	10.1	53.1	35.0	28.9	43.7	0.0	46.3	37.9	37.7	21.2
LnGrp LOS	D	C	B	D	C	C	D		D	D	D	C
Approach Vol, veh/h		2157			1089			551			993	
Approach Delay, s/veh		30.8			35.5			44.6			27.3	
Approach LOS		C			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	50.3		24.3	27.4	32.4		18.9
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.1	20.7		16.7	23.1	20.1		12.8
Green Ext Time (p_c), s	0.1	14.9		3.9	0.6	7.5		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
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)	45	921	258	590	726	93	204	25	631	154	26	49
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		0.98	1.00		0.97	1.00		0.98	1.00		0.97
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	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	46	940	176	602	741	90	227	0	556	106	98	29
Adj No. of Lanes	1	2	1	2	2	0	2	0	1	1	1	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	59	1046	459	671	1448	176	903	0	704	178	137	41
Arrive On Green	0.03	0.30	0.30	0.20	0.46	0.46	0.26	0.00	0.26	0.10	0.10	0.10
Sat Flow, veh/h	1757	3505	1539	3408	3137	381	3514	0	1537	1757	1357	402
Grp Volume(v), veh/h	46	940	176	602	414	417	227	0	556	106	0	127
Grp Sat Flow(s),veh/h/ln	1757	1752	1539	1704	1752	1765	1757	0	1537	1757	0	1759
Q Serve(g_s), s	3.0	30.0	10.6	20.1	19.4	19.5	6.0	0.0	30.0	6.7	0.0	8.2
Cycle Q Clear(g_c), s	3.0	30.0	10.6	20.1	19.4	19.5	6.0	0.0	30.0	6.7	0.0	8.2
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	59	1046	459	671	809	815	903	0	704	178	0	178
V/C Ratio(X)	0.78	0.90	0.38	0.90	0.51	0.51	0.25	0.00	0.79	0.60	0.00	0.71
Avail Cap(c_a), veh/h	301	1201	527	876	809	815	903	0	704	376	0	377
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.0	39.3	32.4	45.7	22.1	22.2	34.5	0.0	27.3	50.2	0.0	50.8
Incr Delay (d2), s/veh	8.0	7.8	0.2	8.4	0.2	0.2	0.1	0.0	5.6	1.2	0.0	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	1.6	15.6	4.5	10.2	9.5	9.6	2.9	0.0	16.3	3.3	0.0	4.1
LnGrp Delay(d),s/veh	64.0	47.1	32.6	54.1	22.4	22.4	34.5	0.0	32.9	51.4	0.0	52.8
LnGrp LOS	E	D	C	D	C	C	C		C	D		D
Approach Vol, veh/h		1162			1433			783			233	
Approach Delay, s/veh		45.6			35.7			33.3			52.2	
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	26.0	39.4		16.3	6.9	58.5		35.0
Change Period (Y+Rc), s	3.0	4.6		4.5	3.0	4.6		5.0
Max Green Setting (Gmax), s	30.0	40.0		25.0	20.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	22.1	32.0		10.2	5.0	21.5		32.0
Green Ext Time (p_c), s	0.9	2.8		0.5	0.0	8.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	39.4
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
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)	0	1539	167	363	847	0	0	0	0	1009	4	562
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1570	132	370	864	0				1033	0	370
Adj No. of Lanes	0	2	1	2	2	0				2	0	2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1519	673	440	2100	0				1088	0	971
Arrive On Green	0.00	0.43	0.43	0.13	0.60	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3597	1554	3408	3597	0				3514	0	3136
Grp Volume(v), veh/h	0	1570	132	370	864	0				1033	0	370
Grp Sat Flow(s),veh/h/ln	0	1752	1554	1704	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	41.4	5.0	10.1	12.5	0.0				27.5	0.0	8.8
Cycle Q Clear(g_c), s	0.0	41.4	5.0	10.1	12.5	0.0				27.5	0.0	8.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1519	673	440	2100	0				1088	0	971
V/C Ratio(X)	0.00	1.03	0.20	0.84	0.41	0.00				0.95	0.00	0.38
Avail Cap(c_a), veh/h	0	1519	673	767	2100	0				1100	0	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	27.1	16.8	40.6	10.2	0.0				32.2	0.0	25.8
Incr Delay (d2), s/veh	0.0	32.2	0.1	1.7	0.0	0.0				16.1	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
%ile BackOfQ(50%),veh/ln	0.0	26.6	2.2	4.9	6.0	0.0				15.8	0.0	3.8
LnGrp Delay(d),s/veh	0.0	59.3	16.8	42.3	10.2	0.0				48.3	0.0	25.9
LnGrp LOS		F	B	D	B					D		C
Approach Vol, veh/h		1702			1234						1403	
Approach Delay, s/veh		56.0			19.9						42.4	
Approach LOS		E			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.8	46.0		33.7		61.8		
Change Period (Y+Rc), s	3.5	4.6		4.1		4.6		
Max Green Setting (Gmax), s	21.5	41.4		29.9		41.4		
Max Q Clear Time (g_c+I1), s	12.1	43.4		29.5		14.5		
Green Ext Time (p_c), s	0.2	0.0		0.1		9.0		

Intersection Summary	
HCM 2010 Ctrl Delay	41.3
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)	430	2114	0	0	1105	907	105	2	375	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	439	2157	0	0	1128	540	108	0	339			
Adj No. of Lanes	2	2	0	0	2	1	2	0	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	561	2162	0	0	1402	626	870	0	388			
Arrive On Green	0.16	0.62	0.00	0.00	0.40	0.40	0.25	0.00	0.25			
Sat Flow, veh/h	3408	3597	0	0	3597	1564	3514	0	1568			
Grp Volume(v), veh/h	439	2157	0	0	1128	540	108	0	339			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1752	1564	1757	0	1568			
Q Serve(g_s), s	8.3	41.1	0.0	0.0	19.1	21.2	1.6	0.0	13.9			
Cycle Q Clear(g_c), s	8.3	41.1	0.0	0.0	19.1	21.2	1.6	0.0	13.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	561	2162	0	0	1402	626	870	0	388			
V/C Ratio(X)	0.78	1.00	0.00	0.00	0.80	0.86	0.12	0.00	0.87			
Avail Cap(c_a), veh/h	1271	2162	0	0	1829	817	1572	0	701			
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	26.9	12.8	0.0	0.0	17.8	18.4	19.6	0.0	24.2			
Incr Delay (d2), s/veh	0.9	18.8	0.0	0.0	1.5	6.2	0.0	0.0	2.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.0	25.1	0.0	0.0	9.4	10.2	0.8	0.0	6.3			
LnGrp Delay(d),s/veh	27.8	31.6	0.0	0.0	19.3	24.6	19.6	0.0	26.7			
LnGrp LOS	C	C			B	C	B		C			
Approach Vol, veh/h		2596			1668			447				
Approach Delay, s/veh		31.0			21.0			25.0				
Approach LOS		C			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		46.4			14.5	31.8		20.7
Change Period (Y+Rc), s		* 5			3.5	* 5		4.1
Max Green Setting (Gmax), s		* 35			25.0	* 35		30.0
Max Q Clear Time (g_c+I1), s		43.1			10.3	23.2		15.9
Green Ext Time (p_c), s		0.0			0.7	3.6		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
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.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1776	713	0	2012	0	53
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1812	728	0	2053	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	1817	0	2844	911
Stage 1	-	-	-	-	1817	-
Stage 2	-	-	-	-	1027	-
Critical Hdwy	-	-	5.36	-	6.31	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	3.13	-	3.68	3.93
Pot Cap-1 Maneuver	-	0	153	-	21	236
Stage 1	-	0	-	-	75	-
Stage 2	-	0	-	-	297	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	153	-	21	235
Mov Cap-2 Maneuver	-	-	-	-	21	-
Stage 1	-	-	-	-	75	-
Stage 2	-	-	-	-	297	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	235	-	153	-
HCM Lane V/C Ratio	0.23	-	-	-
HCM Control Delay (s)	24.8	-	0	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.9	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	477	1252	100	82	1410	126	314	61	24	145	53	288
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		0.97	1.00		1.00	1.00		0.99	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1845
Adj Flow Rate, veh/h	487	1278	98	84	1439	124	201	229	20	148	54	41
Adj No. of Lanes	2	2	0	1	2	0	1	1	0	0	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	548	1662	127	107	1308	112	287	273	24	175	64	363
Arrive On Green	0.16	0.50	0.50	0.06	0.40	0.40	0.16	0.16	0.16	0.13	0.13	0.13
Sat Flow, veh/h	3408	3293	252	1757	3267	280	1757	1670	146	1304	476	2697
Grp Volume(v), veh/h	487	679	697	84	768	795	201	0	249	202	0	41
Grp Sat Flow(s),veh/h/ln	1704	1752	1792	1757	1752	1794	1757	0	1816	1779	0	1348
Q Serve(g_s), s	15.5	34.7	35.0	5.2	44.4	44.4	12.0	0.0	14.7	12.3	0.0	1.5
Cycle Q Clear(g_c), s	15.5	34.7	35.0	5.2	44.4	44.4	12.0	0.0	14.7	12.3	0.0	1.5
Prop In Lane	1.00		0.14	1.00		0.16	1.00		0.08	0.73		1.00
Lane Grp Cap(c), veh/h	548	885	905	107	702	718	287	0	297	239	0	363
V/C Ratio(X)	0.89	0.77	0.77	0.79	1.10	1.11	0.70	0.00	0.84	0.84	0.00	0.11
Avail Cap(c_a), veh/h	615	885	905	317	702	718	396	0	409	401	0	608
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.6	22.2	22.3	51.4	33.2	33.2	43.8	0.0	44.9	46.8	0.0	42.2
Incr Delay (d2), s/veh	12.9	3.9	4.0	4.7	62.9	66.5	1.4	0.0	7.9	3.4	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	8.3	17.7	18.2	2.7	33.5	35.0	5.9	0.0	8.1	6.3	0.0	0.6
LnGrp Delay(d),s/veh	58.5	26.1	26.2	56.1	96.1	99.8	45.2	0.0	52.8	50.2	0.0	42.2
LnGrp LOS	E	C	C	E	F	F	D		D	D		D
Approach Vol, veh/h		1863			1647			450			243	
Approach Delay, s/veh		34.6			95.8			49.4			48.9	
Approach LOS		C			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.7	60.1		18.9	21.3	48.5		22.1
Change Period (Y+Rc), s	3.0	4.1		4.0	3.5	4.1		4.0
Max Green Setting (Gmax), s	20.0	44.4		25.0	20.0	44.4		25.0
Max Q Clear Time (g_c+I1), s	7.2	37.0		14.3	17.5	46.4		16.7
Green Ext Time (p_c), s	0.1	6.7		0.6	0.3	0.0		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	61.0
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)	450	701	259	149	718	128	549	344	118	97	331	367
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	455	708	237	151	725	58	555	347	32	98	334	234
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	1	2	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	433	865	290	199	713	312	492	1340	596	119	334	229
Arrive On Green	0.25	0.34	0.34	0.11	0.20	0.20	0.28	0.38	0.38	0.07	0.17	0.17
Sat Flow, veh/h	1757	2570	860	1757	3505	1536	1757	3505	1559	1757	1967	1345
Grp Volume(v), veh/h	455	483	462	151	725	58	555	347	32	98	297	271
Grp Sat Flow(s),veh/h/ln	1757	1752	1677	1757	1752	1536	1757	1752	1559	1757	1752	1560
Q Serve(g_s), s	37.0	37.8	37.8	12.5	30.5	4.7	42.0	10.2	1.9	8.3	25.4	25.5
Cycle Q Clear(g_c), s	37.0	37.8	37.8	12.5	30.5	4.7	42.0	10.2	1.9	8.3	25.4	25.5
Prop In Lane	1.00		0.51	1.00		1.00	1.00		1.00	1.00		0.86
Lane Grp Cap(c), veh/h	433	590	565	199	713	312	492	1340	596	119	298	265
V/C Ratio(X)	1.05	0.82	0.82	0.76	1.02	0.19	1.13	0.26	0.05	0.83	1.00	1.02
Avail Cap(c_a), veh/h	433	590	565	199	713	312	492	1340	596	199	298	265
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.5	45.6	45.6	64.5	59.7	49.5	54.0	31.8	29.2	69.1	62.2	62.3
Incr Delay (d2), s/veh	56.9	8.3	8.7	23.4	38.1	0.1	80.7	0.0	0.0	5.4	50.9	61.3
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	0.1
%ile BackOfQ(50%),veh/ln	24.8	19.6	18.8	7.4	18.5	2.0	31.4	4.9	0.8	4.2	16.5	15.5
LnGrp Delay(d),s/veh	113.4	53.9	54.2	87.9	97.9	49.6	134.7	31.8	29.2	74.4	113.1	123.7
LnGrp LOS	F	D	D	F	F	D	F	C	C	E	F	F
Approach Vol, veh/h		1400			934			934			666	
Approach Delay, s/veh		73.3			93.3			92.9			111.7	
Approach LOS		E			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	40.0	35.0	13.1	61.9	20.0	55.0	45.0	30.0
Change Period (Y+Rc), s	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Max Green Setting (Gmax), s	37.0	30.5	17.0	50.5	17.0	50.5	42.0	25.5
Max Q Clear Time (g_c+I1), s	39.0	32.5	10.3	12.2	14.5	39.8	44.0	27.5
Green Ext Time (p_c), s	0.0	0.0	0.1	4.2	0.0	5.6	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	89.2
HCM 2010 LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	450	701	259	149	718	128	549	344	118	97	331	367
Future Volume (veh/h)	450	701	259	149	718	128	549	344	118	97	331	367
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.97
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	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	455	708	237	151	725	58	555	347	32	98	334	234
Adj No. of Lanes	1	2	0	1	2	1	2	1	1	1	2	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	472	940	315	217	773	339	723	379	319	325	364	249
Arrive On Green	0.27	0.37	0.37	0.12	0.22	0.22	0.21	0.21	0.21	0.19	0.19	0.19
Sat Flow, veh/h	1757	2570	860	1757	3505	1538	3514	1845	1552	1757	1968	1346
Grp Volume(v), veh/h	455	483	462	151	725	58	555	347	32	98	296	272
Grp Sat Flow(s),veh/h/ln	1757	1752	1677	1757	1752	1538	1757	1845	1552	1757	1752	1562
Q Serve(g_s), s	35.2	33.2	33.2	11.3	28.0	4.2	20.5	25.3	2.3	6.6	22.8	23.6
Cycle Q Clear(g_c), s	35.2	33.2	33.2	11.3	28.0	4.2	20.5	25.3	2.3	6.6	22.8	23.6
Prop In Lane	1.00		0.51	1.00		1.00	1.00		1.00	1.00		0.86
Lane Grp Cap(c), veh/h	472	641	614	217	773	339	723	379	319	325	325	289
V/C Ratio(X)	0.96	0.75	0.75	0.70	0.94	0.17	0.77	0.91	0.10	0.30	0.91	0.94
Avail Cap(c_a), veh/h	472	643	615	217	776	341	778	409	344	325	325	289
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	38.2	38.2	57.9	52.7	43.5	51.6	53.5	44.4	48.4	55.0	55.3
Incr Delay (d2), s/veh	32.0	4.5	4.7	16.9	18.5	0.1	3.8	23.0	0.1	0.2	28.5	36.4
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	21.3	16.9	16.2	6.6	15.6	1.8	10.3	15.3	1.0	3.2	13.6	13.1
LnGrp Delay(d),s/veh	81.7	42.7	42.9	74.8	71.2	43.5	55.4	76.5	44.4	48.6	83.5	91.7
LnGrp LOS	F	D	D	E	E	D	E	E	D	D	F	F
Approach Vol, veh/h		1400			934			934			666	
Approach Delay, s/veh		55.4			70.1			62.8			81.7	
Approach LOS		E			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	40.0	34.9		32.8	20.0	54.9		30.0
Change Period (Y+Rc), s	3.0	4.5		4.5	3.0	4.5		4.5
Max Green Setting (Gmax), s	37.0	30.5		30.5	17.0	50.5		25.5
Max Q Clear Time (g_c+I1), s	37.2	30.0		27.3	13.3	35.2		25.6
Green Ext Time (p_c), s	0.0	0.4		1.0	0.1	6.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	65.1
HCM 2010 LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	450	35	177	35	25	29	189	486	16	24	476	185
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		0.97	1.00		1.00	1.00		0.98	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	495	38	41	38	27	0	208	534	16	26	523	62
Adj No. of Lanes	2	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	721	169	182	106	112	0	240	1816	54	64	1482	647
Arrive On Green	0.21	0.21	0.21	0.06	0.06	0.00	0.14	0.52	0.52	0.04	0.42	0.42
Sat Flow, veh/h	3408	799	862	1757	1845	0	1757	3472	104	1757	3505	1530
Grp Volume(v), veh/h	495	0	79	38	27	0	208	269	281	26	523	62
Grp Sat Flow(s),veh/h/ln	1704	0	1660	1757	1845	0	1757	1752	1824	1757	1752	1530
Q Serve(g_s), s	12.7	0.0	3.7	2.0	1.3	0.0	11.0	8.2	8.2	1.4	9.6	2.3
Cycle Q Clear(g_c), s	12.7	0.0	3.7	2.0	1.3	0.0	11.0	8.2	8.2	1.4	9.6	2.3
Prop In Lane	1.00		0.52	1.00		0.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	721	0	351	106	112	0	240	917	954	64	1482	647
V/C Ratio(X)	0.69	0.00	0.23	0.36	0.24	0.00	0.87	0.29	0.29	0.40	0.35	0.10
Avail Cap(c_a), veh/h	721	0	351	372	390	0	372	917	954	279	1482	647
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	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	0.0	30.9	42.7	42.3	0.0	40.0	12.7	12.7	44.5	18.5	16.4
Incr Delay (d2), s/veh	5.3	0.0	1.5	0.8	0.4	0.0	8.1	0.8	0.8	1.5	0.7	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	6.5	0.0	1.9	1.0	0.7	0.0	5.9	4.2	4.3	0.7	4.8	1.0
LnGrp Delay(d),s/veh	39.7	0.0	32.4	43.4	42.8	0.0	48.0	13.5	13.5	46.1	19.2	16.7
LnGrp LOS	D		C	D	D		D	B	B	D	B	B
Approach Vol, veh/h		574			65			758			611	
Approach Delay, s/veh		38.7			43.1			23.0			20.1	
Approach LOS		D			D			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	7.0	53.7		24.1	16.4	44.2		9.8
Change Period (Y+Rc), s	3.5	* 4.2		4.1	3.5	* 4.2		4.1
Max Green Setting (Gmax), s	15.0	* 40		20.0	20.0	* 40		20.0
Max Q Clear Time (g_c+I1), s	3.4	10.2		14.7	13.0	11.6		4.0
Green Ext Time (p_c), s	0.0	14.9		0.8	0.0	14.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

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

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	141	0	681	580	108
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	152	0	732	624	116

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1048	370	740	0	-	0
Stage 1	682	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	222	624	856	-	-	-
Stage 1	461	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	222	624	856	-	-	-
Mov Cap-2 Maneuver	222	-	-	-	-	-
Stage 1	461	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	856	-	624	-	-
HCM Lane V/C Ratio	-	-	0.243	-	-
HCM Control Delay (s)	0	-	12.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	6	108	1	11	14	127	537	2	22	651	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		0.99	1.00		0.99	1.00		0.97	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	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	128	6	20	1	12	2	135	571	2	23	693	34
Adj No. of Lanes	2	1	0	1	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	389	79	262	3	152	25	204	1640	6	67	1291	63
Arrive On Green	0.11	0.21	0.21	0.00	0.10	0.10	0.12	0.46	0.46	0.04	0.38	0.38
Sat Flow, veh/h	3408	373	1242	1757	1539	257	1757	3582	13	1757	3400	167
Grp Volume(v), veh/h	128	0	26	1	0	14	135	279	294	23	357	370
Grp Sat Flow(s),veh/h/ln	1704	0	1615	1757	0	1796	1757	1752	1842	1757	1752	1814
Q Serve(g_s), s	1.8	0.0	0.7	0.0	0.0	0.4	3.8	5.3	5.3	0.7	8.2	8.2
Cycle Q Clear(g_c), s	1.8	0.0	0.7	0.0	0.0	0.4	3.8	5.3	5.3	0.7	8.2	8.2
Prop In Lane	1.00		0.77	1.00		0.14	1.00		0.01	1.00		0.09
Lane Grp Cap(c), veh/h	389	0	340	3	0	177	204	802	843	67	665	689
V/C Ratio(X)	0.33	0.00	0.08	0.29	0.00	0.08	0.66	0.35	0.35	0.34	0.54	0.54
Avail Cap(c_a), veh/h	761	0	973	392	0	1082	392	1226	1288	392	1226	1269
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	16.3	25.7	0.0	21.1	21.8	9.0	9.0	24.1	12.4	12.4
Incr Delay (d2), s/veh	0.5	0.0	0.1	41.7	0.0	0.2	3.6	0.3	0.2	3.0	0.7	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	0.9	0.0	0.3	0.1	0.0	0.2	2.0	2.6	2.7	0.4	4.0	4.1
LnGrp Delay(d),s/veh	21.5	0.0	16.4	67.4	0.0	21.3	25.4	9.3	9.2	27.1	13.1	13.1
LnGrp LOS	C		B	E		C	C	A	A	C	B	B
Approach Vol, veh/h		154			15			708			750	
Approach Delay, s/veh		20.6			24.3			12.3			13.5	
Approach LOS		C			C			B			B	

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	5.5	27.6	3.6	14.8	9.5	23.5	9.4	9.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	11.5	36.0	11.5	31.0	11.5	36.0	11.5	31.0
Max Q Clear Time (g_c+I1), s	2.7	7.3	2.0	2.7	5.8	10.2	3.8	2.4
Green Ext Time (p_c), s	0.0	9.1	0.0	0.2	0.1	8.8	0.2	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	82	603	14	82	44	546	266	9	31	181	65
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	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	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	39	89	91	15	89	28	593	289	9	34	197	37
Adj No. of Lanes	1	1	2	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	103	329	489	46	196	62	645	1595	50	93	429	79
Arrive On Green	0.06	0.18	0.18	0.03	0.15	0.15	0.37	0.46	0.46	0.05	0.15	0.15
Sat Flow, veh/h	1757	1845	2746	1757	1346	424	1757	3468	108	1757	2949	543
Grp Volume(v), veh/h	39	89	91	15	0	117	593	146	152	34	115	119
Grp Sat Flow(s),veh/h/ln	1757	1845	1373	1757	0	1770	1757	1752	1823	1757	1752	1740
Q Serve(g_s), s	1.1	2.1	1.4	0.4	0.0	3.0	16.0	2.4	2.4	0.9	3.0	3.1
Cycle Q Clear(g_c), s	1.1	2.1	1.4	0.4	0.0	3.0	16.0	2.4	2.4	0.9	3.0	3.1
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.06	1.00		0.31
Lane Grp Cap(c), veh/h	103	329	489	46	0	258	645	806	838	93	255	253
V/C Ratio(X)	0.38	0.27	0.19	0.32	0.00	0.45	0.92	0.18	0.18	0.37	0.45	0.47
Avail Cap(c_a), veh/h	781	1006	1497	603	0	1216	958	1133	1178	603	956	949
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	17.6	17.3	23.7	0.0	19.3	15.0	7.9	7.9	22.6	19.4	19.4
Incr Delay (d2), s/veh	0.8	0.2	0.1	1.5	0.0	0.5	7.8	0.0	0.0	0.9	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	0.5	1.1	0.5	0.2	0.0	1.5	9.0	1.2	1.2	0.5	1.5	1.5
LnGrp Delay(d),s/veh	23.3	17.7	17.4	25.2	0.0	19.8	22.7	7.9	7.9	23.5	19.8	19.9
LnGrp LOS	C	B	B	C		B	C	A	A	C	B	B
Approach Vol, veh/h		219			132			891			268	
Approach Delay, s/veh		18.6			20.4			17.8			20.3	
Approach LOS		B			C			B			C	

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	5.9	11.2	5.6	26.8	4.3	12.8	21.2	11.2
Change Period (Y+Rc), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Green Setting (Gmax), s	22.0	34.0	17.0	32.0	17.0	27.0	27.0	27.0
Max Q Clear Time (g_c+I1), s	3.1	5.0	2.9	4.4	2.4	4.1	18.0	5.1
Green Ext Time (p_c), s	0.0	1.0	0.0	2.1	0.0	0.9	0.2	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.6
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	149	699	14	7	619	318	9	5	13	399	7	137
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1845	1845	1900	1845	1845	1845	1900	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	155	728	14	7	645	0	9	5	0	421	0	23
Adj No. of Lanes	1	2	0	1	2	1	0	1	0	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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	197	1720	33	23	1367	612	28	16	0	541	0	241
Arrive On Green	0.11	0.49	0.49	0.01	0.39	0.00	0.02	0.02	0.00	0.15	0.00	0.15
Sat Flow, veh/h	1757	3516	68	1757	3505	1568	1149	638	0	3514	0	1568
Grp Volume(v), veh/h	155	363	379	7	645	0	14	0	0	421	0	23
Grp Sat Flow(s),veh/h/ln	1757	1752	1832	1757	1752	1568	1787	0	0	1757	0	1568
Q Serve(g_s), s	4.6	7.1	7.1	0.2	7.3	0.0	0.4	0.0	0.0	6.1	0.0	0.7
Cycle Q Clear(g_c), s	4.6	7.1	7.1	0.2	7.3	0.0	0.4	0.0	0.0	6.1	0.0	0.7
Prop In Lane	1.00		0.04	1.00		1.00	0.64		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	197	857	896	23	1367	612	44	0	0	541	0	241
V/C Ratio(X)	0.79	0.42	0.42	0.31	0.47	0.00	0.32	0.00	0.00	0.78	0.00	0.10
Avail Cap(c_a), veh/h	660	1382	1445	891	2633	1178	638	0	0	1650	0	736
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.0	8.8	8.8	26.0	12.1	0.0	25.5	0.0	0.0	21.7	0.0	19.3
Incr Delay (d2), s/veh	2.6	0.4	0.4	2.8	0.3	0.0	1.5	0.0	0.0	0.9	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	2.3	3.5	3.7	0.1	3.5	0.0	0.2	0.0	0.0	3.1	0.0	0.3
LnGrp Delay(d),s/veh	25.7	9.2	9.1	28.9	12.4	0.0	27.1	0.0	0.0	22.6	0.0	19.4
LnGrp LOS	C	A	A	C	B		C			C		B
Approach Vol, veh/h		897			652			14			444	
Approach Delay, s/veh		12.0			12.6			27.1			22.4	
Approach LOS		B			B			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	4.2	31.1		5.3	9.5	25.8		12.7
Change Period (Y+Rc), s	3.5	5.0		4.0	3.5	5.0		4.5
Max Green Setting (Gmax), s	27.6	42.0		19.0	20.0	40.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	9.1		2.4	6.6	9.3		8.1
Green Ext Time (p_c), s	0.0	11.7		0.0	0.1	11.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
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)	0	965	210	0	759	214	0	0	0	574	0	261
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	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	1845	1845	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	1005	0	0	791	0				598	0	163
Adj No. of Lanes	0	2	1	0	2	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
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1453	650	0	1453	650				833	0	383
Arrive On Green	0.00	0.41	0.00	0.00	0.41	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3597	1568	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	1005	0	0	791	0				598	0	163
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	6.9	0.0	0.0	5.0	0.0				4.7	0.0	2.6
Cycle Q Clear(g_c), s	0.0	6.9	0.0	0.0	5.0	0.0				4.7	0.0	2.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1453	650	0	1453	650				833	0	383
V/C Ratio(X)	0.00	0.69	0.00	0.00	0.54	0.00				0.72	0.00	0.43
Avail Cap(c_a), veh/h	0	5978	2674	0	5978	2674				4069	0	1872
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.0	0.0	0.0	6.5	0.0				10.2	0.0	9.3
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0				0.4	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	3.3	0.0	0.0	2.3	0.0				2.2	0.0	1.1
LnGrp Delay(d),s/veh	0.0	7.3	0.0	0.0	6.6	0.0				10.6	0.0	9.6
LnGrp LOS		A			A					B		A
Approach Vol, veh/h		1005			791						761	
Approach Delay, s/veh		7.3			6.6						10.4	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		17.2		12.2		17.2		
Change Period (Y+Rc), s		* 5		* 5		* 5		
Max Green Setting (Gmax), s		* 50		* 35		* 50		
Max Q Clear Time (g_c+I1), s		8.9		6.7		7.0		
Green Ext Time (p_c), s		3.3		0.5		3.3		

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

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)	0	1252	287	0	850	676	123	0	197	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	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			
Parking Bus, Adj	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	1845	1845	0	1845	1845	1845	0	1845			
Adj Flow Rate, veh/h	0	1304	0	0	885	0	128	0	135			
Adj No. of Lanes	0	2	1	0	2	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			
Percent Heavy Veh, %	0	3	3	0	3	3	3	0	3			
Cap, veh/h	0	1973	883	0	1973	883	463	0	213			
Arrive On Green	0.00	0.56	0.00	0.00	0.56	0.00	0.14	0.00	0.14			
Sat Flow, veh/h	0	3597	1568	0	3597	1568	3408	0	1568			
Grp Volume(v), veh/h	0	1304	0	0	885	0	128	0	135			
Grp Sat Flow(s),veh/h/ln	0	1752	1568	0	1752	1568	1704	0	1568			
Q Serve(g_s), s	0.0	7.7	0.0	0.0	4.4	0.0	1.0	0.0	2.4			
Cycle Q Clear(g_c), s	0.0	7.7	0.0	0.0	4.4	0.0	1.0	0.0	2.4			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1973	883	0	1973	883	463	0	213			
V/C Ratio(X)	0.00	0.66	0.00	0.00	0.45	0.00	0.28	0.00	0.63			
Avail Cap(c_a), veh/h	0	5865	2624	0	5865	2624	2852	0	1312			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.5	0.0	0.0	3.8	0.0	11.6	0.0	12.2			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	3.7	0.0	0.0	2.1	0.0	0.5	0.0	1.1			
LnGrp Delay(d),s/veh	0.0	4.7	0.0	0.0	3.9	0.0	11.7	0.0	13.4			
LnGrp LOS		A			A		B		B			
Approach Vol, veh/h		1304			885			263				
Approach Delay, s/veh		4.7			3.9			12.6				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		21.8				21.8		8.1
Change Period (Y+Rc), s		* 5				* 5		4.0
Max Green Setting (Gmax), s		* 50				* 50		25.0
Max Q Clear Time (g_c+I1), s		9.7				6.4		4.4
Green Ext Time (p_c), s		7.1				7.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.2
HCM 2010 LOS	A

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)	574	619	256	75	719	221	231	150	72	200	168	576
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		0.97	1.00		1.00	1.00		0.97	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	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	598	645	150	78	749	46	241	156	61	192	198	468
Adj No. of Lanes	2	3	1	1	3	1	2	1	0	1	1	2
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	707	2095	890	117	1403	436	560	206	80	303	318	1191
Arrive On Green	0.21	0.42	0.42	0.07	0.28	0.28	0.16	0.16	0.16	0.17	0.17	0.17
Sat Flow, veh/h	3408	5036	1520	1757	5036	1566	3408	1251	489	1757	1845	3136
Grp Volume(v), veh/h	598	645	150	78	749	46	241	0	217	192	198	468
Grp Sat Flow(s),veh/h/ln	1704	1679	1520	1757	1679	1566	1704	0	1741	1757	1845	1568
Q Serve(g_s), s	15.1	7.7	4.1	3.9	11.3	2.0	5.7	0.0	10.7	9.1	8.9	9.8
Cycle Q Clear(g_c), s	15.1	7.7	4.1	3.9	11.3	2.0	5.7	0.0	10.7	9.1	8.9	9.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	707	2095	890	117	1403	436	560	0	286	303	318	1191
V/C Ratio(X)	0.85	0.31	0.17	0.66	0.53	0.11	0.43	0.00	0.76	0.63	0.62	0.39
Avail Cap(c_a), veh/h	949	2244	935	489	2244	698	1139	0	582	587	617	1699
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.2	17.6	8.8	40.9	27.4	24.1	33.7	0.0	35.8	34.5	34.4	20.3
Incr Delay (d2), s/veh	5.4	0.1	0.1	6.3	0.3	0.1	0.5	0.0	4.1	2.2	2.0	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	7.7	3.6	2.4	2.1	5.2	0.9	2.7	0.0	5.4	4.6	4.7	4.2
LnGrp Delay(d),s/veh	39.6	17.6	8.9	47.2	27.7	24.2	34.2	0.0	39.9	36.7	36.4	20.5
LnGrp LOS	D	B	A	D	C	C	C		D	D	D	C
Approach Vol, veh/h		1393			873			458			858	
Approach Delay, s/veh		26.1			29.3			36.9			27.8	
Approach LOS		C			C			D			C	

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	42.1		19.2	22.3	29.8		18.5
Change Period (Y+Rc), s	4.0	4.8		3.7	3.7	4.8		3.7
Max Green Setting (Gmax), s	25.0	40.0		30.0	25.0	40.0		30.0
Max Q Clear Time (g_c+I1), s	5.9	9.7		11.8	17.1	13.3		12.7
Green Ext Time (p_c), s	0.1	12.3		3.7	1.5	11.7		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	28.7
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

APPENDIX B: SYNCHRO QUEUE REPORTS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	144	198	26	52	80	261	35	480	74
v/c Ratio	0.14	0.33	0.14	0.25	0.54	0.17	0.28	0.34	0.11
Control Delay	30.4	9.3	44.4	20.0	62.9	21.0	56.9	25.6	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	9.3	44.4	20.0	62.9	21.0	56.9	25.6	1.9
Queue Length 50th (ft)	34	12	16	7	51	55	22	113	0
Queue Length 95th (ft)	72	60	39	35	106	102	59	200	3
Internal Link Dist (ft)		277		314		250		1340	
Turn Bay Length (ft)	175		65		235		230		230
Base Capacity (vph)	1047	604	377	378	348	1589	260	1392	666
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.33	0.07	0.14	0.23	0.16	0.13	0.34	0.11

Intersection Summary

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	71	64	38	86	294	100	576
v/c Ratio	0.10	0.12	0.09	0.21	0.15	0.24	0.28
Control Delay	26.0	5.4	10.4	26.0	14.2	26.0	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	5.4	10.4	26.0	14.2	26.0	14.7
Queue Length 50th (ft)	7	1	1	17	23	20	50
Queue Length 95th (ft)	36	18	19	82	88	93	172
Internal Link Dist (ft)		240	383		432		480
Turn Bay Length (ft)				125		125	
Base Capacity (vph)	1169	1195	1165	602	2693	602	2679
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.05	0.03	0.14	0.11	0.17	0.22

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	404	245	48	85	174	616	49	436	140
v/c Ratio	0.42	0.44	0.27	0.40	0.83	0.40	0.40	0.34	0.22
Control Delay	36.3	19.4	50.2	28.0	79.3	24.4	63.6	28.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	19.4	50.2	28.0	79.3	24.4	63.6	28.8	6.2
Queue Length 50th (ft)	116	58	32	24	118	150	33	112	0
Queue Length 95th (ft)	219	173	70	71	#237	284	86	219	50
Internal Link Dist (ft)		277		314		250		1340	
Turn Bay Length (ft)	175		65		235		230		230
Base Capacity (vph)	971	554	351	371	323	1549	242	1292	641
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.44	0.14	0.23	0.54	0.40	0.20	0.34	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	139	153	9	63	122	624	48	676
v/c Ratio	0.23	0.27	0.03	0.17	0.35	0.33	0.16	0.42
Control Delay	30.1	6.0	34.9	11.1	32.5	16.0	32.5	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	6.0	34.9	11.1	32.5	16.0	32.5	18.9
Queue Length 50th (ft)	22	2	3	3	38	86	15	103
Queue Length 95th (ft)	71	41	21	33	#132	220	63	241
Internal Link Dist (ft)		240		383		432		480
Turn Bay Length (ft)			85		125		125	
Base Capacity (vph)	879	1023	453	996	453	2381	453	2359
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.15	0.02	0.06	0.27	0.26	0.11	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	495	233	38	59	208	505	26	490	203
v/c Ratio	0.52	0.40	0.22	0.30	0.88	0.30	0.23	0.39	0.30
Control Delay	38.7	11.1	50.0	29.8	83.0	21.1	60.6	30.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	11.1	50.0	29.8	83.0	21.1	60.6	30.1	5.7
Queue Length 50th (ft)	151	21	26	19	144	117	18	133	0
Queue Length 95th (ft)	270	106	60	59	#314	220	55	246	60
Internal Link Dist (ft)		277		314		250		1340	
Turn Bay Length (ft)	175		65		235		230		230
Base Capacity (vph)	956	582	345	357	318	1661	238	1272	683
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.40	0.11	0.17	0.65	0.30	0.11	0.39	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	128	121	1	27	135	537	23	699
v/c Ratio	0.22	0.26	0.00	0.08	0.39	0.24	0.08	0.55
Control Delay	28.9	6.6	36.0	17.0	32.1	10.7	33.2	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	6.6	36.0	17.0	32.1	10.7	33.2	19.1
Queue Length 50th (ft)	14	1	0	3	29	21	5	71
Queue Length 95th (ft)	69	40	6	26	#170	188	40	261
Internal Link Dist (ft)		240		383		432		480
Turn Bay Length (ft)			85		125		125	
Base Capacity (vph)	847	1066	436	1097	436	2536	436	2513
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.11	0.00	0.02	0.31	0.21	0.05	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	144	198	26	52	80	279	35	488	74
v/c Ratio	0.14	0.33	0.14	0.25	0.54	0.19	0.28	0.35	0.11
Control Delay	30.4	9.3	44.4	20.0	62.9	21.1	56.9	25.7	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	9.3	44.4	20.0	62.9	21.1	56.9	25.7	1.9
Queue Length 50th (ft)	34	12	16	7	51	59	22	114	0
Queue Length 95th (ft)	72	60	39	35	106	110	59	203	3
Internal Link Dist (ft)		277		314		250		1340	
Turn Bay Length (ft)	175		65		235		230		230
Base Capacity (vph)	1047	604	377	378	348	1590	260	1392	666
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.33	0.07	0.14	0.23	0.18	0.13	0.35	0.11

Intersection Summary

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	71	64	38	86	309	100	583
v/c Ratio	0.11	0.12	0.09	0.23	0.20	0.26	0.29
Control Delay	26.3	5.4	10.5	26.5	15.1	26.5	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	5.4	10.5	26.5	15.1	26.5	14.7
Queue Length 50th (ft)	7	1	1	17	25	20	51
Queue Length 95th (ft)	36	18	19	82	93	93	174
Internal Link Dist (ft)		240	383		432		480
Turn Bay Length (ft)				125		125	
Base Capacity (vph)	1064	1195	1164	548	2694	548	2677
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.05	0.03	0.16	0.11	0.18	0.22

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	404	245	48	85	174	625	49	445	140
v/c Ratio	0.42	0.44	0.27	0.40	0.83	0.41	0.40	0.34	0.22
Control Delay	36.3	19.4	50.2	28.0	79.3	24.5	63.6	28.9	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	19.4	50.2	28.0	79.3	24.5	63.6	28.9	6.2
Queue Length 50th (ft)	116	58	32	24	118	153	33	115	0
Queue Length 95th (ft)	219	173	70	71	#237	288	86	224	50
Internal Link Dist (ft)		277		314		250		1340	
Turn Bay Length (ft)	175		65		235		230		230
Base Capacity (vph)	971	554	351	371	323	1549	242	1292	641
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.44	0.14	0.23	0.54	0.40	0.20	0.34	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	139	153	9	63	122	636	48	690
v/c Ratio	0.23	0.28	0.03	0.17	0.36	0.33	0.16	0.43
Control Delay	30.5	6.0	35.1	11.2	33.0	15.9	32.8	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	6.0	35.1	11.2	33.0	15.9	32.8	18.8
Queue Length 50th (ft)	23	2	3	3	39	88	16	106
Queue Length 95th (ft)	71	41	21	33	#134	224	63	246
Internal Link Dist (ft)		240		383		432		480
Turn Bay Length (ft)			85		125		125	
Base Capacity (vph)	870	1016	448	989	448	2361	448	2339
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.15	0.02	0.06	0.27	0.27	0.11	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	495	233	38	59	208	514	26	499	203
v/c Ratio	0.52	0.40	0.22	0.30	0.88	0.31	0.23	0.39	0.30
Control Delay	38.7	11.1	50.0	29.8	83.0	21.1	60.6	30.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	11.1	50.0	29.8	83.0	21.1	60.6	30.2	5.7
Queue Length 50th (ft)	151	21	26	19	144	120	18	136	0
Queue Length 95th (ft)	270	106	60	59	#314	224	55	252	60
Internal Link Dist (ft)		277		314		250		1340	
Turn Bay Length (ft)	175		65		235		230		230
Base Capacity (vph)	956	582	345	357	318	1661	238	1272	683
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.40	0.11	0.17	0.65	0.31	0.11	0.39	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	128	121	1	27	135	548	23	708
v/c Ratio	0.22	0.26	0.00	0.08	0.40	0.24	0.09	0.55
Control Delay	29.1	6.7	36.0	17.0	32.3	10.7	33.4	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	6.7	36.0	17.0	32.3	10.7	33.4	19.0
Queue Length 50th (ft)	14	1	0	3	29	21	5	72
Queue Length 95th (ft)	69	41	6	26	#171	192	40	265
Internal Link Dist (ft)		240		383		432		480
Turn Bay Length (ft)			85		125		125	
Base Capacity (vph)	834	1063	430	1093	430	2529	430	2505
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.11	0.00	0.02	0.31	0.22	0.05	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	144	198	26	52	80	281	35	625	74
v/c Ratio	0.14	0.33	0.14	0.25	0.54	0.19	0.28	0.45	0.11
Control Delay	30.4	9.3	44.4	20.0	62.9	21.1	56.9	27.1	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	9.3	44.4	20.0	62.9	21.1	56.9	27.1	1.9
Queue Length 50th (ft)	34	12	16	7	51	60	22	154	0
Queue Length 95th (ft)	72	60	39	35	106	110	59	264	3
Internal Link Dist (ft)		277		314		250		1340	
Turn Bay Length (ft)	175		65		235		230		230
Base Capacity (vph)	1047	604	377	378	348	1590	260	1392	666
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.33	0.07	0.14	0.23	0.18	0.13	0.45	0.11

Intersection Summary

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	71	64	38	86	307	100	723
v/c Ratio	0.11	0.12	0.10	0.25	0.19	0.28	0.35
Control Delay	29.9	6.1	11.8	30.2	15.2	30.3	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	6.1	11.8	30.2	15.2	30.3	15.7
Queue Length 50th (ft)	11	1	2	26	37	30	103
Queue Length 95th (ft)	38	20	21	88	92	99	221
Internal Link Dist (ft)		240	383		432		480
Turn Bay Length (ft)				125		125	
Base Capacity (vph)	986	1115	1084	508	2487	508	2480
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.06	0.04	0.17	0.12	0.20	0.29

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	404	245	48	90	174	661	49	479	140
v/c Ratio	0.42	0.44	0.27	0.41	0.83	0.43	0.40	0.37	0.22
Control Delay	36.3	19.4	50.2	27.1	79.3	24.9	63.6	29.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	19.4	50.2	27.1	79.3	24.9	63.6	29.2	6.2
Queue Length 50th (ft)	116	58	32	24	118	164	33	125	0
Queue Length 95th (ft)	219	173	70	73	#237	307	86	241	50
Internal Link Dist (ft)		277		314		250		1340	
Turn Bay Length (ft)	175		65		235		230		230
Base Capacity (vph)	971	554	351	374	323	1548	242	1292	641
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.44	0.14	0.24	0.54	0.43	0.20	0.37	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	139	153	9	63	122	655	48	727
v/c Ratio	0.24	0.28	0.03	0.18	0.36	0.34	0.17	0.44
Control Delay	31.0	6.2	35.9	11.5	33.7	15.8	33.4	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	6.2	35.9	11.5	33.7	15.8	33.4	18.8
Queue Length 50th (ft)	23	2	3	3	40	92	16	114
Queue Length 95th (ft)	72	42	21	33	#137	232	64	261
Internal Link Dist (ft)		240		383		432		480
Turn Bay Length (ft)			85		125		125	
Base Capacity (vph)	842	1007	434	979	434	2337	434	2317
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.15	0.02	0.06	0.28	0.28	0.11	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	495	233	38	59	208	552	26	523	203
v/c Ratio	0.52	0.40	0.22	0.30	0.88	0.33	0.23	0.41	0.30
Control Delay	38.7	11.1	50.0	29.8	83.0	21.5	60.6	30.5	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	11.1	50.0	29.8	83.0	21.5	60.6	30.5	5.7
Queue Length 50th (ft)	151	21	26	19	144	131	18	143	0
Queue Length 95th (ft)	270	106	60	59	#314	242	55	265	60
Internal Link Dist (ft)		277		314		250		1340	
Turn Bay Length (ft)	175		65		235		230		230
Base Capacity (vph)	956	582	345	357	318	1661	238	1272	683
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.40	0.11	0.17	0.65	0.33	0.11	0.41	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	128	121	1	27	135	573	23	736
v/c Ratio	0.23	0.26	0.00	0.08	0.40	0.27	0.09	0.56
Control Delay	29.5	6.8	37.0	17.2	32.8	12.2	33.8	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	6.8	37.0	17.2	32.8	12.2	33.8	19.1
Queue Length 50th (ft)	14	1	0	3	30	22	5	76
Queue Length 95th (ft)	70	41	6	26	#175	201	40	276
Internal Link Dist (ft)		240		383		432		480
Turn Bay Length (ft)			85		125		125	
Base Capacity (vph)	827	1056	426	1086	426	2519	426	2486
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.11	0.00	0.02	0.32	0.23	0.05	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX C: HCM 2010 AND LEISCH METHOD FREEWAY REPORTS

Key

<> Express Lane (HOV)

No Trucks

Location	1	2	3	4	5	6	7	8	9	10
Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,327	1,327	986	986	1,261	2,222	2,222	2,066	2,066	2,621
On Ramp Volume				275	961				555	
Off Ramp Volume		341					156			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,327	1,327	986	1,261	2,222	2,222	2,222	2,066	2,621	2,621
PHF	0.75	0.75	0.75	0.75	0.75	0.75	0.76	0.76	0.76	0.76
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,828	1,828	1,358	1,737	3,060	3,060	3,020	2,808	3,562	3,562
GP Flow (pcphpl)	914	914	679	868	1,530	1,530	1,510	1,404	1,781	1,781
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.39	0.39	0.29	0.37	0.65	0.65	0.64	0.60	0.76	0.76
Speed (mph)	65.0	65.0	65.0	65.0	64.8	64.8	64.8	65.0	62.9	62.9
Density (pcphpl)	14.1	14.1	10.4	13.4	23.6	23.6	23.3	21.6	28.3	28.3
LOS	B	B	A	B	C	C	C	C	D	D
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		1,828		1,433	2,000		3,020		2,982	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.39		0.30	0.43		0.64		0.63	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,452		1,737	3,060		2,857		3,562	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.31		0.37	0.65		0.61		0.76	

Location	1	2	3	4	5	6	7	8	9	10

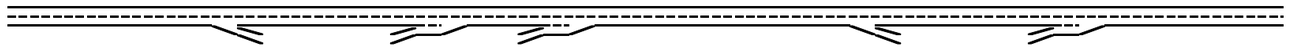
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
Calculate Speed in Express Lanes										
Calculate Operations in Express Lanes										
Calculate On Ramp Flow Rate										
On Volume (vph)				275	961				555	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				303	1,060				581	
On Flow (pcphpl)				303	1,060				581	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				45	
On Ramp Cap (pcph)				1,900	2,100				2,100	
On Ramp v/c ratio				0.16	0.50				0.28	

Location	1	2	3	4	5	6	7	8	9	10



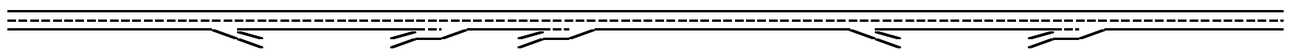
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		341					156			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		376					163			
Off Flow (pcphpl)		376					163			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.18					0.08			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,433	2,000				2,982	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,433	2,000				2,982	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,433	2,000				2,982	
v_{R12a} (pcph)				1,737	3,060				3,562	
Merge Speed Index				0.33	0.37				0.43	
Merge Area Speed				57.4	56.4				55.1	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.4	56.4				55.1	
Merge v/c ratio				0.38	0.67				0.77	
Merge Density				17.3	26.7				31.1	
Merge LOS				B	C				D	

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

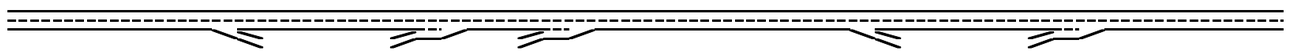
No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_p (pcph)		1,828					3,020			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.697					0.677			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		1,828					3,020			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		1,828					3,020			
Diverge Speed Index		0.33					0.31			
Diverge Area Speed		57.4					57.8			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.4					57.8			
Diverge v/c ratio		0.42					0.69			
Diverge Density		19.1					29.3			
Diverge LOS		B					D			

Project: Chico Wal-Mart Expansion
Freeway Corridor: Northbound SR 99

Alternative: Existing Conditions
Time Period: AM Peak Hour

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
Calculate Weave Segment Operations										

Project: Chico Wal-Mart Expansion
Freeway Corridor: Northbound SR 99

Alternative: Existing Conditions
Time Period: AM Peak Hour

Location	1	2	3	4	5	6	7	8	9	10

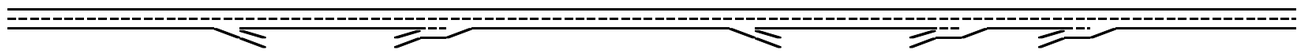
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Summarize Segment Operations										
Segment v/c ratio	0.39	0.42	0.29	0.38	0.67	0.65	0.69	0.60	0.77	0.76
Segment Density	14.1	19.1	10.4	17.3	26.7	23.6	29.3	21.6	31.1	28.3
Segment LOS	B	B	A	B	C	C	D	C	D	D
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



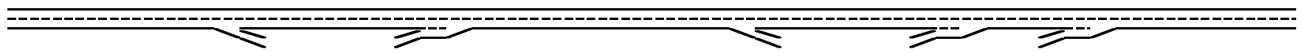
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	3,295	3,295	2,426	2,426	2,574	2,574	1,200	1,200	1,381	1,545
On Ramp Volume				148				181	164	
Off Ramp Volume		869				1,374				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,295	3,295	2,426	2,574	2,574	2,574	1,200	1,381	1,545	1,545
PHF	0.84	0.84	0.84	0.84	0.84	0.81	0.81	0.81	0.81	0.81
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,052	4,052	2,983	3,165	3,165	3,283	1,530	1,761	1,970	1,970
GP Flow (pcphpl)	2,026	2,026	1,492	1,583	1,583	1,641	765	881	985	985
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.86	0.86	0.63	0.67	0.67	0.70	0.33	0.37	0.42	0.42
Speed (mph)	59.4	59.4	64.9	64.5	64.5	64.2	65.0	65.0	65.0	65.0
Density (pcphpl)	34.1	34.1	23.0	24.5	24.5	25.6	11.8	13.5	15.2	15.2
LOS	D	D	C	C	C	C	B	B	B	B
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		4,052		3,009		3,283		1,572	1,785	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.86		0.64		0.70		0.33	0.38	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		3,133		3,165		1,845		1,761	1,970	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.67		0.67		0.39		0.37	0.42	

Location	1	2	3	4	5	6	7	8	9	10



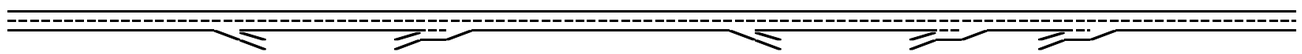
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				148				181	164	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				156				189	185	
On Flow (pcphpl)				156				189	185	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.07				0.10	0.09	

Location	1	2	3	4	5	6	7	8	9	10



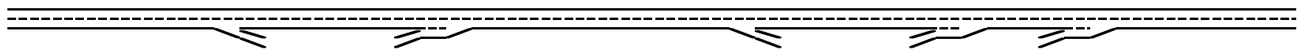
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		869				1,374				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		919				1,438				
Off Flow (pcphpl)		919				1,438				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.44				0.68				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				3,009				1,572	1,785	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				3,009				1,572	1,785	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,009				1,572	1,785	
v_{R12a} (pcph)				3,165				1,761	1,970	
Merge Speed Index				0.38				0.32	0.31	
Merge Area Speed				56.3				57.6	57.8	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.3				57.6	57.8	
Merge v/c ratio				0.69				0.38	0.43	
Merge Density				27.6				16.6	18.3	
Merge LOS				C				B	B	

Location	1	2	3	4	5	6	7	8	9	10



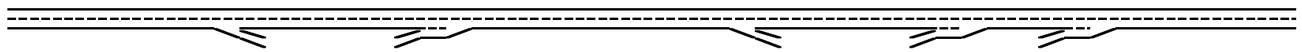
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		4,052				3,283				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.616				0.612				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		4,052				3,283				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		4,052				3,283				
Diverge Speed Index		0.38				0.43				
Diverge Area Speed		56.2				55.2				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		56.2				55.2				
Diverge v/c ratio		0.92				0.75				
Diverge Density		38.2				31.6				
Diverge LOS		E				D				

Location	1	2	3	4	5	6	7	8	9	10



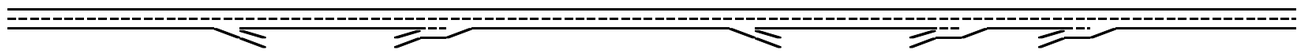
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.86	0.92	0.63	0.69	0.67	0.75	0.33	0.38	0.43	0.42
Segment Density	34.1	38.2	23.0	27.6	24.5	31.6	11.8	16.6	18.3	15.2
Segment LOS	D	E	C	C	C	D	B	B	B	B
Over Capacity										

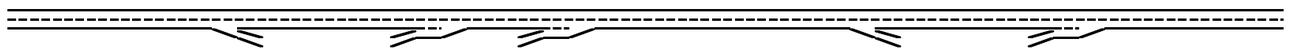
Key

<> Express Lane (HOV)

No Trucks

Location	1	2	3	4	5	6	7	8	9	10
Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,904	1,904	1,462	1,462	2,012	3,029	3,029	2,709	2,709	3,954
On Ramp Volume				550	1,017				1,245	
Off Ramp Volume		442					320			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,904	1,904	1,462	2,012	3,029	3,029	3,029	2,709	3,954	3,954
PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.96
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,210	2,210	1,697	2,335	3,516	3,516	3,259	2,915	4,255	4,255
GP Flow (pcphpl)	1,105	1,105	848	1,168	1,758	1,758	1,630	1,457	2,127	2,127
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.47	0.47	0.36	0.50	0.75	0.75	0.69	0.62	0.91	0.91
Speed (mph)	65.0	65.0	65.0	65.0	63.2	63.2	64.3	65.0	57.5	57.5
Density (pcphpl)	17.0	17.0	13.1	18.0	27.8	27.8	25.4	22.4	37.0	37.0
LOS	B	B	B	B	D	D	C	C	E	E
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		2,210		1,728	2,394		3,259		2,952	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.47		0.37	0.51		0.69		0.63	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,722		2,335	3,516		2,924		4,255	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.37		0.50	0.75		0.62		0.91	

Location	1	2	3	4	5	6	7	8	9	10



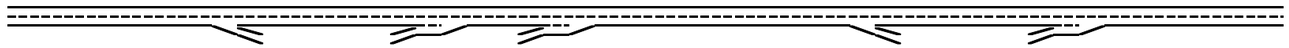
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
Calculate Speed in Express Lanes										
Calculate Operations in Express Lanes										
Calculate On Ramp Flow Rate										
On Volume (vph)				550	1,017				1,245	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				607	1,122				1,303	
On Flow (pcphpl)				607	1,122				1,303	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				25	
On Ramp Cap (pcph)				1,900	2,100				1,900	
On Ramp v/c ratio				0.32	0.53				0.69	

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		442					320			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		488					335			
Off Flow (pcphpl)		488					335			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.23					0.16			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,728	2,394				2,952	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,728	2,394				2,952	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,728	2,394				2,952	
v_{R12a} (pcph)				2,335	3,516				4,255	
Merge Speed Index				0.35	0.42				0.58	
Merge Area Speed				57.0	55.3				51.6	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.0	55.3				51.6	
Merge v/c ratio				0.51	0.76				0.92	
Merge Density				21.8	30.2				36.2	
Merge LOS				C	D				E	

Location	1	2	3	4	5	6	7	8	9	10

Key

<> Express Lane (HOV)

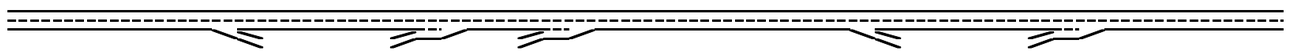
No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_p (pcph)		2,210					3,259			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.682					0.663			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		2,210					3,259			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		2,210					3,259			
Diverge Speed Index		0.34					0.33			
Diverge Area Speed		57.1					57.5			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.1					57.5			
Diverge v/c ratio		0.50					0.74			
Diverge Density		22.4					31.4			
Diverge LOS		C					D			

Project: Chico Wal-Mart Expansion
Freeway Corridor: Northbound SR 99

Alternative: Existing Conditions
Time Period: PM Peak Hour

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
Calculate Weave Segment Operations										

Project: Chico Wal-Mart Expansion
Freeway Corridor: Northbound SR 99

Alternative: Existing Conditions
Time Period: PM Peak Hour

Location	1	2	3	4	5	6	7	8	9	10

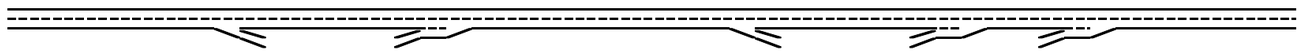
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Summarize Segment Operations										
Segment v/c ratio	0.47	0.50	0.36	0.51	0.76	0.75	0.74	0.62	0.92	0.91
Segment Density	17.0	22.4	13.1	21.8	30.2	27.8	31.4	22.4	36.2	37.0
Segment LOS	B	C	B	C	D	D	D	C	E	E
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



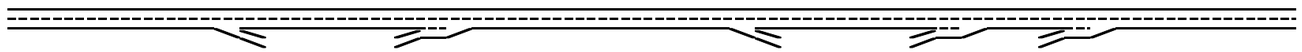
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	3,705	3,705	2,311	2,311	2,566	2,566	1,316	1,316	1,555	1,788
On Ramp Volume				255				239	233	
Off Ramp Volume		1,394				1,250				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,705	3,705	2,311	2,566	2,566	2,566	1,316	1,555	1,788	1,788
PHF	0.9	0.9	0.9	0.9	0.9	0.88	0.88	0.88	0.88	0.88
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,253	4,253	2,653	2,945	2,945	3,012	1,545	1,825	2,099	2,099
GP Flow (pcphpl)	2,126	2,126	1,326	1,473	1,473	1,506	772	913	1,049	1,049
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.90	0.90	0.56	0.63	0.63	0.64	0.33	0.39	0.45	0.45
Speed (mph)	57.5	57.5	65.0	64.9	64.9	64.8	65.0	65.0	65.0	65.0
Density (pcphpl)	37.0	37.0	20.4	22.7	22.7	23.2	11.9	14.0	16.1	16.1
LOS	E	E	C	C	C	C	B	B	B	B
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		4,253		2,676		3,012		1,575	1,836	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.90		0.57		0.64		0.34	0.39	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		2,779		2,945		1,704		1,825	2,099	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.59		0.63		0.36		0.39	0.45	

Location	1	2	3	4	5	6	7	8	9	10



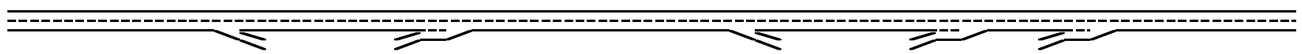
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				255				239	233	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				270				250	263	
On Flow (pcphpl)				270				250	263	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.13				0.13	0.13	

Location	1	2	3	4	5	6	7	8	9	10



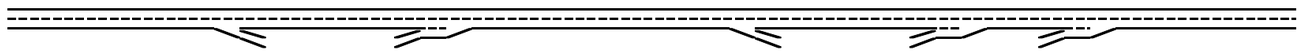
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		1,394				1,250				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		1,474				1,308				
Off Flow (pcphpl)		1,474				1,308				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.70				0.62				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				2,676				1,575	1,836	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				2,676				1,575	1,836	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				2,676				1,575	1,836	
v_{R12a} (pcph)				2,945				1,825	2,099	
Merge Speed Index				0.36				0.33	0.32	
Merge Area Speed				56.7				57.5	57.7	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.7				57.5	57.7	
Merge v/c ratio				0.64				0.40	0.46	
Merge Density				25.8				17.1	19.2	
Merge LOS				C				B	B	

Location	1	2	3	4	5	6	7	8	9	10



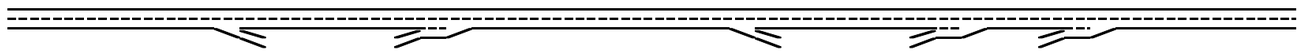
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		4,253				3,012				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.586				0.625				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		4,253				3,012				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		4,253				3,012				
Diverge Speed Index		0.43				0.42				
Diverge Area Speed		55.1				55.4				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		55.1				55.4				
Diverge v/c ratio		0.97				0.68				
Diverge Density		39.9				29.3				
Diverge LOS		E				D				

Location	1	2	3	4	5	6	7	8	9	10



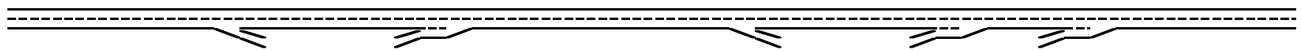
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.90	0.97	0.56	0.64	0.63	0.68	0.33	0.40	0.46	0.45
Segment Density	37.0	39.9	20.4	25.8	22.7	29.3	11.9	17.1	19.2	16.1
Segment LOS	E	E	C	C	C	D	B	B	B	B
Over Capacity										

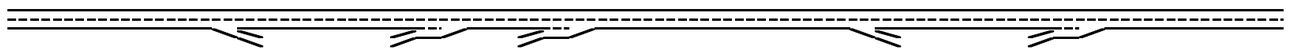
Key

<> Express Lane (HOV)

No Trucks

Location	1	2	3	4	5	6	7	8	9	10
Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,222	1,222	952	952	1,229	1,900	1,900	1,574	1,574	2,728
On Ramp Volume				277	671				1,154	
Off Ramp Volume		270					326			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,222	1,222	952	1,229	1,900	1,900	1,900	1,574	2,728	2,728
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.95	0.95	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,403	1,403	1,093	1,411	2,181	2,181	2,066	1,712	2,966	2,966
GP Flow (pcphpl)	701	701	546	705	1,090	1,090	1,033	856	1,483	1,483
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.30	0.30	0.23	0.30	0.46	0.46	0.44	0.36	0.63	0.63
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.9	64.9
Density (pcphpl)	10.8	10.8	8.4	10.9	16.8	16.8	15.9	13.2	22.9	22.9
LOS	A	A	A	A	B	B	B	B	C	C
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		1,403		1,105	1,440		2,066		1,759	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.30		0.24	0.31		0.44		0.37	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,105		1,411	2,181		1,725		2,966	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.24		0.30	0.46		0.37		0.63	

Location	1	2	3	4	5	6	7	8	9	10



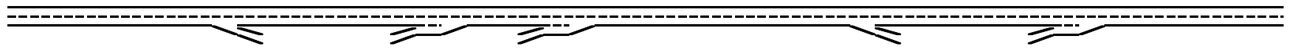
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
Calculate Speed in Express Lanes										
Calculate Operations in Express Lanes										
Calculate On Ramp Flow Rate										
On Volume (vph)				277	671				1,154	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				306	740				1,208	
On Flow (pcphpl)				306	740				1,208	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				45	
On Ramp Cap (pcph)				1,900	2,100				2,100	
On Ramp v/c ratio				0.16	0.35				0.58	

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		270					326			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		298					341			
Off Flow (pcphpl)		298					341			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.14					0.16			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,105	1,440				1,759	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,105	1,440				1,759	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,105	1,440				1,759	
v_{R12a} (pcph)				1,411	2,181				2,966	
Merge Speed Index				0.32	0.32				0.37	
Merge Area Speed				57.5	57.5				56.5	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.5	57.5				56.5	
Merge v/c ratio				0.31	0.47				0.64	
Merge Density				14.8	20.0				26.2	
Merge LOS				B	B				C	

Location	1	2	3	4	5	6	7	8	9	10

Key

<> Express Lane (HOV)

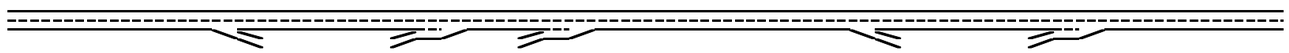
No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_p (pcph)		1,403					2,066			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.711					0.693			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		1,403					2,066			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		1,403					2,066			
Diverge Speed Index		0.32					0.33			
Diverge Area Speed		57.5					57.4			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.5					57.4			
Diverge v/c ratio		0.32					0.47			
Diverge Density		15.4					21.1			
Diverge LOS		B					C			

Project: Chico Wal-Mart Expansion
Freeway Corridor: Northbound SR 99

Alternative: Existing Conditions
Time Period: Saturday Peak Hour

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10

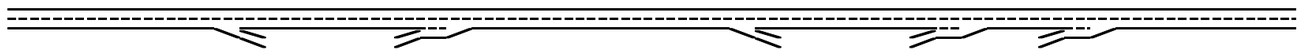
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Summarize Segment Operations										
Segment v/c ratio	0.30	0.32	0.23	0.31	0.47	0.46	0.47	0.36	0.64	0.63
Segment Density	10.8	15.4	8.4	14.8	20.0	16.8	21.1	13.2	26.2	22.9
Segment LOS	A	B	A	B	B	B	C	B	C	C
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



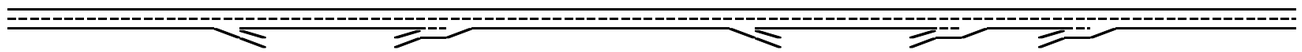
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	2,887	2,887	1,420	1,420	1,661	1,661	836	836	1,000	1,159
On Ramp Volume				241				164	159	
Off Ramp Volume		1,467				825				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,887	2,887	1,420	1,661	1,661	1,661	836	1,000	1,159	1,159
PHF	0.97	0.97	0.97	0.97	0.97	0.87	0.87	0.87	0.87	0.87
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,075	3,075	1,512	1,769	1,769	1,972	993	1,187	1,376	1,376
GP Flow (pcphpl)	1,537	1,537	756	884	884	986	496	594	688	688
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.65	0.65	0.32	0.38	0.38	0.42	0.21	0.25	0.29	0.29
Speed (mph)	64.7	64.7	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	23.7	23.7	11.6	13.6	13.6	15.2	7.6	9.1	10.6	10.6
LOS	C	C	B	B	B	B	A	A	A	A
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		3,075		1,514		1,972		1,016	1,197	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.65		0.32		0.42		0.22	0.25	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,523		1,769		1,109		1,187	1,376	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.32		0.38		0.24		0.25	0.29	

Location	1	2	3	4	5	6	7	8	9	10



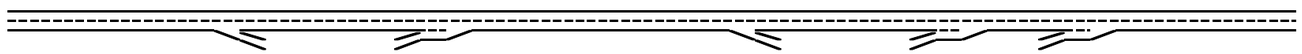
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				241				164	159	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				255				172	179	
On Flow (pcphpl)				255				172	179	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.12				0.09	0.09	

Location	1	2	3	4	5	6	7	8	9	10



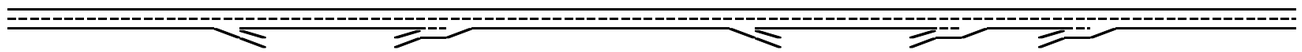
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		1,467				825				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		1,551				863				
Off Flow (pcphpl)		1,551				863				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.74				0.41				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,514				1,016	1,197	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				1,514				1,016	1,197	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,514				1,016	1,197	
v_{R12a} (pcph)				1,769				1,187	1,376	
Merge Speed Index				0.31				0.31	0.30	
Merge Area Speed				57.9				57.8	58.1	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.9				57.8	58.1	
Merge v/c ratio				0.38				0.26	0.30	
Merge Density				16.6				12.1	13.6	
Merge LOS				B				B	B	

Location	1	2	3	4	5	6	7	8	9	10



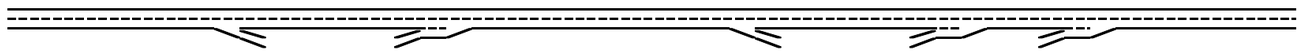
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		3,075				1,972				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.612				0.671				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		3,075				1,972				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		3,075				1,972				
Diverge Speed Index		0.44				0.38				
Diverge Area Speed		54.9				56.4				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		54.9				56.4				
Diverge v/c ratio		0.70				0.45				
Diverge Density		29.8				20.3				
Diverge LOS		D				C				

Location	1	2	3	4	5	6	7	8	9	10



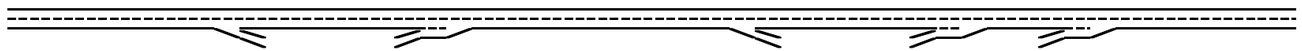
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



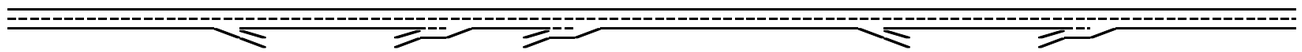
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.65	0.70	0.32	0.38	0.38	0.45	0.21	0.26	0.30	0.29
Segment Density	23.7	29.8	11.6	16.6	13.6	20.3	7.6	12.1	13.6	10.6
Segment LOS	C	D	B	B	B	C	A	B	B	A
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



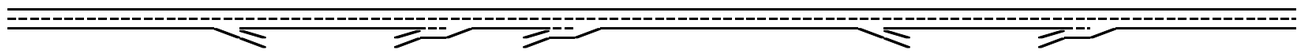
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,341	1,341	991	991	1,266	2,227	2,227	2,066	2,066	2,635
On Ramp Volume				275	961				569	
Off Ramp Volume		350					161			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,341	1,341	991	1,266	2,227	2,227	2,227	2,066	2,635	2,635
PHF	0.75	0.75	0.75	0.75	0.75	0.75	0.76	0.76	0.76	0.76
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,847	1,847	1,365	1,744	3,067	3,067	3,027	2,808	3,582	3,582
GP Flow (pcphpl)	924	924	682	872	1,534	1,534	1,513	1,404	1,791	1,791
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.39	0.39	0.29	0.37	0.65	0.65	0.64	0.60	0.76	0.76
Speed (mph)	65.0	65.0	65.0	65.0	64.7	64.7	64.8	65.0	62.8	62.8
Density (pcphpl)	14.2	14.2	10.5	13.4	23.7	23.7	23.3	21.6	28.5	28.5
LOS	B	B	A	B	C	C	C	C	D	D
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		1,847		1,440	2,007		3,027		2,986	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.39		0.31	0.43		0.64		0.64	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,461		1,744	3,067		2,858		3,582	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.31		0.37	0.65		0.61		0.76	

Location	1	2	3	4	5	6	7	8	9	10



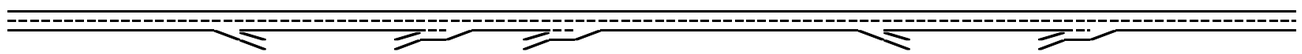
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				275	961				569	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				303	1,060				595	
On Flow (pcphpl)				303	1,060				595	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				45	
On Ramp Cap (pcph)				1,900	2,100				2,100	
On Ramp v/c ratio				0.16	0.50				0.28	

Location	1	2	3	4	5	6	7	8	9	10



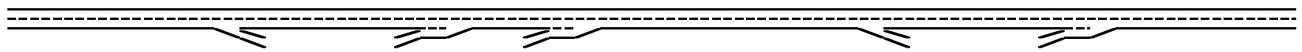
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		350					161			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		386					168			
Off Flow (pcphpl)		386					168			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.18					0.08			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,440	2,007				2,986	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,440	2,007				2,986	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,440	2,007				2,986	
v_{R12a} (pcph)				1,744	3,067				3,582	
Merge Speed Index				0.33	0.37				0.43	
Merge Area Speed				57.4	56.4				55.0	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.4	56.4				55.0	
Merge v/c ratio				0.38	0.67				0.78	
Merge Density				17.4	26.7				31.3	
Merge LOS				B	C				D	

Location	1	2	3	4	5	6	7	8	9	10



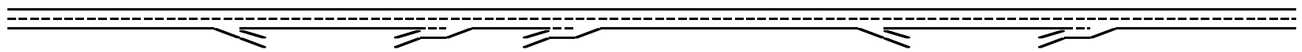
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		1,847					3,027			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.696					0.677			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		1,847					3,027			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		1,847					3,027			
Diverge Speed Index		0.33					0.31			
Diverge Area Speed		57.3					57.8			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.3					57.8			
Diverge v/c ratio		0.42					0.69			
Diverge Density		19.2					29.4			
Diverge LOS		B					D			

Location	1	2	3	4	5	6	7	8	9	10



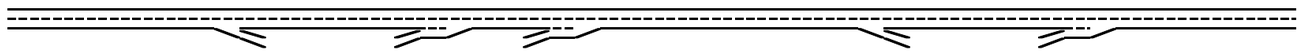
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



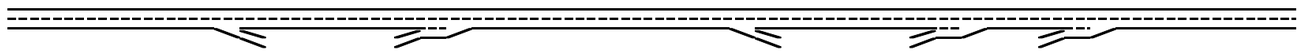
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.39	0.42	0.29	0.38	0.67	0.65	0.69	0.60	0.78	0.76
Segment Density	14.2	19.2	10.5	17.4	26.7	23.7	29.4	21.6	31.3	28.5
Segment LOS	B	B	A	B	C	C	D	C	D	D
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



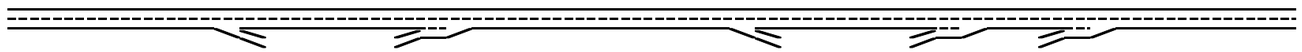
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	3,318	3,318	2,426	2,426	2,575	2,575	1,201	1,201	1,397	1,561
On Ramp Volume				149				196	164	
Off Ramp Volume		892				1,374				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,318	3,318	2,426	2,575	2,575	2,575	1,201	1,397	1,561	1,561
PHF	0.84	0.84	0.84	0.84	0.84	0.81	0.81	0.81	0.81	0.81
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,080	4,080	2,983	3,167	3,167	3,284	1,532	1,782	1,991	1,991
GP Flow (pcphpl)	2,040	2,040	1,492	1,583	1,583	1,642	766	891	995	995
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.87	0.87	0.63	0.67	0.67	0.70	0.33	0.38	0.42	0.42
Speed (mph)	59.2	59.2	64.9	64.5	64.5	64.2	65.0	65.0	65.0	65.0
Density (pcphpl)	34.5	34.5	23.0	24.5	24.5	25.6	11.8	13.7	15.3	15.3
LOS	D	D	C	C	C	C	B	B	B	B
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		4,080		3,009		3,284		1,577	1,806	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.87		0.64		0.70		0.34	0.38	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		3,137		3,167		1,846		1,782	1,991	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.67		0.67		0.39		0.38	0.42	

Location	1	2	3	4	5	6	7	8	9	10



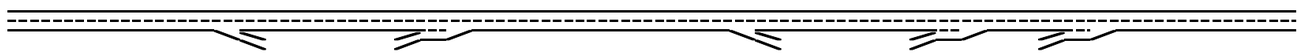
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				149				196	164	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				158				205	185	
On Flow (pcphpl)				158				205	185	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.08				0.11	0.09	

Location	1	2	3	4	5	6	7	8	9	10



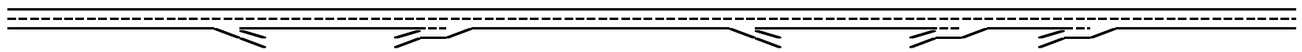
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		892				1,374				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		943				1,438				
Off Flow (pcphpl)		943				1,438				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.45				0.68				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				3,009				1,577	1,806	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				3,009				1,577	1,806	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,009				1,577	1,806	
v_{R12a} (pcph)				3,167				1,782	1,991	
Merge Speed Index				0.38				0.32	0.31	
Merge Area Speed				56.3				57.5	57.8	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.3				57.5	57.8	
Merge v/c ratio				0.69				0.39	0.43	
Merge Density				27.6				16.8	18.4	
Merge LOS				C				B	B	

Location	1	2	3	4	5	6	7	8	9	10



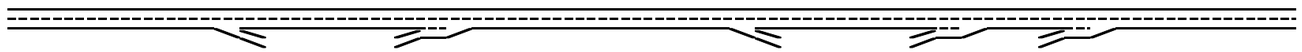
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		4,080				3,284				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.615				0.612				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		4,080				3,284				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		4,080				3,284				
Diverge Speed Index		0.38				0.43				
Diverge Area Speed		56.2				55.2				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		56.2				55.2				
Diverge v/c ratio		0.93				0.75				
Diverge Density		38.4				31.6				
Diverge LOS		E				D				

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

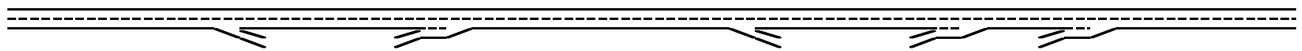
No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Project: Chico Wal-Mart Expansion
Freeway Corridor: Southbound SR 99

Alternative: E+P Conditions
Time Period: AM Peak Hour

Location	1	2	3	4	5	6	7	8	9	10



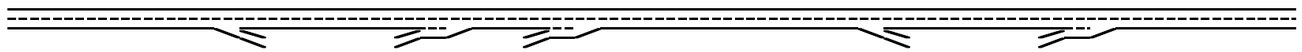
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.87	0.93	0.63	0.69	0.67	0.75	0.33	0.39	0.43	0.42
Segment Density	34.5	38.4	23.0	27.6	24.5	31.6	11.8	16.8	18.4	15.3
Segment LOS	D	E	C	C	C	D	B	B	B	B
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



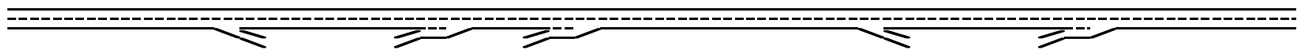
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,939	1,939	1,477	1,477	2,027	3,044	3,044	2,709	2,709	3,999
On Ramp Volume				550	1,017				1,290	
Off Ramp Volume		462					335			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,939	1,939	1,477	2,027	3,044	3,044	3,044	2,709	3,999	3,999
PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.96
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,251	2,251	1,714	2,353	3,533	3,533	3,275	2,915	4,303	4,303
GP Flow (pcphpl)	1,125	1,125	857	1,176	1,767	1,767	1,638	1,457	2,152	2,152
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.48	0.48	0.36	0.50	0.75	0.75	0.70	0.62	0.92	0.92
Speed (mph)	65.0	65.0	65.0	65.0	63.1	63.1	64.2	65.0	57.0	57.0
Density (pcphpl)	17.3	17.3	13.2	18.1	28.0	28.0	25.5	22.4	37.8	37.8
LOS	B	B	B	C	D	D	C	C	E	E
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		2,251		1,746	2,411		3,275		2,953	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.48		0.37	0.51		0.70		0.63	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,741		2,353	3,533		2,925		4,303	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.37		0.50	0.75		0.62		0.92	

Location	1	2	3	4	5	6	7	8	9	10



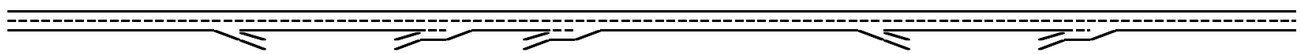
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				550	1,017				1,290	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				607	1,122				1,350	
On Flow (pcphpl)				607	1,122				1,350	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				25	
On Ramp Cap (pcph)				1,900	2,100				1,900	
On Ramp v/c ratio				0.32	0.53				0.71	

Location	1	2	3	4	5	6	7	8	9	10



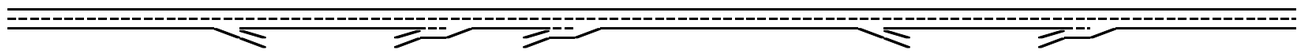
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		462					335			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		510					351			
Off Flow (pcphpl)		510					351			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.24					0.17			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,746	2,411				2,953	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,746	2,411				2,953	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,746	2,411				2,953	
v_{R12a} (pcph)				2,353	3,533				4,303	
Merge Speed Index				0.35	0.42				0.59	
Merge Area Speed				57.0	55.3				51.3	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.0	55.3				51.3	
Merge v/c ratio				0.51	0.77				0.94	
Merge Density				22.0	30.3				36.5	
Merge LOS				C	D				E	

Location	1	2	3	4	5	6	7	8	9	10



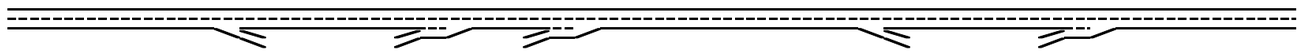
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		2,251					3,275			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.680					0.662			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		2,251					3,275			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		2,251					3,275			
Diverge Speed Index		0.34					0.33			
Diverge Area Speed		57.1					57.4			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.1					57.4			
Diverge v/c ratio		0.51					0.74			
Diverge Density		22.7					31.5			
Diverge LOS		C					D			

Location	1	2	3	4	5	6	7	8	9	10



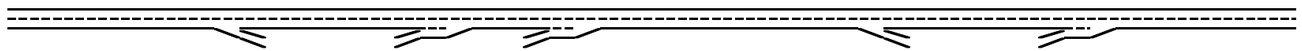
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



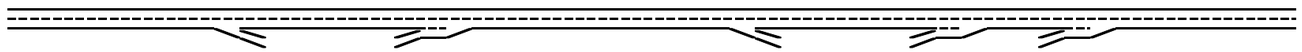
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.48	0.51	0.36	0.51	0.77	0.75	0.74	0.62	0.94	0.92
Segment Density	17.3	22.7	13.2	22.0	30.3	28.0	31.5	22.4	36.5	37.8
Segment LOS	B	C	B	C	D	D	D	C	E	E
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



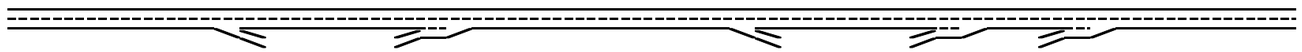
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	3,752	3,752	2,311	2,311	2,569	2,569	1,319	1,319	1,596	1,829
On Ramp Volume				258				277	233	
Off Ramp Volume		1,441				1,250				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,752	3,752	2,311	2,569	2,569	2,569	1,319	1,596	1,829	1,829
PHF	0.9	0.9	0.9	0.9	0.9	0.88	0.88	0.88	0.88	0.88
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,306	4,306	2,653	2,949	2,949	3,016	1,548	1,873	2,147	2,147
GP Flow (pcphpl)	2,153	2,153	1,326	1,474	1,474	1,508	774	937	1,073	1,073
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.92	0.92	0.56	0.63	0.63	0.64	0.33	0.40	0.46	0.46
Speed (mph)	57.0	57.0	65.0	64.9	64.9	64.8	65.0	65.0	65.0	65.0
Density (pcphpl)	37.8	37.8	20.4	22.7	22.7	23.3	11.9	14.4	16.5	16.5
LOS	E	E	C	C	C	C	B	B	B	B
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		4,306		2,676		3,016		1,584	1,884	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.92		0.57		0.64		0.34	0.40	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		2,783		2,949		1,708		1,873	2,147	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.59		0.63		0.36		0.40	0.46	

Location	1	2	3	4	5	6	7	8	9	10



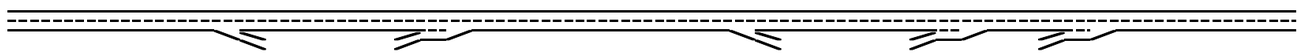
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				258				277	233	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				273				290	263	
On Flow (pcphpl)				273				290	263	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.13				0.15	0.13	

Location	1	2	3	4	5	6	7	8	9	10



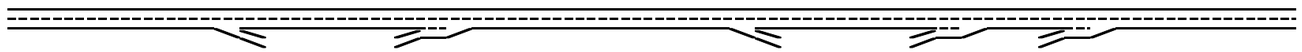
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		1,441				1,250				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		1,524				1,308				
Off Flow (pcphpl)		1,524				1,308				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.73				0.62				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				2,676				1,584	1,884	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				2,676				1,584	1,884	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				2,676				1,584	1,884	
v_{R12a} (pcph)				2,949				1,873	2,147	
Merge Speed Index				0.36				0.33	0.32	
Merge Area Speed				56.7				57.5	57.7	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.7				57.5	57.7	
Merge v/c ratio				0.64				0.41	0.47	
Merge Density				25.8				17.4	19.6	
Merge LOS				C				B	B	

Location	1	2	3	4	5	6	7	8	9	10



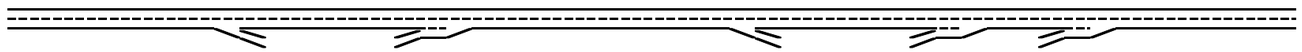
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		4,306				3,016				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.582				0.624				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		4,306				3,016				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		4,306				3,016				
Diverge Speed Index		0.44				0.42				
Diverge Area Speed		55.0				55.4				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		55.0				55.4				
Diverge v/c ratio		0.98				0.69				
Diverge Density		40.4				29.3				
Diverge LOS		E				D				

Location	1	2	3	4	5	6	7	8	9	10



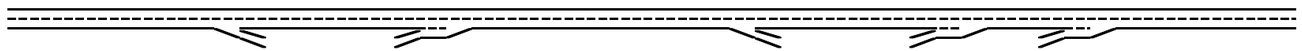
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



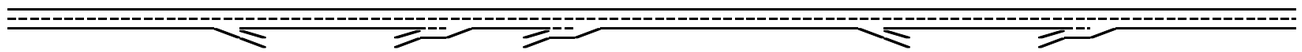
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.92	0.98	0.56	0.64	0.63	0.69	0.33	0.41	0.47	0.46
Segment Density	37.8	40.4	20.4	25.8	22.7	29.3	11.9	17.4	19.6	16.5
Segment LOS	E	E	C	C	C	D	B	B	B	B
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



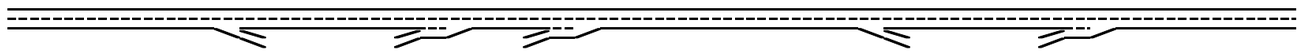
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,267	1,267	972	972	1,249	1,920	1,920	1,574	1,574	2,782
On Ramp Volume				277	671				1,208	
Off Ramp Volume		295					346			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,267	1,267	972	1,249	1,920	1,920	1,920	1,574	2,782	2,782
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.95	0.95	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,454	1,454	1,116	1,434	2,204	2,204	2,088	1,712	3,025	3,025
GP Flow (pcphpl)	727	727	558	717	1,102	1,102	1,044	856	1,513	1,513
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.31	0.31	0.24	0.31	0.47	0.47	0.44	0.36	0.64	0.64
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.8	64.8
Density (pcphpl)	11.2	11.2	8.6	11.0	17.0	17.0	16.1	13.2	23.3	23.3
LOS	B	B	A	B	B	B	B	B	C	C
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		1,454		1,128	1,463		2,088		1,761	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.31		0.24	0.31		0.44		0.37	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,129		1,434	2,204		1,726		3,025	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.24		0.31	0.47		0.37		0.64	

Location	1	2	3	4	5	6	7	8	9	10



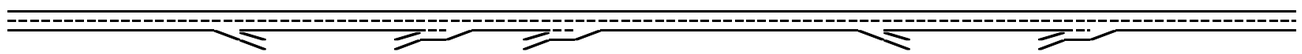
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				277	671				1,208	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				306	740				1,264	
On Flow (pcphpl)				306	740				1,264	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				45	
On Ramp Cap (pcph)				1,900	2,100				2,100	
On Ramp v/c ratio				0.16	0.35				0.60	

Location	1	2	3	4	5	6	7	8	9	10



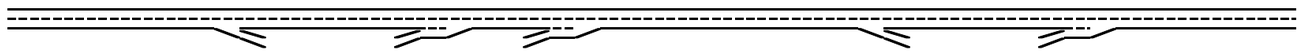
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		295					346			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		325					362			
Off Flow (pcphpl)		325					362			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.15					0.17			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,128	1,463				1,761	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,128	1,463				1,761	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,128	1,463				1,761	
v_{R12a} (pcph)				1,434	2,204				3,025	
Merge Speed Index				0.32	0.32				0.37	
Merge Area Speed				57.5	57.5				56.4	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.5	57.5				56.4	
Merge v/c ratio				0.31	0.48				0.66	
Merge Density				14.9	20.1				26.6	
Merge LOS				B	C				C	

Location	1	2	3	4	5	6	7	8	9	10



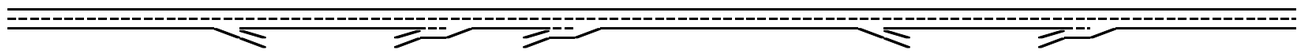
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		1,454					2,088			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FO} (Eqn 13-9)		0.709					0.691			
P_{FO} (Eqn 13-10)										
P_{FO} (Eqn 13-11)										
P_{FO}		1.000					1.000			
v_{12} (pcph)		1,454					2,088			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		1,454					2,088			
Diverge Speed Index		0.33					0.33			
Diverge Area Speed		57.5					57.4			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.5					57.4			
Diverge v/c ratio		0.33					0.47			
Diverge Density		15.9					21.3			
Diverge LOS		B					C			

Location	1	2	3	4	5	6	7	8	9	10



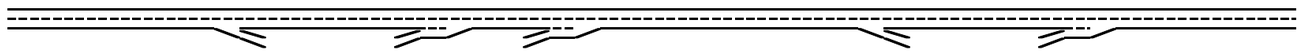
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



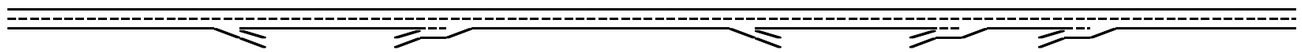
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.31	0.33	0.24	0.31	0.48	0.47	0.47	0.36	0.66	0.64
Segment Density	11.2	15.9	8.6	14.9	20.1	17.0	21.3	13.2	26.6	23.3
Segment LOS	B	B	A	B	C	B	C	B	C	C
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



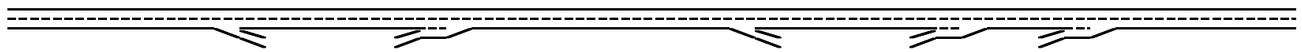
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	2,950	2,950	1,420	1,420	1,662	1,662	837	837	1,046	1,205
On Ramp Volume				242				209	159	
Off Ramp Volume		1,530				825				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,950	2,950	1,420	1,662	1,662	1,662	837	1,046	1,205	1,205
PHF	0.97	0.97	0.97	0.97	0.97	0.87	0.87	0.87	0.87	0.87
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,142	3,142	1,512	1,770	1,770	1,973	994	1,242	1,431	1,431
GP Flow (pcphpl)	1,571	1,571	756	885	885	987	497	621	715	715
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.67	0.67	0.32	0.38	0.38	0.42	0.21	0.26	0.30	0.30
Speed (mph)	64.6	64.6	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	24.3	24.3	11.6	13.6	13.6	15.2	7.6	9.6	11.0	11.0
LOS	C	C	B	B	B	B	A	A	B	B
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		3,142		1,514		1,973		1,023	1,251	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.67		0.32		0.42		0.22	0.27	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,524		1,770		1,110		1,242	1,431	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.32		0.38		0.24		0.26	0.30	

Location	1	2	3	4	5	6	7	8	9	10



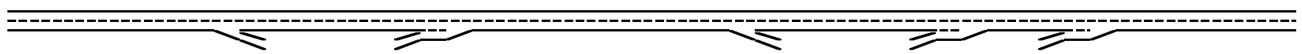
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				242				209	159	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				256				219	179	
On Flow (pcphpl)				256				219	179	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.12				0.12	0.09	

Location	1	2	3	4	5	6	7	8	9	10



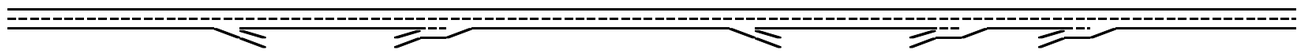
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		1,530				825				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		1,618				863				
Off Flow (pcphpl)		1,618				863				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.77				0.41				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,514				1,023	1,251	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				1,514				1,023	1,251	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,514				1,023	1,251	
v_{R12a} (pcph)				1,770				1,242	1,431	
Merge Speed Index				0.31				0.31	0.30	
Merge Area Speed				57.9				57.8	58.1	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.9				57.8	58.1	
Merge v/c ratio				0.38				0.27	0.31	
Merge Density				16.7				12.6	14.0	
Merge LOS				B				B	B	

Location	1	2	3	4	5	6	7	8	9	10



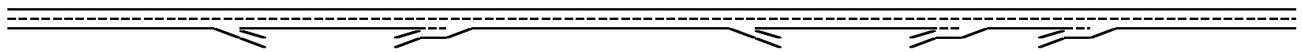
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		3,142				1,973				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.607				0.671				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		3,142				1,973				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		3,142				1,973				
Diverge Speed Index		0.44				0.38				
Diverge Area Speed		54.8				56.4				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		54.8				56.4				
Diverge v/c ratio		0.71				0.45				
Diverge Density		30.4				20.3				
Diverge LOS		D				C				

Location	1	2	3	4	5	6	7	8	9	10



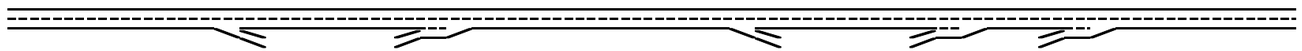
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



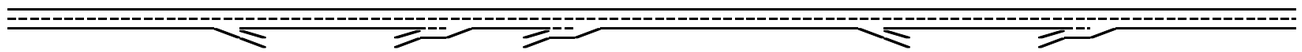
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.67	0.71	0.32	0.38	0.38	0.45	0.21	0.27	0.31	0.30
Segment Density	24.3	30.4	11.6	16.7	13.6	20.3	7.6	12.6	14.0	11.0
Segment LOS	C	D	B	B	B	C	A	B	B	B
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



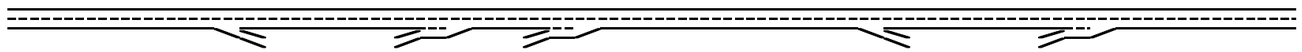
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,327	1,327	985	985	1,260	2,221	2,221	2,065	2,065	2,666
On Ramp Volume				275	961				601	
Off Ramp Volume		342					156			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,327	1,327	985	1,260	2,221	2,221	2,221	2,065	2,666	2,666
PHF	0.75	0.75	0.75	0.75	0.75	0.75	0.76	0.76	0.76	0.76
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,828	1,828	1,357	1,735	3,059	3,059	3,019	2,807	3,624	3,624
GP Flow (pcphpl)	914	914	678	868	1,530	1,530	1,509	1,403	1,812	1,812
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.39	0.39	0.29	0.37	0.65	0.65	0.64	0.60	0.77	0.77
Speed (mph)	65.0	65.0	65.0	65.0	64.8	64.8	64.8	65.0	62.6	62.6
Density (pcphpl)	14.1	14.1	10.4	13.3	23.6	23.6	23.3	21.6	28.9	28.9
LOS	B	B	A	B	C	C	C	C	D	D
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		1,828		1,432	1,999		3,019		2,995	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.39		0.30	0.43		0.64		0.64	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,450		1,735	3,059		2,856		3,624	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.31		0.37	0.65		0.61		0.77	

Location	1	2	3	4	5	6	7	8	9	10



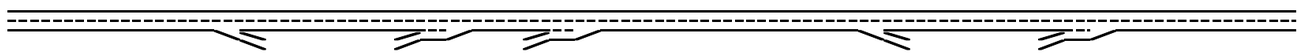
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				275	961				601	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				303	1,060				629	
On Flow (pcphpl)				303	1,060				629	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				45	
On Ramp Cap (pcph)				1,900	2,100				2,100	
On Ramp v/c ratio				0.16	0.50				0.30	

Location	1	2	3	4	5	6	7	8	9	10



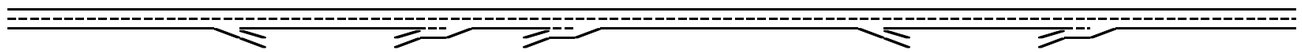
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		342					156			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		377					163			
Off Flow (pcphpl)		377					163			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.18					0.08			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,432	1,999				2,995	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,432	1,999				2,995	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,432	1,999				2,995	
v_{R12a} (pcph)				1,735	3,059				3,624	
Merge Speed Index				0.33	0.37				0.44	
Merge Area Speed				57.4	56.4				54.9	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.4	56.4				54.9	
Merge v/c ratio				0.38	0.67				0.79	
Merge Density				17.3	26.7				31.6	
Merge LOS				B	C				D	

Location	1	2	3	4	5	6	7	8	9	10



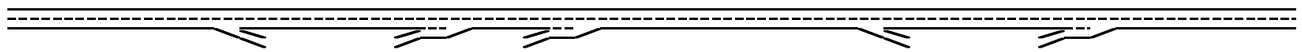
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		1,828					3,019			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.697					0.677			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		1,828					3,019			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		1,828					3,019			
Diverge Speed Index		0.33					0.31			
Diverge Area Speed		57.4					57.8			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.4					57.8			
Diverge v/c ratio		0.42					0.69			
Diverge Density		19.1					29.3			
Diverge LOS		B					D			

Location	1	2	3	4	5	6	7	8	9	10



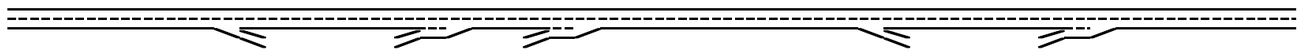
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



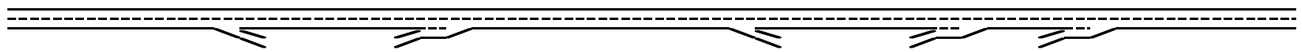
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.39	0.42	0.29	0.38	0.67	0.65	0.69	0.60	0.79	0.77
Segment Density	14.1	19.1	10.4	17.3	26.7	23.6	29.3	21.6	31.6	28.9
Segment LOS	B	B	A	B	C	C	D	C	D	D
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



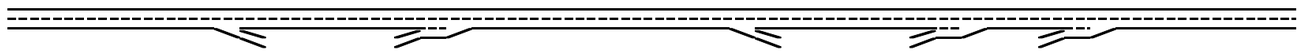
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	3,322	3,322	2,450	2,450	2,606	2,606	1,232	1,232	1,417	1,581
On Ramp Volume				156				185	164	
Off Ramp Volume		872				1,374				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,322	3,322	2,450	2,606	2,606	2,606	1,232	1,417	1,581	1,581
PHF	0.84	0.84	0.84	0.84	0.84	0.81	0.81	0.81	0.81	0.81
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,085	4,085	3,013	3,205	3,205	3,323	1,571	1,807	2,016	2,016
GP Flow (pcphpl)	2,043	2,043	1,506	1,602	1,602	1,662	786	904	1,008	1,008
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.87	0.87	0.64	0.68	0.68	0.71	0.33	0.38	0.43	0.43
Speed (mph)	59.1	59.1	64.8	64.4	64.4	64.0	65.0	65.0	65.0	65.0
Density (pcphpl)	34.5	34.5	23.2	24.9	24.9	26.0	12.1	13.9	15.5	15.5
LOS	D	D	C	C	C	C	B	B	B	B
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		4,085		3,040		3,323		1,614	1,831	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.87		0.65		0.71		0.34	0.39	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		3,163		3,205		1,886		1,807	2,016	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.67		0.68		0.40		0.38	0.43	

Location	1	2	3	4	5	6	7	8	9	10



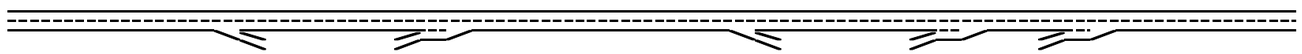
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				156				185	164	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				165				194	185	
On Flow (pcphpl)				165				194	185	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.08				0.10	0.09	

Location	1	2	3	4	5	6	7	8	9	10



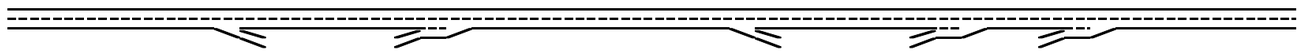
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		872				1,374				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		922				1,438				
Off Flow (pcphpl)		922				1,438				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.44				0.68				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				3,040				1,614	1,831	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				3,040				1,614	1,831	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,040				1,614	1,831	
v_{R12a} (pcph)				3,205				1,807	2,016	
Merge Speed Index				0.38				0.32	0.31	
Merge Area Speed				56.2				57.5	57.8	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.2				57.5	57.8	
Merge v/c ratio				0.70				0.39	0.44	
Merge Density				27.9				17.0	18.6	
Merge LOS				C				B	B	

Location	1	2	3	4	5	6	7	8	9	10



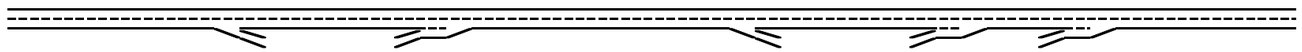
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		4,085				3,323				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.615				0.611				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		4,085				3,323				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		4,085				3,323				
Diverge Speed Index		0.38				0.43				
Diverge Area Speed		56.2				55.2				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		56.2				55.2				
Diverge v/c ratio		0.93				0.76				
Diverge Density		38.5				31.9				
Diverge LOS		E				D				

Location	1	2	3	4	5	6	7	8	9	10



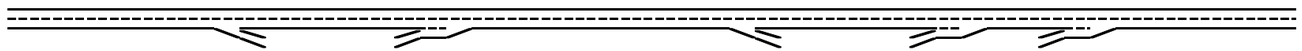
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



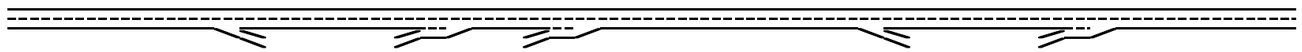
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.87	0.93	0.64	0.70	0.68	0.76	0.33	0.39	0.44	0.43
Segment Density	34.5	38.5	23.2	27.9	24.9	31.9	12.1	17.0	18.6	15.5
Segment LOS	D	E	C	C	C	D	B	B	B	B
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



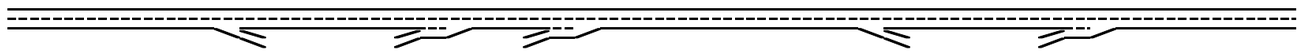
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,921	1,921	1,479	1,479	2,029	3,046	3,046	2,715	2,715	3,978
On Ramp Volume				550	1,017				1,263	
Off Ramp Volume		442					331			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,921	1,921	1,479	2,029	3,046	3,046	3,046	2,715	3,978	3,978
PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.96
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,230	2,230	1,717	2,355	3,535	3,535	3,278	2,921	4,280	4,280
GP Flow (pcphpl)	1,115	1,115	858	1,178	1,768	1,768	1,639	1,461	2,140	2,140
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.47	0.47	0.37	0.50	0.75	0.75	0.70	0.62	0.91	0.91
Speed (mph)	65.0	65.0	65.0	65.0	63.1	63.1	64.2	64.9	57.2	57.2
Density (pcphpl)	17.2	17.2	13.2	18.1	28.0	28.0	25.5	22.5	37.4	37.4
LOS	B	B	B	C	D	D	C	C	E	E
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		2,230		1,748	2,413		3,278		2,959	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.47		0.37	0.51		0.70		0.63	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,742		2,355	3,535		2,931		4,280	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.37		0.50	0.75		0.62		0.91	

Location	1	2	3	4	5	6	7	8	9	10



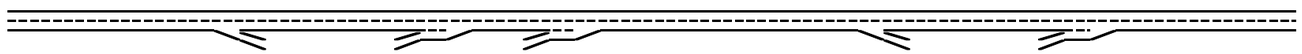
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				550	1,017				1,263	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				607	1,122				1,322	
On Flow (pcphpl)				607	1,122				1,322	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				25	
On Ramp Cap (pcph)				1,900	2,100				1,900	
On Ramp v/c ratio				0.32	0.53				0.70	

Location	1	2	3	4	5	6	7	8	9	10



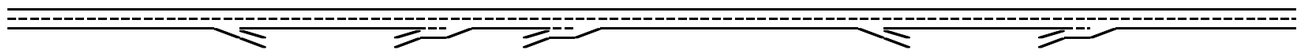
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		442					331			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		488					346			
Off Flow (pcphpl)		488					346			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.23					0.16			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,748	2,413				2,959	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,748	2,413				2,959	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,748	2,413				2,959	
v_{R12a} (pcph)				2,355	3,535				4,280	
Merge Speed Index				0.35	0.42				0.59	
Merge Area Speed				57.0	55.3				51.5	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.0	55.3				51.5	
Merge v/c ratio				0.51	0.77				0.93	
Merge Density				22.0	30.3				36.4	
Merge LOS				C	D				E	

Location	1	2	3	4	5	6	7	8	9	10



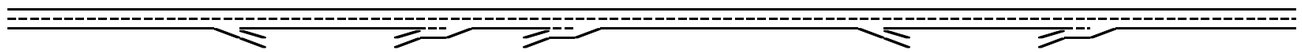
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		2,230					3,278			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.682					0.662			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		2,230					3,278			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		2,230					3,278			
Diverge Speed Index		0.34					0.33			
Diverge Area Speed		57.1					57.4			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.1					57.4			
Diverge v/c ratio		0.51					0.74			
Diverge Density		22.5					31.5			
Diverge LOS		C					D			

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

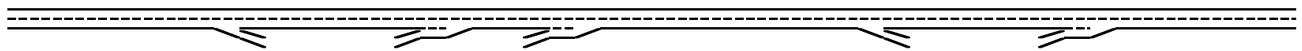
No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Project: Chico Wal-Mart Expansion
Freeway Corridor: Northbound SR 99

Alternative: ST Conditions
Time Period: PM Peak Hour

Location	1	2	3	4	5	6	7	8	9	10



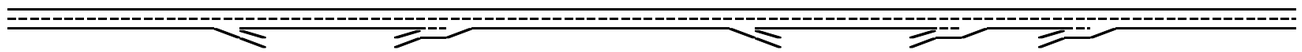
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_p										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.47	0.51	0.37	0.51	0.77	0.75	0.74	0.62	0.93	0.91
Segment Density	17.2	22.5	13.2	22.0	30.3	28.0	31.5	22.5	36.4	37.4
Segment LOS	B	C	B	C	D	D	D	C	E	E
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



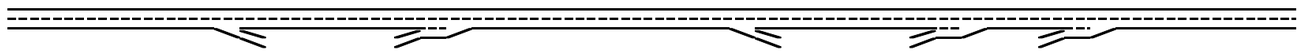
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	3,704	3,704	2,284	2,284	2,542	2,542	1,291	1,291	1,530	1,763
On Ramp Volume				258				239	233	
Off Ramp Volume		1,420				1,251				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,704	3,704	2,284	2,542	2,542	2,542	1,291	1,530	1,763	1,763
PHF	0.9	0.9	0.9	0.9	0.9	0.88	0.88	0.88	0.88	0.88
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,251	4,251	2,622	2,918	2,918	2,984	1,515	1,796	2,070	2,070
GP Flow (pcphpl)	2,126	2,126	1,311	1,459	1,459	1,492	758	898	1,035	1,035
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.90	0.90	0.56	0.62	0.62	0.63	0.32	0.38	0.44	0.44
Speed (mph)	57.5	57.5	65.0	65.0	65.0	64.9	65.0	65.0	65.0	65.0
Density (pcphpl)	36.9	36.9	20.2	22.5	22.5	23.0	11.7	13.8	15.9	15.9
LOS	E	E	C	C	C	C	B	B	B	B
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		4,251		2,645		2,984		1,546	1,807	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.90		0.56		0.63		0.33	0.38	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		2,750		2,918		1,675		1,796	2,070	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.59		0.62		0.36		0.38	0.44	

Location	1	2	3	4	5	6	7	8	9	10



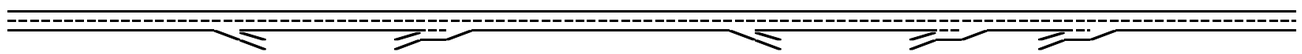
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				258				239	233	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				273				250	263	
On Flow (pcphpl)				273				250	263	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.13				0.13	0.13	

Location	1	2	3	4	5	6	7	8	9	10



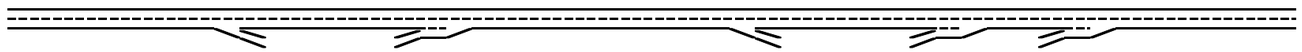
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		1,420				1,251				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		1,501				1,309				
Off Flow (pcphpl)		1,501				1,309				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.71				0.62				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				2,645				1,546	1,807	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				2,645				1,546	1,807	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				2,645				1,546	1,807	
v_{R12a} (pcph)				2,918				1,796	2,070	
Merge Speed Index				0.36				0.32	0.32	
Merge Area Speed				56.8				57.5	57.7	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.8				57.5	57.7	
Merge v/c ratio				0.63				0.39	0.45	
Merge Density				25.6				16.9	19.0	
Merge LOS				C				B	B	

Location	1	2	3	4	5	6	7	8	9	10



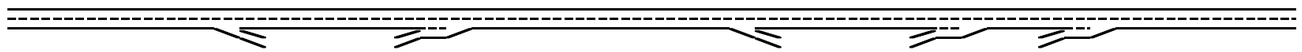
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		4,251				2,984				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.585				0.625				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		4,251				2,984				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		4,251				2,984				
Diverge Speed Index		0.43				0.42				
Diverge Area Speed		55.0				55.4				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		55.0				55.4				
Diverge v/c ratio		0.97				0.68				
Diverge Density		39.9				29.0				
Diverge LOS		E				D				

Location	1	2	3	4	5	6	7	8	9	10



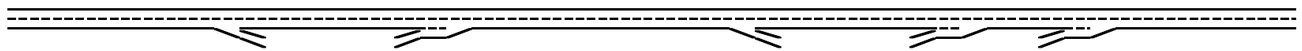
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



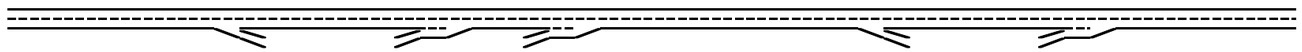
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.90	0.97	0.56	0.63	0.62	0.68	0.32	0.39	0.45	0.44
Segment Density	36.9	39.9	20.2	25.6	22.5	29.0	11.7	16.9	19.0	15.9
Segment LOS	E	E	C	C	C	D	B	B	B	B
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



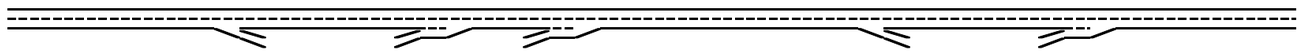
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,233	1,233	963	963	1,240	1,911	1,911	1,585	1,585	2,752
On Ramp Volume				277	671				1,167	
Off Ramp Volume		270					326			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,233	1,233	963	1,240	1,911	1,911	1,911	1,585	2,752	2,752
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.95	0.95	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,415	1,415	1,105	1,423	2,193	2,193	2,078	1,723	2,992	2,992
GP Flow (pcphpl)	708	708	553	712	1,097	1,097	1,039	862	1,496	1,496
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.30	0.30	0.24	0.30	0.47	0.47	0.44	0.37	0.64	0.64
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.9	64.9
Density (pcphpl)	10.9	10.9	8.5	10.9	16.9	16.9	16.0	13.3	23.1	23.1
LOS	A	A	A	A	B	B	B	B	C	C
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		1,415		1,118	1,453		2,078		1,771	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.30		0.24	0.31		0.44		0.38	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,117		1,423	2,193		1,737		2,992	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.24		0.30	0.47		0.37		0.64	

Location	1	2	3	4	5	6	7	8	9	10



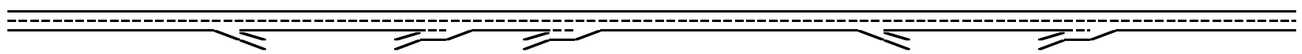
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				277	671				1,167	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				306	740				1,221	
On Flow (pcphpl)				306	740				1,221	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				45	
On Ramp Cap (pcph)				1,900	2,100				2,100	
On Ramp v/c ratio				0.16	0.35				0.58	

Location	1	2	3	4	5	6	7	8	9	10



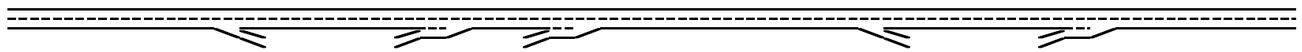
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		270					326			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		298					341			
Off Flow (pcphpl)		298					341			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.14					0.16			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,118	1,453				1,771	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,118	1,453				1,771	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,118	1,453				1,771	
v_{R12a} (pcph)				1,423	2,193				2,992	
Merge Speed Index				0.32	0.32				0.37	
Merge Area Speed				57.5	57.5				56.4	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.5	57.5				56.4	
Merge v/c ratio				0.31	0.48				0.65	
Merge Density				14.9	20.0				26.4	
Merge LOS				B	C				C	

Location	1	2	3	4	5	6	7	8	9	10



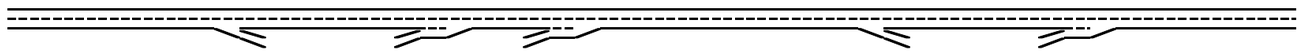
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		1,415					2,078			
Up Ramp L_{FQ}										
Down Ramp L_{FQ}										
P_{FD} (Eqn 13-9)		0.711					0.692			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		1,415					2,078			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		1,415					2,078			
Diverge Speed Index		0.32					0.33			
Diverge Area Speed		57.5					57.4			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.5					57.4			
Diverge v/c ratio		0.32					0.47			
Diverge Density		15.5					21.2			
Diverge LOS		B					C			

Location	1	2	3	4	5	6	7	8	9	10



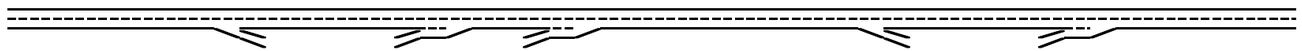
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



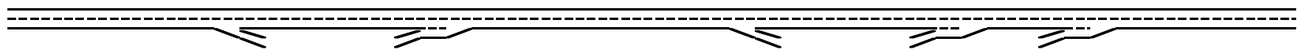
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.30	0.32	0.24	0.31	0.48	0.47	0.47	0.37	0.65	0.64
Segment Density	10.9	15.5	8.5	14.9	20.0	16.9	21.2	13.3	26.4	23.1
Segment LOS	A	B	A	B	C	B	C	B	C	C
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



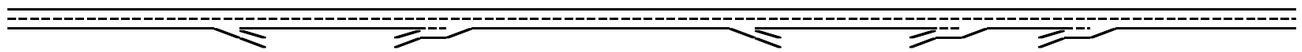
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	2,887	2,887	1,393	1,393	1,634	1,634	808	808	972	1,131
On Ramp Volume				241				164	159	
Off Ramp Volume		1,494				826				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,887	2,887	1,393	1,634	1,634	1,634	808	972	1,131	1,131
PHF	0.97	0.97	0.97	0.97	0.97	0.87	0.87	0.87	0.87	0.87
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,075	3,075	1,483	1,740	1,740	1,940	959	1,154	1,343	1,343
GP Flow (pcphpl)	1,537	1,537	742	870	870	970	480	577	671	671
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.65	0.65	0.32	0.37	0.37	0.41	0.20	0.25	0.29	0.29
Speed (mph)	64.7	64.7	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	23.7	23.7	11.4	13.4	13.4	14.9	7.4	8.9	10.3	10.3
LOS	C	C	B	B	B	B	A	A	A	A
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		3,075		1,485		1,940		983	1,164	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.65		0.32		0.41		0.21	0.25	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,495		1,740		1,076		1,154	1,343	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.32		0.37		0.23		0.25	0.29	

Location	1	2	3	4	5	6	7	8	9	10



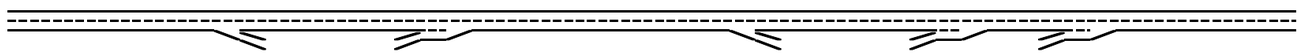
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				241				164	159	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				255				172	179	
On Flow (pcphpl)				255				172	179	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.12				0.09	0.09	

Location	1	2	3	4	5	6	7	8	9	10



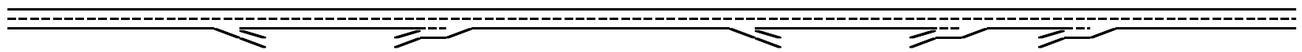
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		1,494				826				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		1,580				864				
Off Flow (pcphpl)		1,580				864				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.75				0.41				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,485				983	1,164	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				1,485				983	1,164	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,485				983	1,164	
v_{R12a} (pcph)				1,740				1,154	1,343	
Merge Speed Index				0.31				0.31	0.30	
Merge Area Speed				57.9				57.8	58.1	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.9				57.8	58.1	
Merge v/c ratio				0.38				0.25	0.29	
Merge Density				16.4				11.9	13.4	
Merge LOS				B				B	B	

Location	1	2	3	4	5	6	7	8	9	10



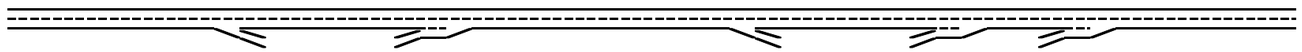
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		3,075				1,940				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.610				0.672				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		3,075				1,940				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		3,075				1,940				
Diverge Speed Index		0.44				0.38				
Diverge Area Speed		54.9				56.4				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		54.9				56.4				
Diverge v/c ratio		0.70				0.44				
Diverge Density		29.8				20.0				
Diverge LOS		D				C				

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

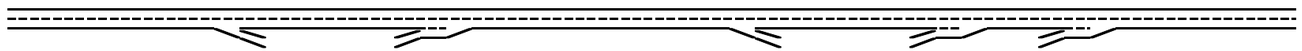
No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Project: Chico Wal-Mart Expansion
Freeway Corridor: Southbound SR 99

Alternative: ST Conditions
Time Period: Saturday Peak Hour

Location	1	2	3	4	5	6	7	8	9	10



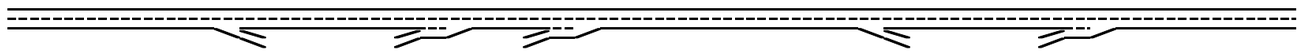
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.65	0.70	0.32	0.38	0.37	0.44	0.20	0.25	0.29	0.29
Segment Density	23.7	29.8	11.4	16.4	13.4	20.0	7.4	11.9	13.4	10.3
Segment LOS	C	D	B	B	B	C	A	B	B	A
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



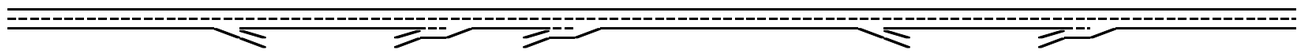
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,341	1,341	990	990	1,265	2,226	2,226	2,065	2,065	2,680
On Ramp Volume				275	961				615	
Off Ramp Volume		351					161			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,341	1,341	990	1,265	2,226	2,226	2,226	2,065	2,680	2,680
PHF	0.75	0.75	0.75	0.75	0.75	0.75	0.76	0.76	0.76	0.76
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,847	1,847	1,364	1,742	3,066	3,066	3,026	2,807	3,643	3,643
GP Flow (pcphpl)	924	924	682	871	1,533	1,533	1,513	1,403	1,821	1,821
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.39	0.39	0.29	0.37	0.65	0.65	0.64	0.60	0.78	0.78
Speed (mph)	65.0	65.0	65.0	65.0	64.7	64.7	64.8	65.0	62.5	62.5
Density (pcphpl)	14.2	14.2	10.5	13.4	23.7	23.7	23.3	21.6	29.1	29.1
LOS	B	B	A	B	C	C	C	C	D	D
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		1,847		1,439	2,006		3,026		2,999	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.39		0.31	0.43		0.64		0.64	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,460		1,742	3,066		2,857		3,643	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.31		0.37	0.65		0.61		0.78	

Location	1	2	3	4	5	6	7	8	9	10



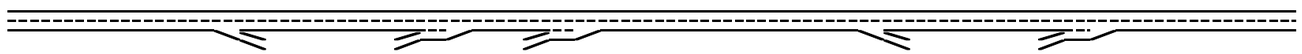
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				275	961				615	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				303	1,060				644	
On Flow (pcphpl)				303	1,060				644	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				45	
On Ramp Cap (pcph)				1,900	2,100				2,100	
On Ramp v/c ratio				0.16	0.50				0.31	

Location	1	2	3	4	5	6	7	8	9	10



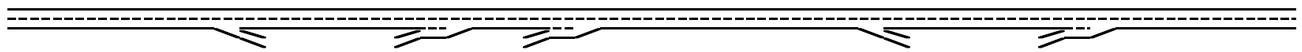
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		351					161			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		387					168			
Off Flow (pcphpl)		387					168			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.18					0.08			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,439	2,006				2,999	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,439	2,006				2,999	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,439	2,006				2,999	
v_{R12a} (pcph)				1,742	3,066				3,643	
Merge Speed Index				0.33	0.37				0.44	
Merge Area Speed				57.4	56.4				54.8	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.4	56.4				54.8	
Merge v/c ratio				0.38	0.67				0.79	
Merge Density				17.4	26.7				31.7	
Merge LOS				B	C				D	

Location	1	2	3	4	5	6	7	8	9	10



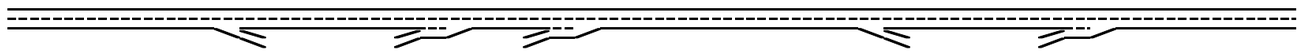
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		1,847					3,026			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.696					0.677			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		1,847					3,026			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		1,847					3,026			
Diverge Speed Index		0.33					0.31			
Diverge Area Speed		57.3					57.8			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.3					57.8			
Diverge v/c ratio		0.42					0.69			
Diverge Density		19.2					29.4			
Diverge LOS		B					D			

Location	1	2	3	4	5	6	7	8	9	10



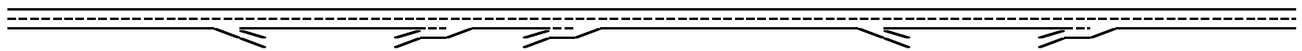
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



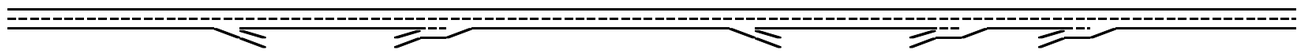
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.39	0.42	0.29	0.38	0.67	0.65	0.69	0.60	0.79	0.78
Segment Density	14.2	19.2	10.5	17.4	26.7	23.7	29.4	21.6	31.7	29.1
Segment LOS	B	B	A	B	C	C	D	C	D	D
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



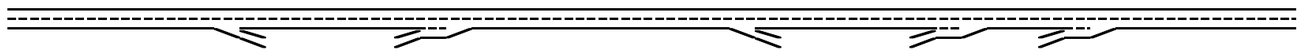
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	3,345	3,345	2,450	2,450	2,607	2,607	1,233	1,233	1,433	1,597
On Ramp Volume				157				200	164	
Off Ramp Volume		895				1,374				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,345	3,345	2,450	2,607	2,607	2,607	1,233	1,433	1,597	1,597
PHF	0.84	0.84	0.84	0.84	0.84	0.81	0.81	0.81	0.81	0.81
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,114	4,114	3,013	3,206	3,206	3,325	1,572	1,828	2,037	2,037
GP Flow (pcphpl)	2,057	2,057	1,506	1,603	1,603	1,662	786	914	1,018	1,018
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.88	0.88	0.64	0.68	0.68	0.71	0.33	0.39	0.43	0.43
Speed (mph)	58.9	58.9	64.8	64.4	64.4	64.0	65.0	65.0	65.0	65.0
Density (pcphpl)	34.9	34.9	23.2	24.9	24.9	26.0	12.1	14.1	15.7	15.7
LOS	D	D	C	C	C	C	B	B	B	B
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		4,114		3,040		3,325		1,618	1,852	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.88		0.65		0.71		0.34	0.39	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		3,167		3,206		1,887		1,828	2,037	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.67		0.68		0.40		0.39	0.43	

Location	1	2	3	4	5	6	7	8	9	10



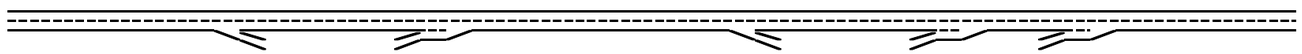
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				157				200	164	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				166				209	185	
On Flow (pcphpl)				166				209	185	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.08				0.11	0.09	

Location	1	2	3	4	5	6	7	8	9	10



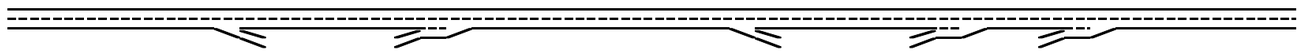
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		895				1,374				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		946				1,438				
Off Flow (pcphpl)		946				1,438				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.45				0.68				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				3,040				1,618	1,852	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				3,040				1,618	1,852	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,040				1,618	1,852	
v_{R12a} (pcph)				3,206				1,828	2,037	
Merge Speed Index				0.38				0.33	0.31	
Merge Area Speed				56.2				57.5	57.8	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.2				57.5	57.8	
Merge v/c ratio				0.70				0.40	0.44	
Merge Density				27.9				17.1	18.8	
Merge LOS				C				B	B	

Location	1	2	3	4	5	6	7	8	9	10



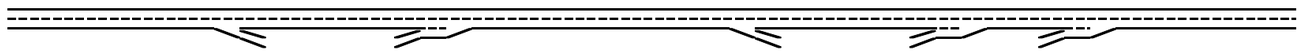
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		4,114				3,325				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.614				0.611				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		4,114				3,325				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		4,114				3,325				
Diverge Speed Index		0.38				0.43				
Diverge Area Speed		56.2				55.2				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		56.2				55.2				
Diverge v/c ratio		0.93				0.76				
Diverge Density		38.7				31.9				
Diverge LOS		E				D				

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

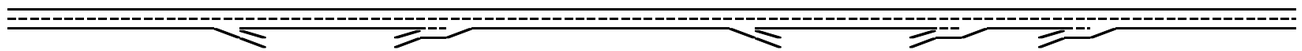
No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Project: Chico Wal-Mart Expansion
Freeway Corridor: Southbound SR 99

Alternative: ST+P Conditions
Time Period: AM Peak Hour

Location	1	2	3	4	5	6	7	8	9	10



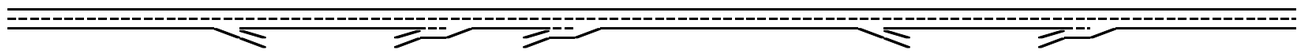
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_p										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.88	0.93	0.64	0.70	0.68	0.76	0.33	0.40	0.44	0.43
Segment Density	34.9	38.7	23.2	27.9	24.9	31.9	12.1	17.1	18.8	15.7
Segment LOS	D	E	C	C	C	D	B	B	B	B
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



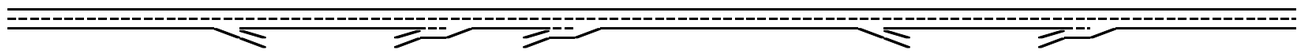
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,956	1,956	1,494	1,494	2,044	3,061	3,061	2,715	2,715	4,020
On Ramp Volume				550	1,017				1,305	
Off Ramp Volume		462					346			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,956	1,956	1,494	2,044	3,061	3,061	3,061	2,715	4,020	4,020
PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.96
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,270	2,270	1,734	2,372	3,553	3,553	3,294	2,921	4,326	4,326
GP Flow (pcphpl)	1,135	1,135	867	1,186	1,776	1,776	1,647	1,461	2,163	2,163
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.48	0.48	0.37	0.50	0.76	0.76	0.70	0.62	0.92	0.92
Speed (mph)	65.0	65.0	65.0	65.0	63.0	63.0	64.1	64.9	56.7	56.7
Density (pcphpl)	17.5	17.5	13.3	18.2	28.2	28.2	25.7	22.5	38.1	38.1
LOS	B	B	B	C	D	D	C	C	E	E
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		2,270		1,766	2,431		3,294		2,960	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.48		0.38	0.52		0.70		0.63	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,761		2,372	3,553		2,932		4,326	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.37		0.50	0.76		0.62		0.92	

Location	1	2	3	4	5	6	7	8	9	10



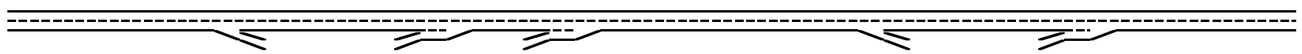
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				550	1,017				1,305	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				607	1,122				1,366	
On Flow (pcphpl)				607	1,122				1,366	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				25	
On Ramp Cap (pcph)				1,900	2,100				1,900	
On Ramp v/c ratio				0.32	0.53				0.72	

Location	1	2	3	4	5	6	7	8	9	10



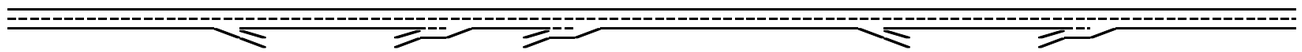
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		462					346			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		510					362			
Off Flow (pcphpl)		510					362			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.24					0.17			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,766	2,431				2,960	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,766	2,431				2,960	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,766	2,431				2,960	
v_{R12a} (pcph)				2,372	3,553				4,326	
Merge Speed Index				0.35	0.43				0.60	
Merge Area Speed				56.9	55.2				51.2	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.9	55.2				51.2	
Merge v/c ratio				0.52	0.77				0.94	
Merge Density				22.1	30.5				36.7	
Merge LOS				C	D				E	

Location	1	2	3	4	5	6	7	8	9	10



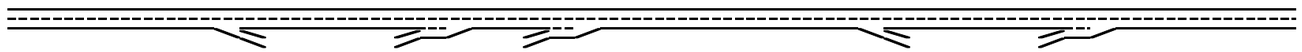
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		2,270					3,294			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.680					0.661			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		2,270					3,294			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		2,270					3,294			
Diverge Speed Index		0.34					0.33			
Diverge Area Speed		57.1					57.4			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.1					57.4			
Diverge v/c ratio		0.52					0.75			
Diverge Density		22.9					31.7			
Diverge LOS		C					D			

Location	1	2	3	4	5	6	7	8	9	10



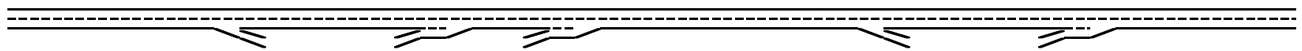
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



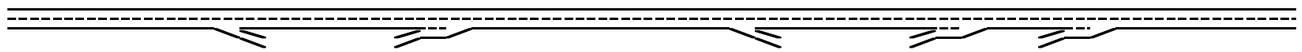
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.48	0.52	0.37	0.52	0.77	0.76	0.75	0.62	0.94	0.92
Segment Density	17.5	22.9	13.3	22.1	30.5	28.2	31.7	22.5	36.7	38.1
Segment LOS	B	C	B	C	D	D	D	C	E	E
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



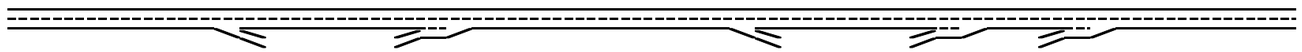
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	3,751	3,751	2,284	2,284	2,545	2,545	1,294	1,294	1,571	1,804
On Ramp Volume				261				277	233	
Off Ramp Volume		1,467				1,251				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,751	3,751	2,284	2,545	2,545	2,545	1,294	1,571	1,804	1,804
PHF	0.9	0.9	0.9	0.9	0.9	0.88	0.88	0.88	0.88	0.88
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,305	4,305	2,622	2,921	2,921	2,987	1,519	1,844	2,118	2,118
GP Flow (pcphpl)	2,153	2,153	1,311	1,461	1,461	1,494	759	922	1,059	1,059
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.92	0.92	0.56	0.62	0.62	0.64	0.32	0.39	0.45	0.45
Speed (mph)	57.0	57.0	65.0	64.9	64.9	64.9	65.0	65.0	65.0	65.0
Density (pcphpl)	37.8	37.8	20.2	22.5	22.5	23.0	11.7	14.2	16.3	16.3
LOS	E	E	C	C	C	C	B	B	B	B
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		4,305		2,645		2,987		1,554	1,855	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.92		0.56		0.64		0.33	0.39	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		2,754		2,921		1,678		1,844	2,118	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.59		0.62		0.36		0.39	0.45	

Location	1	2	3	4	5	6	7	8	9	10



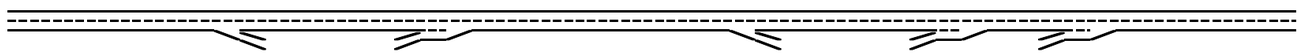
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				261				277	233	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				276				290	263	
On Flow (pcphpl)				276				290	263	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.13				0.15	0.13	

Location	1	2	3	4	5	6	7	8	9	10



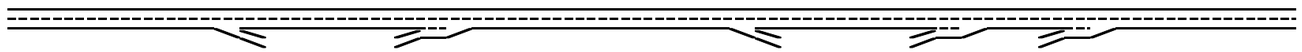
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		1,467				1,251				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		1,551				1,309				
Off Flow (pcphpl)		1,551				1,309				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.74				0.62				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				2,645				1,554	1,855	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				2,645				1,554	1,855	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				2,645				1,554	1,855	
v_{R12a} (pcph)				2,921				1,844	2,118	
Merge Speed Index				0.36				0.33	0.32	
Merge Area Speed				56.8				57.5	57.7	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.8				57.5	57.7	
Merge v/c ratio				0.64				0.40	0.46	
Merge Density				25.6				17.2	19.4	
Merge LOS				C				B	B	

Location	1	2	3	4	5	6	7	8	9	10



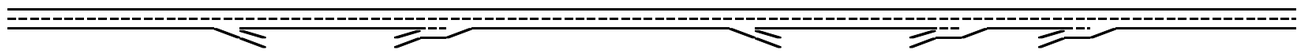
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		4,305				2,987				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.581				0.625				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		4,305				2,987				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		4,305				2,987				
Diverge Speed Index		0.44				0.42				
Diverge Area Speed		54.9				55.4				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		54.9				55.4				
Diverge v/c ratio		0.98				0.68				
Diverge Density		40.4				29.0				
Diverge LOS		E				D				

Location	1	2	3	4	5	6	7	8	9	10



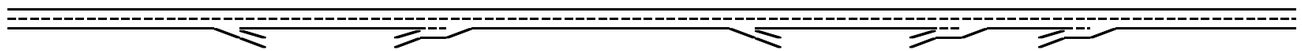
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



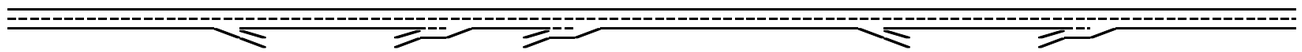
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.92	0.98	0.56	0.64	0.62	0.68	0.32	0.40	0.46	0.45
Segment Density	37.8	40.4	20.2	25.6	22.5	29.0	11.7	17.2	19.4	16.3
Segment LOS	E	E	C	C	C	D	B	B	B	B
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



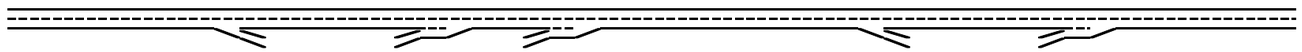
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Merge	Basic	Diverge	Basic	Merge	Basic
Length (ft)	5,150	1,500	1,850	1,850	1,000	2,150	1,500	2,500	2,500	2,700
Accel Length				250	350				300	
Decel Length		100					100			
Mainline Volume	1,278	1,278	983	983	1,260	1,931	1,931	1,585	1,585	2,806
On Ramp Volume				277	671				1,221	
Off Ramp Volume		295					346			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	1,278	1,278	983	1,260	1,931	1,931	1,931	1,585	2,806	2,806
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.95	0.95	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,467	1,467	1,128	1,446	2,216	2,216	2,100	1,723	3,051	3,051
GP Flow (pcphpl)	733	733	564	723	1,108	1,108	1,050	862	1,526	1,526
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.31	0.31	0.24	0.31	0.47	0.47	0.45	0.37	0.65	0.65
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	64.8	64.8
Density (pcphpl)	11.3	11.3	8.7	11.1	17.0	17.0	16.2	13.3	23.6	23.6
LOS	B	B	A	B	B	B	B	B	C	C
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		1,467		1,141	1,476		2,100		1,774	
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{IN} v/c ratio		0.31		0.24	0.31		0.45		0.38	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,141		1,446	2,216		1,738		3,051	
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700		4,700	
GP_{OUT} v/c ratio		0.24		0.31	0.47		0.37		0.65	

Location	1	2	3	4	5	6	7	8	9	10



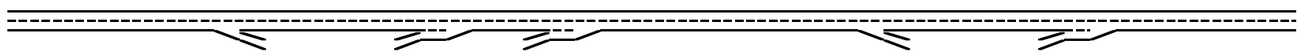
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				277	671				1,221	
PHF				0.92	0.92				0.97	
Total Lanes				1	1				1	
Terrain				Level	Level				Level	
Grade %				0.0%	0.0%				0.0%	
Grade Length (mi)				0.00	0.00				0.00	
Truck & Bus %				3.0%	3.0%				3.0%	
RV %				0.0%	0.0%				0.0%	
E_T				1.5	1.5				1.5	
E_R				1.2	1.2				1.2	
f_{HV}				0.985	0.985				0.985	
f_p				1.00	1.00				1.00	
On Flow (pcph)				306	740				1,278	
On Flow (pcphpl)				306	740				1,278	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right	Right				Right	
On Ramp Speed (mph)				25	45				45	
On Ramp Cap (pcph)				1,900	2,100				2,100	
On Ramp v/c ratio				0.16	0.35				0.61	

Location	1	2	3	4	5	6	7	8	9	10



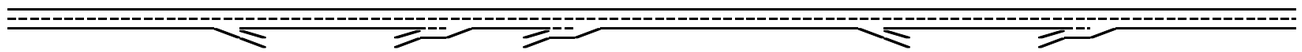
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Off Ramp Flow Rate										
Off Volume (vph)		295					346			
PHF		0.92					0.97			
Total Lanes		1					1			
Terrain		Level					Level			
Grade %		0.0%					0.0%			
Grade Length (mi)		0.00					0.00			
Truck & Bus %		3.0%					3.0%			
RV %		0.0%					0.0%			
E_T		1.5					1.5			
E_R		1.2					1.2			
f_{HV}		0.985					0.985			
f_p		1.00					1.00			
Off Flow (pcph)		325					362			
Off Flow (pcphpl)		325					362			
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right					Right			
Off Ramp Speed		45					45			
Off Ramp Cap (pcph)		2,100					2,100			
Off Ramp v/c ratio		0.15					0.17			
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,141	1,476				1,774	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.585	0.587				0.586	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000	1.000				1.000	
v_{12} (pcph)				1,141	1,476				1,774	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,141	1,476				1,774	
v_{R12a} (pcph)				1,446	2,216				3,051	
Merge Speed Index				0.33	0.33				0.38	
Merge Area Speed				57.5	57.5				56.3	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.5	57.5				56.3	
Merge v/c ratio				0.31	0.48				0.66	
Merge Density				15.0	20.2				26.8	
Merge LOS				B	C				C	

Location	1	2	3	4	5	6	7	8	9	10



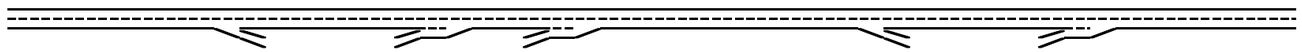
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		1,467					2,100			
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.708					0.691			
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000					1.000			
v_{12} (pcph)		1,467					2,100			
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		1,467					2,100			
Diverge Speed Index		0.33					0.33			
Diverge Area Speed		57.5					57.4			
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		57.5					57.4			
Diverge v/c ratio		0.33					0.48			
Diverge Density		16.0					21.4			
Diverge LOS		B					C			

Location	1	2	3	4	5	6	7	8	9	10



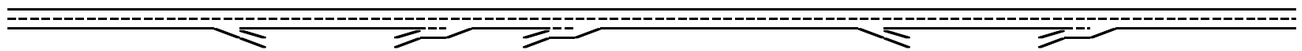
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



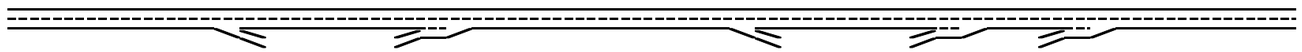
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of E 20th Street
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.31	0.33	0.24	0.31	0.48	0.47	0.48	0.37	0.66	0.65
Segment Density	11.3	16.0	8.7	15.0	20.2	17.0	21.4	13.3	26.8	23.6
Segment LOS	B	B	A	B	C	B	C	B	C	C
Over Capacity										

Location	1	2	3	4	5	6	7	8	9	10



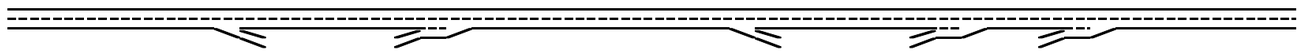
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment										
Type	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	2,550	1,500	1,100	1,500	1,800	1,500	2,000	2,000	1,050	5,150
Accel Length				400				400	400	
Decel Length		100				100				
Mainline Volume	2,950	2,950	1,393	1,393	1,635	1,635	809	809	1,018	1,177
On Ramp Volume				242				209	159	
Off Ramp Volume		1,557				826				
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,950	2,950	1,393	1,635	1,635	1,635	809	1,018	1,177	1,177
PHF	0.97	0.97	0.97	0.97	0.97	0.87	0.87	0.87	0.87	0.87
GP Lanes	2	2	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,142	3,142	1,483	1,741	1,741	1,941	961	1,209	1,398	1,398
GP Flow (pcphpl)	1,571	1,571	742	871	871	971	480	604	699	699
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3	3	3	3
TRD										
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Calculated FFS	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.67	0.67	0.32	0.37	0.37	0.41	0.20	0.26	0.30	0.30
Speed (mph)	64.6	64.6	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	24.3	24.3	11.4	13.4	13.4	14.9	7.4	9.3	10.8	10.8
LOS	C	C	B	B	B	B	A	A	A	A
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)		3,142		1,485		1,941		990	1,218	
GP_{IN} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio		0.67		0.32		0.41		0.21	0.26	
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)		1,495		1,741		1,077		1,209	1,398	
GP_{OUT} Cap (pcph)		4,700		4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio		0.32		0.37		0.23		0.26	0.30	

Location	1	2	3	4	5	6	7	8	9	10



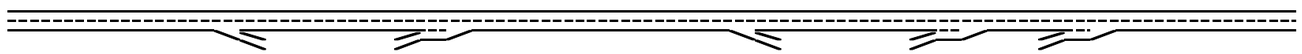
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)										
PHF										
Express Lanes	0	0	0	0	0	0	0	0	0	0
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_p										
EL Flow (pcph)										
EL Flow (pcphpl)										
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS										
FFS										
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio										
Calculate On Ramp Flow Rate										
On Volume (vph)				242				209	159	
PHF				0.96				0.97	0.9	
Total Lanes				1				1	1	
Terrain				Level				Level	Level	
Grade %				0.0%				0.0%	0.0%	
Grade Length (mi)				0.00				0.00	0.00	
Truck & Bus %				3.0%				3.0%	3.0%	
RV %				0.0%				0.0%	0.0%	
E_T				1.5				1.5	1.5	
E_R				1.2				1.2	1.2	
f_{HV}				0.985				0.985	0.985	
f_p				1.00				1.00	1.00	
On Flow (pcph)				256				219	179	
On Flow (pcphpl)				256				219	179	
Calculate On Ramp Roadway Operations										
On Ramp Type				Right				Right	Right	
On Ramp Speed (mph)				45				25	45	
On Ramp Cap (pcph)				2,100				1,900	2,100	
On Ramp v/c ratio				0.12				0.12	0.09	

Location	1	2	3	4	5	6	7	8	9	10



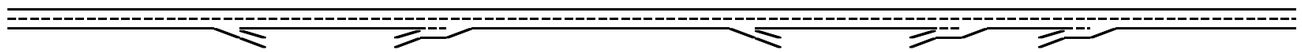
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate										
Off Volume (vph)		1,557				826				
PHF		0.96				0.97				
Total Lanes		1				1				
Terrain		Level				Level				
Grade %		0.0%				0.0%				
Grade Length (mi)		0.00				0.00				
Truck & Bus %		3.0%				3.0%				
RV %		0.0%				0.0%				
E_T		1.5				1.5				
E_R		1.2				1.2				
f_{HV}		0.985				0.985				
f_p		1.00				1.00				
Off Flow (pcph)		1,646				864				
Off Flow (pcphpl)		1,646				864				
Calculate Off Ramp Roadway Operations										
Off Ramp Type		Right				Right				
Off Ramp Speed		45				45				
Off Ramp Cap (pcph)		2,100				2,100				
Off Ramp v/c ratio		0.78				0.41				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_p (pcph)				1,485				990	1,218	
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)				0.589				0.589	0.589	
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}				1.000				1.000	1.000	
v_{12} (pcph)				1,485				990	1,218	
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				1,485				990	1,218	
v_{R12a} (pcph)				1,741				1,209	1,398	
Merge Speed Index				0.31				0.31	0.30	
Merge Area Speed				57.9				57.8	58.1	
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				57.9				57.8	58.1	
Merge v/c ratio				0.38				0.26	0.30	
Merge Density				16.4				12.3	13.8	
Merge LOS				B				B	B	

Location	1	2	3	4	5	6	7	8	9	10



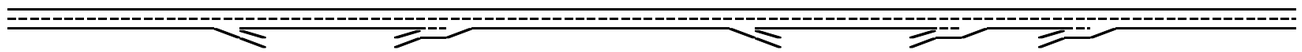
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)		3,142				1,941				
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)		0.606				0.672				
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}		1.000				1.000				
v_{12} (pcph)		3,142				1,941				
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)		3,142				1,941				
Diverge Speed Index		0.45				0.38				
Diverge Area Speed		54.7				56.4				
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed		54.7				56.4				
Diverge v/c ratio		0.71				0.44				
Diverge Density		30.4				20.0				
Diverge LOS		D				C				

Location	1	2	3	4	5	6	7	8	9	10



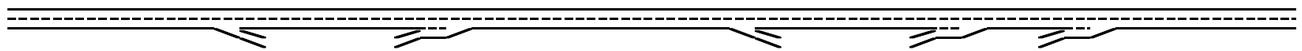
Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to Off Flow (pcph)										
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
On to ML Flow (pcph)										
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
ML to Off Flow (pcph)										
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)										
PHF										
Terrain										
Grade %										
Grade Length (mi)										
Truck & Bus %										
RV %										
E_T										
E_R										
f_{HV}										
f_P										
GP to GP Flow (pcph)										
Calculate Weave Segment Operations										

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

No Trucks

Name	North of E 20th Street	E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp	North of Skyway Road Ramp	Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type										
Weave Length										
Segment Lanes										
Weave Lanes										
Weave Flow (pcph)										
Non-Weave Flow										
Segment Flow										
Max Weave Length										
Length Check										
Ideal Weave Capacity										
f_{HV}										
f_P										
Capacity Condition 1										
Capacity Condition 2										
Weave v/c ratio										
Interchange Density										
Lane Changes On to ML										
Lane Changes ML to Off										
Lane Changes On to Off										
Min Lane Change Rate										
Weave LC Rate										
Non-Weave LC Rate 1										
Non-Weave LC Rate 2										
Non-Weave LC Rate 3										
Segment LC Rate										
Weave Intensity Factor										
Weave Speed										
Non-Weave Speed										
Segment Speed										
Weave Density										
Weave LOS										
Summarize Segment Operations										
Segment v/c ratio	0.67	0.71	0.32	0.38	0.37	0.44	0.20	0.26	0.30	0.30
Segment Density	24.3	30.4	11.4	16.4	13.4	20.0	7.4	12.3	13.8	10.8
Segment LOS	C	D	B	B	B	C	A	B	B	A
Over Capacity										

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Define Freeway Segment							
Type	Basic	Diverge	Basic	Merge	Weave	Basic	Weave
Length (ft)	5,150	1,500	1,850	1,850	3,100	2,500	3,650
Accel Length				250			
Decel Length		100					
Mainline Volume	2,632	2,632	2,257	2,257	2,532	3,162	3,162
On Ramp Volume				275	991		826
Off Ramp Volume		375			361		610
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	2,632	2,632	2,257	2,532	3,523	3,162	3,988
PHF	0.75	0.75	0.75	0.75	0.75	0.76	0.76
GP Lanes	2	2	2	2	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,625	3,625	3,109	3,487	4,852	4,298	5,421
GP Flow (pcphpl)	1,813	1,813	1,554	1,744	1,617	2,149	1,807
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.2	1.8	1.2
Calculated FFS	73.6	73.6	73.6	73.6	74.2	73.6	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.77	0.77	0.66	0.74	0.69	0.91	0.77
Speed (mph)	62.6	62.6	64.7	63.3	64.3	57.0	62.7
Density (pcphpl)	29.0	29.0	24.0	27.5	25.1	37.7	28.8
LOS	D	D	C	D	C	E	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)		3,625		3,184	3,759		4,556
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{IN} v/c ratio		0.77		0.68	0.80		0.97
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)		3,211		3,487	4,467		4,769
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{OUT} v/c ratio		0.68		0.74	0.95		1.01

Key

<> Express Lane (HOV)

No Trucks

Location	1	2	3	4	5	6	7
Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)				275	991		826
PHF				0.92	0.92		0.97
Total Lanes				1	1		1
Terrain				Level	Level		Level
Grade %				0.0%	0.0%		0.0%
Grade Length (mi)				0.00	0.00		0.00
Truck & Bus %				3.0%	3.0%		3.0%
RV %				0.0%	0.0%		0.0%
E_T				1.5	1.5		1.5
E_R				1.2	1.2		1.2
f_{HV}				0.985	0.985		0.985
f_p				1.00	1.00		1.00
On Flow (pcph)				303	1,093		864
On Flow (pcphpl)				303	1,093		864
Calculate On Ramp Roadway Operations							
On Ramp Type				Right	Right		Right
On Ramp Speed (mph)				25	45		45
On Ramp Cap (pcph)				1,900	2,100		2,100
On Ramp v/c ratio				0.16	0.52		0.41

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Off Ramp Flow Rate							
Off Volume (vph)		375			361		610
PHF		0.92			0.95		0.95
Total Lanes		1			1		1
Terrain		Level			Level		Level
Grade %		0.0%			2.0%		0.0%
Grade Length (mi)		0.00			0.00		0.00
Truck & Bus %		3.0%			3.0%		3.0%
RV %		0.0%			0.0%		0.0%
E_T		1.5			1.5		1.5
E_R		1.2			1.2		1.2
f_{HV}		0.985			0.985		0.985
f_p		1.00			1.00		1.00
Off Flow (pcph)		414			386		652
Off Flow (pcphpl)		414			386		652
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		2,100					
Off Ramp v/c ratio		0.20					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)				3,184			
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)				0.585			
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}				1.000			
v_{12} (pcph)				3,184			
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)				3,184			
v_{R12a} (pcph)				3,487			
Merge Speed Index				0.44			
Merge Area Speed				55.0			
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed				55.0			
Merge v/c ratio				0.76			
Merge Density				31.0			
Merge LOS				D			

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)		3,625					
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)		0.650					
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}		1.000					
v_{12} (pcph)		3,625					
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)		3,625					
Diverge Speed Index		0.34					
Diverge Area Speed		57.3					
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed		57.3					
Diverge v/c ratio		0.82					
Diverge Density		34.5					
Diverge LOS		D					

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On-Ramp to SR 32 Off Ramp
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.985
f_p					1.00		1.00
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					8.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.962		0.985
f_p					1.00		1.00
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					4.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.980		0.971
f_p					1.00		1.00
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.971
f_p					1.00		1.00
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

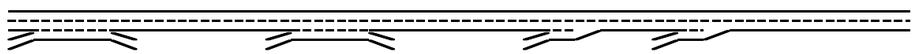
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Weave Type					One-sided		One-sided
Weave Length					2,100		2,650
Segment Lanes					3		3
Weave Lanes							
Weave Flow (pcph)					#VALUE!		#VALUE!
Non-Weave Flow					#VALUE!		#VALUE!
Segment Flow					#VALUE!		#VALUE!
Max Weave Length					#VALUE!		#VALUE!
Length Check					#VALUE!		#VALUE!
Ideal Weave Capacity					#VALUE!		#VALUE!
f_{HV}					#VALUE!		#VALUE!
f_p					#VALUE!		#VALUE!
Capacity Condition 1					#VALUE!		#VALUE!
Capacity Condition 2					#VALUE!		#VALUE!
Weave v/c ratio					#VALUE!		#VALUE!
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	0.77	0.82	0.66	0.76	#VALUE!	0.91	#VALUE!
Segment Density	29.0	34.5	24.0	31.0	#VALUE!	37.7	#VALUE!
Segment LOS	D	D	C	D	#VALUE!	E	#VALUE!
Over Capacity					#VALUE!		#VALUE!

Location	1	2	3	4	5	6	7



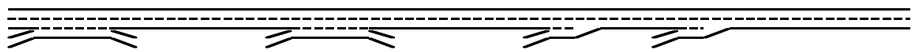
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment							
Type	Weave	Basic	Weave	Basic	Merge	Merge	Basic
Length (ft)	3,650	1,100	2,700	2,000	2,000	1,050	5,150
Accel Length					400	400	
Decel Length							
Mainline Volume	3,766	3,256	3,256	2,102	2,102	2,285	2,491
On Ramp Volume	565		285		183	206	
Off Ramp Volume	1,075		1,439				
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,331	3,256	3,541	2,102	2,285	2,491	2,491
PHF	0.84	0.84	0.84	0.81	0.81	0.81	0.81
GP Lanes	3	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	5,326	4,004	4,355	2,681	2,914	3,177	3,177
GP Flow (pcphpl)	1,775	2,002	1,452	1,340	1,457	1,588	1,588
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.2	1.8	1.2	1.8	1.8	1.8	1.8
Calculated FFS	74.2	73.6	74.2	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.76	0.85	0.62	0.57	0.62	0.68	0.68
Speed (mph)	63.0	59.9	65.0	65.0	65.0	64.5	64.5
Density (pcphpl)	28.2	33.4	22.3	20.6	22.4	24.6	24.6
LOS	D	D	C	C	C	C	C
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	5,316		4,053		2,723	2,944	
GP_{IN} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio	1.13		0.86		0.58	0.63	
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	4,178		2,817		2,914	3,177	
GP_{OUT} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio	0.89		0.60		0.62	0.68	

Location	1	2	3	4	5	6	7



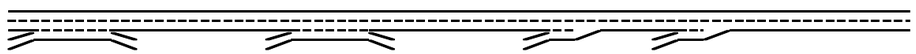
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)	565		285		183	206	
PHF	55		0.96		0.97	0.9	
Total Lanes	1		1		1	1	
Terrain	Level		Level		Level	Level	
Grade %	0.0%		0.0%		0.0%	0.0%	
Grade Length (mi)	0.00		0.00		0.00	0.00	
Truck & Bus %	3.0%		3.0%		3.0%	3.0%	
RV %	0.0%		0.0%		0.0%	0.0%	
E_T	1.5		1.5		1.5	1.5	
E_R	1.2		1.2		1.2	1.2	
f_{HV}	0.985		0.985		0.985	0.985	
f_p	1.00		1.00		1.00	1.00	
On Flow (pcph)	10		301		191	232	
On Flow (pcphpl)	10		301		191	232	
Calculate On Ramp Roadway Operations							
On Ramp Type			Right		Right	Right	
On Ramp Speed (mph)			45		25	45	
On Ramp Cap (pcph)			2,100		1,900	2,100	
On Ramp v/c ratio			0.14		0.10	0.11	

Location	1	2	3	4	5	6	7



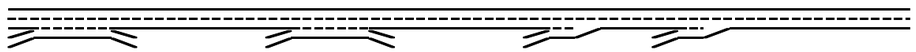
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate							
Off Volume (vph)	1,075		1,439				
PHF	0.95		0.95				
Total Lanes	1		1				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
Off Flow (pcph)	1,149		1,537				
Off Flow (pcphpl)	1,149		1,537				
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		#VALUE!					
Off Ramp v/c ratio		#VALUE!					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)					2,723	2,944	
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.589	0.589	
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000	1.000	
v_{12} (pcph)					2,723	2,944	
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					2,723	2,944	
v_{R12a} (pcph)					2,914	3,177	
Merge Speed Index					0.37	0.38	
Merge Area Speed					56.4	56.3	
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					56.4	56.3	
Merge v/c ratio					0.63	0.69	
Merge Density					25.6	27.6	
Merge LOS					C	C	

Location	1	2	3	4	5	6	7



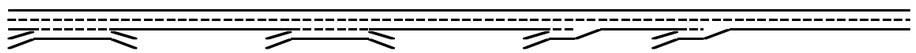
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)							
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)							
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}							
v_{12} (pcph)							
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)							
Diverge Speed Index							
Diverge Area Speed							
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							
Diverge v/c ratio							
Diverge Density							
Diverge LOS							

Location	1	2	3	4	5	6	7



Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type	One-sided		One-sided				
Weave Length	2,650		1,700				
Segment Lanes	3		3				
Weave Lanes							
Weave Flow (pcph)	#VALUE!		#VALUE!				
Non-Weave Flow	#VALUE!		#VALUE!				
Segment Flow	#VALUE!		#VALUE!				
Max Weave Length	#VALUE!		#VALUE!				
Length Check	#VALUE!		#VALUE!				
Ideal Weave Capacity	#VALUE!		#VALUE!				
f_{HV}	#VALUE!		#VALUE!				
f_P	#VALUE!		#VALUE!				
Capacity Condition 1	#VALUE!		#VALUE!				
Capacity Condition 2	#VALUE!		#VALUE!				
Weave v/c ratio	#VALUE!		#VALUE!				
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	#VALUE!	0.85	#VALUE!	0.57	0.63	0.69	0.68
Segment Density	#VALUE!	#VALUE!	#VALUE!	20.6	25.6	27.6	24.6
Segment LOS	#VALUE!	#VALUE!	#VALUE!	C	C	C	C
Over Capacity	#VALUE!	#VALUE!	#VALUE!				

Leisch Method for Weaving Analysis

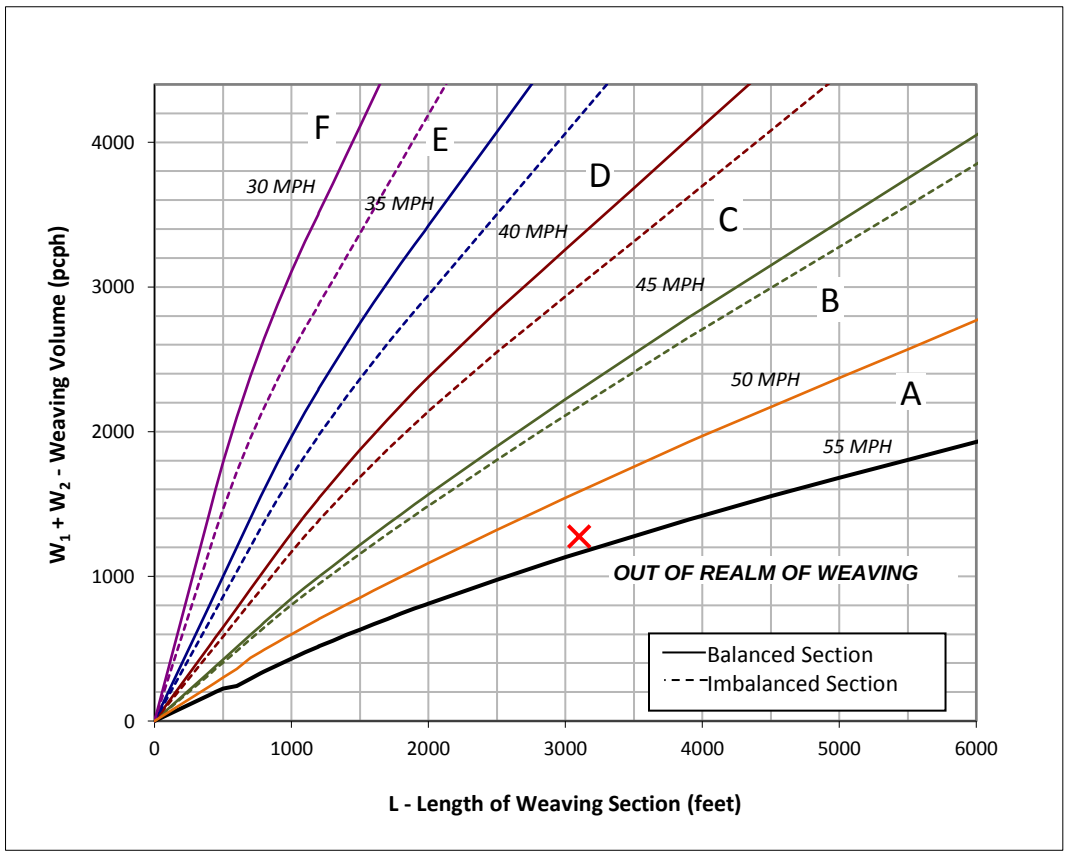
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,100

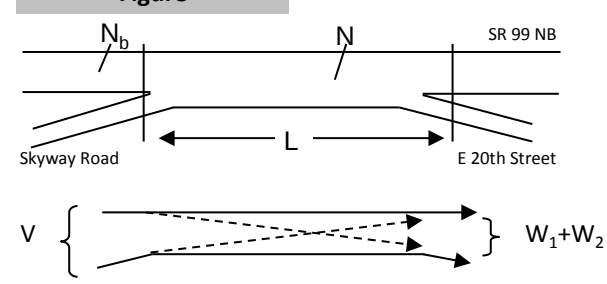
Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - AM
Freeway	SR 99 NB
On-ramp	Skyway Road
Off-ramp	E 20th Street

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,523	Volume (vph)*	944	Volume (vph)*	314
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,639	Volume (pcph)	958	Volume (pcph)	319



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **53.6**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,213**

6. Level of Service (LOS) **C**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

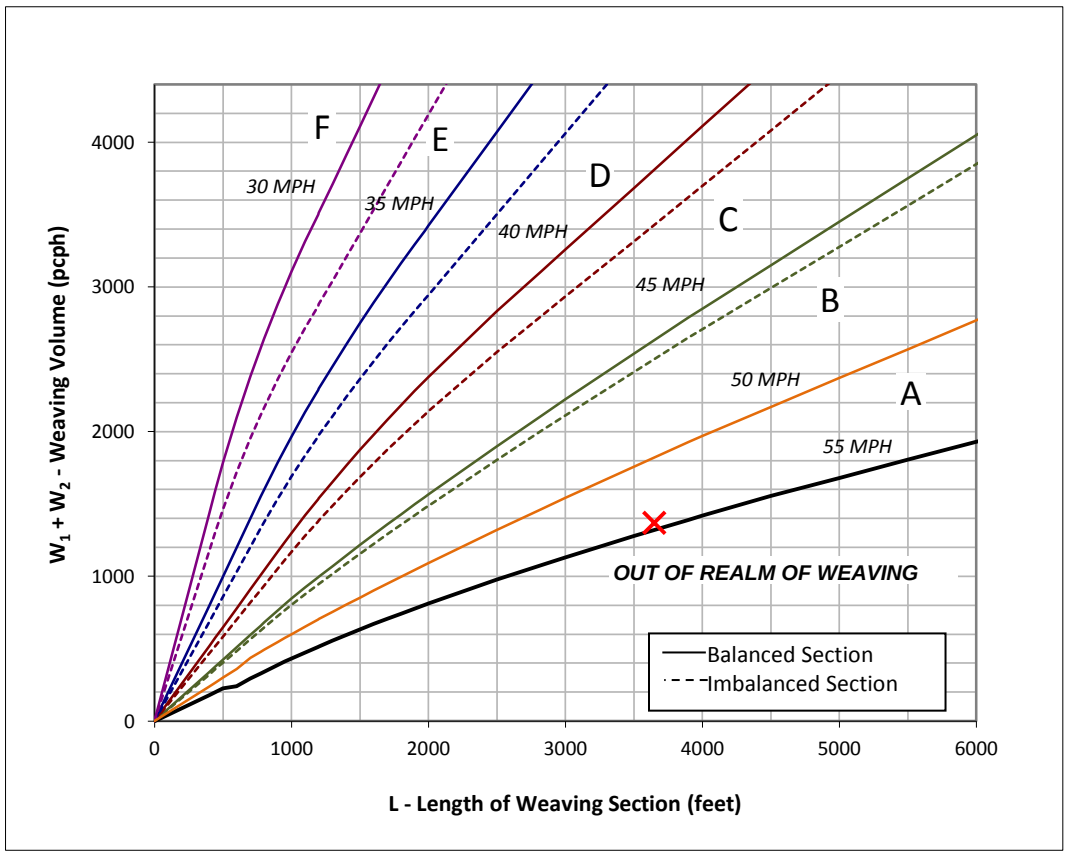
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - AM
Freeway	SR 99 NB
On-ramp	E 20th Street
Off-ramp	SR 32

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,988	Volume (vph)*	783	Volume (vph)*	568
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,120	Volume (pcph)	795	Volume (pcph)	577



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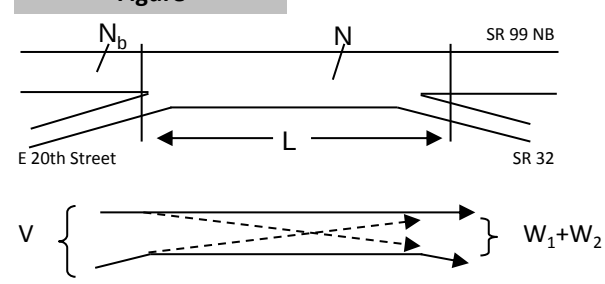


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **54.5**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,373**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

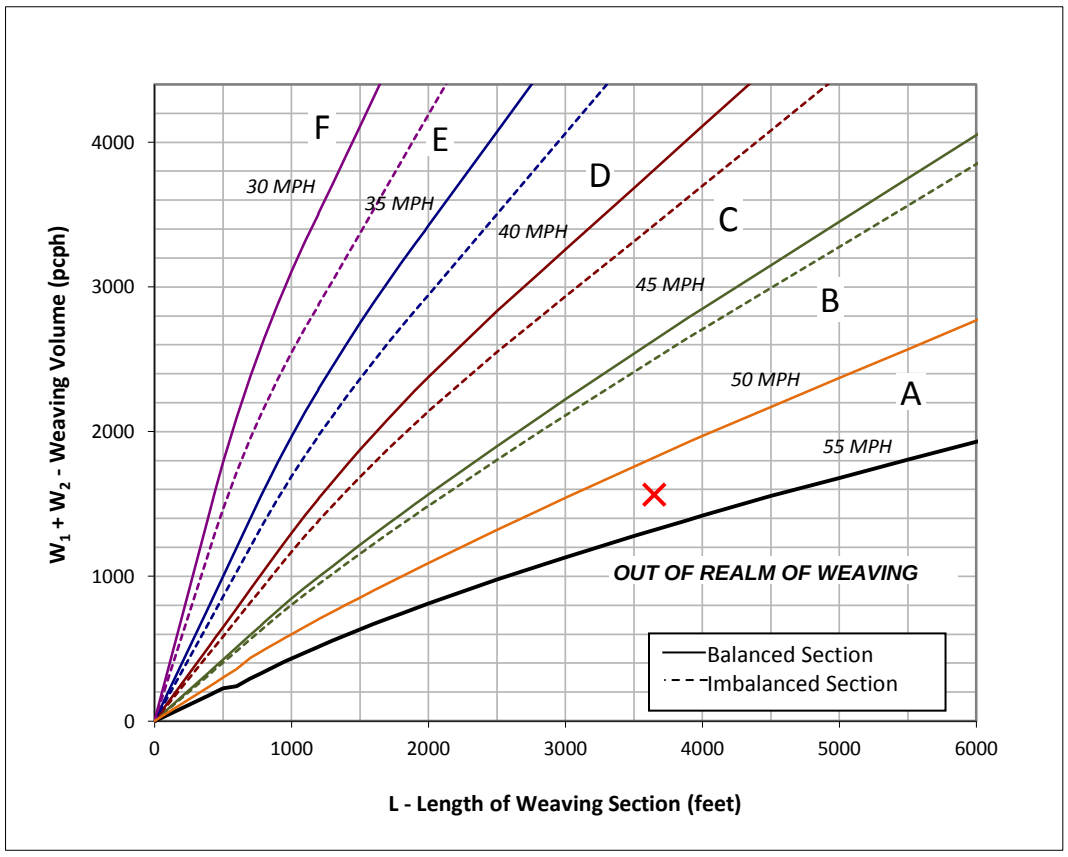
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,331	Volume (vph)*	516	Volume (vph)*	1,026
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,474	Volume (pcph)	524	Volume (pcph)	1,041

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - AM
Freeway	SR 99 SB
On-ramp	SR 32
Off-ramp	E 20th Street



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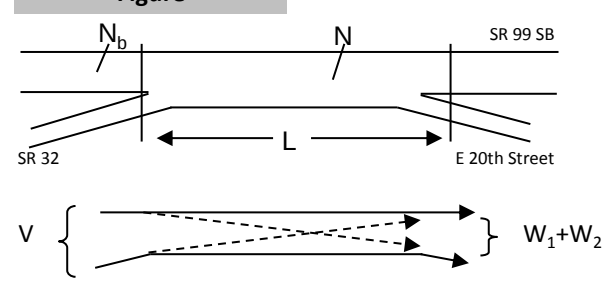


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **52.6**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,491**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

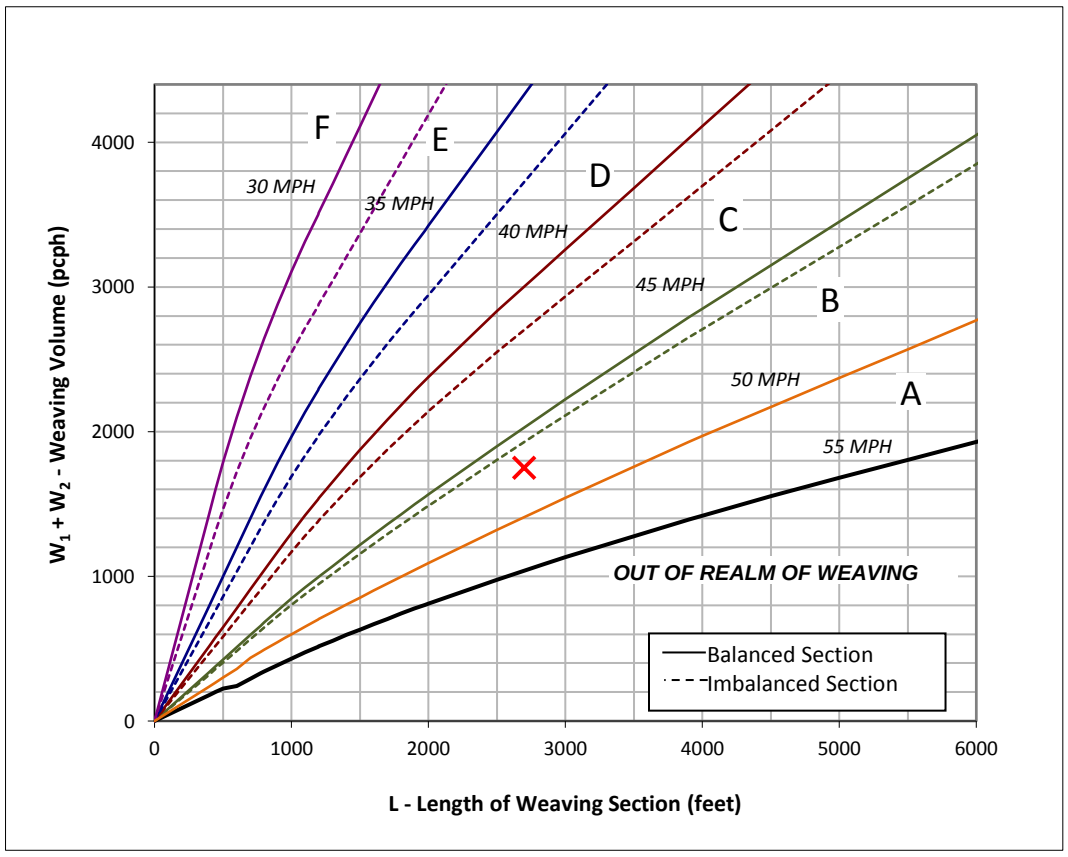
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,700

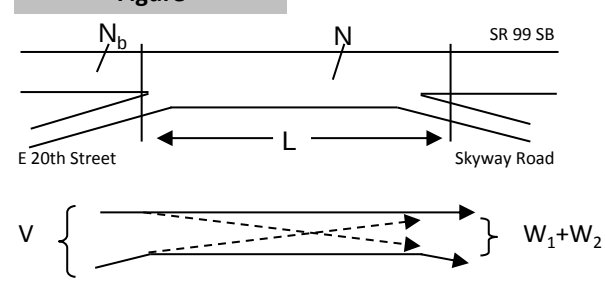
Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - AM
Freeway	SR 99 SB
On-ramp	E 20th Street
Off-ramp	Skyway Road

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,541	Volume (vph)*	285	Volume (vph)*	1,439
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,658	Volume (pcph)	289	Volume (pcph)	1,461



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   45 MPH and **50 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **46.7**
4. Weaving Intensity Factor (k) **2.21**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,336**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Define Freeway Segment							
Type	Basic	Diverge	Basic	Merge	Weave	Basic	Weave
Length (ft)	5,150	1,500	1,850	1,850	3,100	2,500	3,650
Accel Length				250			
Decel Length		100					
Mainline Volume	2,823	2,823	2,361	2,361	2,937	3,500	3,500
On Ramp Volume				576	1,023		1,378
Off Ramp Volume		462			460		691
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	2,823	2,823	2,361	2,937	3,960	3,500	4,878
PHF	0.89	0.89	0.89	0.89	0.89	0.96	0.96
GP Lanes	2	2	2	2	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,277	3,277	2,740	3,409	4,596	3,766	5,249
GP Flow (pcphpl)	1,638	1,638	1,370	1,704	1,532	1,883	1,750
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.2	1.8	1.2
Calculated FFS	73.6	73.6	73.6	73.6	74.2	73.6	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.70	0.70	0.58	0.73	0.65	0.80	0.74
Speed (mph)	64.2	64.2	65.0	63.7	64.8	61.7	63.3
Density (pcphpl)	25.5	25.5	21.1	26.8	23.7	30.5	27.7
LOS	C	C	C	D	C	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)		3,277		2,773	3,468		3,807
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{IN} v/c ratio		0.70		0.59	0.74		0.81
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)		2,767		3,409	4,105		4,511
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{OUT} v/c ratio		0.59		0.73	0.87		0.96

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)				576	1,023		1,378
PHF				0.92	0.92		0.97
Total Lanes				1	1		1
Terrain				Level	Level		Level
Grade %				0.0%	0.0%		0.0%
Grade Length (mi)				0.00	0.00		0.00
Truck & Bus %				3.0%	3.0%		3.0%
RV %				0.0%	0.0%		0.0%
E_T				1.5	1.5		1.5
E_R				1.2	1.2		1.2
f_{HV}				0.985	0.985		0.985
f_p				1.00	1.00		1.00
On Flow (pcph)				635	1,129		1,442
On Flow (pcphpl)				635	1,129		1,442
Calculate On Ramp Roadway Operations							
On Ramp Type				Right	Right		Right
On Ramp Speed (mph)				25	45		25
On Ramp Cap (pcph)				1,900	2,100		1,900
On Ramp v/c ratio				0.33	0.54		0.76

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Off Ramp Flow Rate							
Off Volume (vph)		462			460		691
PHF		0.92			0.95		0.95
Total Lanes		1			1		1
Terrain		Level			Level		Level
Grade %		0.0%			2.0%		0.0%
Grade Length (mi)		0.00			0.00		0.00
Truck & Bus %		3.0%			3.0%		3.0%
RV %		0.0%			0.0%		0.0%
E_T		1.5			1.5		1.5
E_R		1.2			1.2		1.2
f_{HV}		0.985			0.985		0.985
f_p		1.00			1.00		1.00
Off Flow (pcph)		510			491		738
Off Flow (pcphpl)		510			491		738
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		2,100					
Off Ramp v/c ratio		0.24					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)				2,773			
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)				0.585			
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}				1.000			
v_{12} (pcph)				2,773			
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)				2,773			
v_{R12a} (pcph)				3,409			
Merge Speed Index				0.43			
Merge Area Speed				55.2			
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed				55.2			
Merge v/c ratio				0.74			
Merge Density				30.2			
Merge LOS				D			

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)		3,277					
Up Ramp L_{FQ}							
Down Ramp L_{FQ}							
P_{FD} (Eqn 13-9)		0.655					
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}		1.000					
v_{12} (pcph)		3,277					
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)		3,277					
Diverge Speed Index		0.34					
Diverge Area Speed		57.1					
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed		57.1					
Diverge v/c ratio		0.74					
Diverge Density		31.5					
Diverge LOS		D					

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On-Ramp to SR 32 Off Ramp
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.985
f_p					1.00		1.00
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					8.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.962		0.985
f_p					1.00		1.00
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					4.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.980		0.971
f_p					1.00		1.00
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.971
f_p					1.00		1.00
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

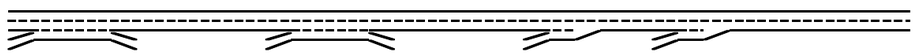
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Weave Type					One-sided		One-sided
Weave Length					2,100		2,650
Segment Lanes					3		3
Weave Lanes							
Weave Flow (pcph)					#VALUE!		#VALUE!
Non-Weave Flow					#VALUE!		#VALUE!
Segment Flow					#VALUE!		#VALUE!
Max Weave Length					#VALUE!		#VALUE!
Length Check					#VALUE!		#VALUE!
Ideal Weave Capacity					#VALUE!		#VALUE!
f_{HV}					#VALUE!		#VALUE!
f_p					#VALUE!		#VALUE!
Capacity Condition 1					#VALUE!		#VALUE!
Capacity Condition 2					#VALUE!		#VALUE!
Weave v/c ratio					#VALUE!		#VALUE!
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	0.70	0.74	0.58	0.74	#VALUE!	0.80	#VALUE!
Segment Density	25.5	31.5	21.1	30.2	#VALUE!	30.5	#VALUE!
Segment LOS	C	D	C	D	#VALUE!	D	#VALUE!
Over Capacity					#VALUE!		#VALUE!

Location	1	2	3	4	5	6	7



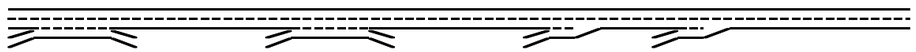
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Sreet Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment							
Type	Weave	Basic	Weave	Basic	Merge	Merge	Basic
Length (ft)	3,650	1,100	2,700	2,000	2,000	1,050	5,150
Accel Length					400	400	
Decel Length							
Mainline Volume	4,068	3,516	3,516	2,810	2,810	3,113	3,357
On Ramp Volume	900		561		303	244	
Off Ramp Volume	1,452		1,267				
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,968	3,516	4,077	2,810	3,113	3,357	3,357
PHF	0.9	0.9	0.9	0.88	0.88	0.88	0.88
GP Lanes	3	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	5,702	4,036	4,679	3,299	3,654	3,941	3,941
GP Flow (pcphpl)	1,901	2,018	1,560	1,649	1,827	1,970	1,970
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.2	1.8	1.2	1.8	1.8	1.8	1.8
Calculated FFS	74.2	73.6	74.2	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.81	0.86	0.66	0.70	0.78	0.84	0.84
Speed (mph)	61.4	59.6	64.6	64.1	62.4	60.4	60.4
Density (pcphpl)	30.9	33.9	24.1	25.7	29.3	32.6	32.6
LOS	D	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	5,686		4,086		3,337	3,665	
GP_{IN} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio	1.21		0.87		0.71	0.78	
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	4,151		3,326		3,654	3,941	
GP_{OUT} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio	0.88		0.71		0.78	0.84	

Location	1	2	3	4	5	6	7



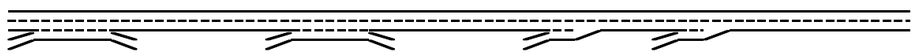
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Sreet Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)	900		561		303	244	
PHF	55		0.96		0.97	0.9	
Total Lanes	1		1		1	1	
Terrain	Level		Level		Level	Level	
Grade %	0.0%		0.0%		0.0%	0.0%	
Grade Length (mi)	0.00		0.00		0.00	0.00	
Truck & Bus %	3.0%		3.0%		3.0%	3.0%	
RV %	0.0%		0.0%		0.0%	0.0%	
E_T	1.5		1.5		1.5	1.5	
E_R	1.2		1.2		1.2	1.2	
f_{HV}	0.985		0.985		0.985	0.985	
f_p	1.00		1.00		1.00	1.00	
On Flow (pcph)	17		593		317	275	
On Flow (pcphpl)	17		593		317	275	
Calculate On Ramp Roadway Operations							
On Ramp Type			Right		Right	Right	
On Ramp Speed (mph)			45		25	45	
On Ramp Cap (pcph)			2,100		1,900	2,100	
On Ramp v/c ratio			0.28		0.17	0.13	

Location	1	2	3	4	5	6	7



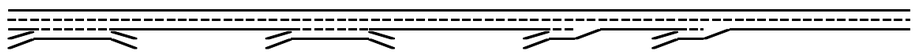
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Sreet Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate							
Off Volume (vph)	1,452		1,267				
PHF	0.95		0.95				
Total Lanes	1		1				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
Off Flow (pcph)	1,551		1,354				
Off Flow (pcphpl)	1,551		1,354				
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		#VALUE!					
Off Ramp v/c ratio		#VALUE!					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)					3,337	3,665	
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.589	0.589	
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000	1.000	
v_{12} (pcph)					3,337	3,665	
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,337	3,665	
v_{R12a} (pcph)					3,654	3,941	
Merge Speed Index					0.45	0.49	
Merge Area Speed					54.6	53.8	
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					54.6	53.8	
Merge v/c ratio					0.79	0.86	
Merge Density					31.3	33.6	
Merge LOS					D	D	

Location	1	2	3	4	5	6	7



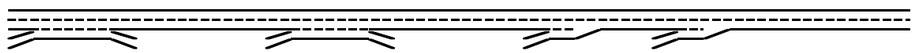
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Sreet Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)							
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)							
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}							
v_{12} (pcph)							
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)							
Diverge Speed Index							
Diverge Area Speed							
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							
Diverge v/c ratio							
Diverge Density							
Diverge LOS							

Location	1	2	3	4	5	6	7



Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Sreet Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Sreet Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type	One-sided		One-sided				
Weave Length	2,650		1,700				
Segment Lanes	3		3				
Weave Lanes							
Weave Flow (pcph)	#VALUE!		#VALUE!				
Non-Weave Flow	#VALUE!		#VALUE!				
Segment Flow	#VALUE!		#VALUE!				
Max Weave Length	#VALUE!		#VALUE!				
Length Check	#VALUE!		#VALUE!				
Ideal Weave Capacity	#VALUE!		#VALUE!				
f_{HV}	#VALUE!		#VALUE!				
f_P	#VALUE!		#VALUE!				
Capacity Condition 1	#VALUE!		#VALUE!				
Capacity Condition 2	#VALUE!		#VALUE!				
Weave v/c ratio	#VALUE!		#VALUE!				
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	#VALUE!	0.86	#VALUE!	0.70	0.79	0.86	0.84
Segment Density	#VALUE!	#VALUE!	#VALUE!	25.7	31.3	33.6	32.6
Segment LOS	#VALUE!	#VALUE!	#VALUE!	C	D	D	D
Over Capacity	#VALUE!	#VALUE!	#VALUE!				

Leisch Method for Weaving Analysis

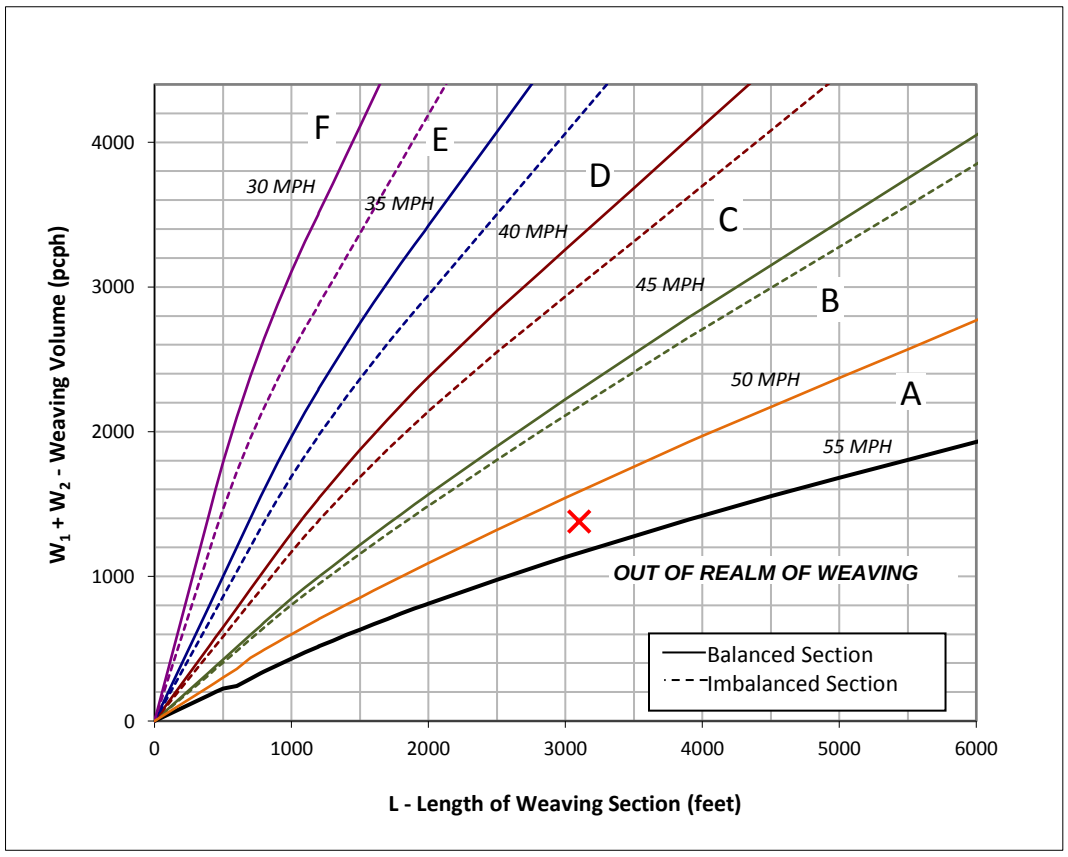
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,100

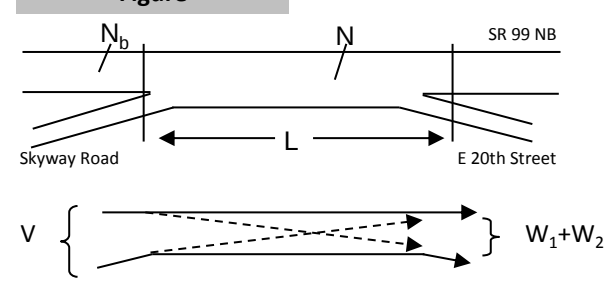
Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - PM
Freeway	SR 99 NB
On-ramp	Skyway Road
Off-ramp	E 20th Street

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,960	Volume (vph)*	961	Volume (vph)*	398
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,091	Volume (pcph)	975	Volume (pcph)	404



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **52.4**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,364**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

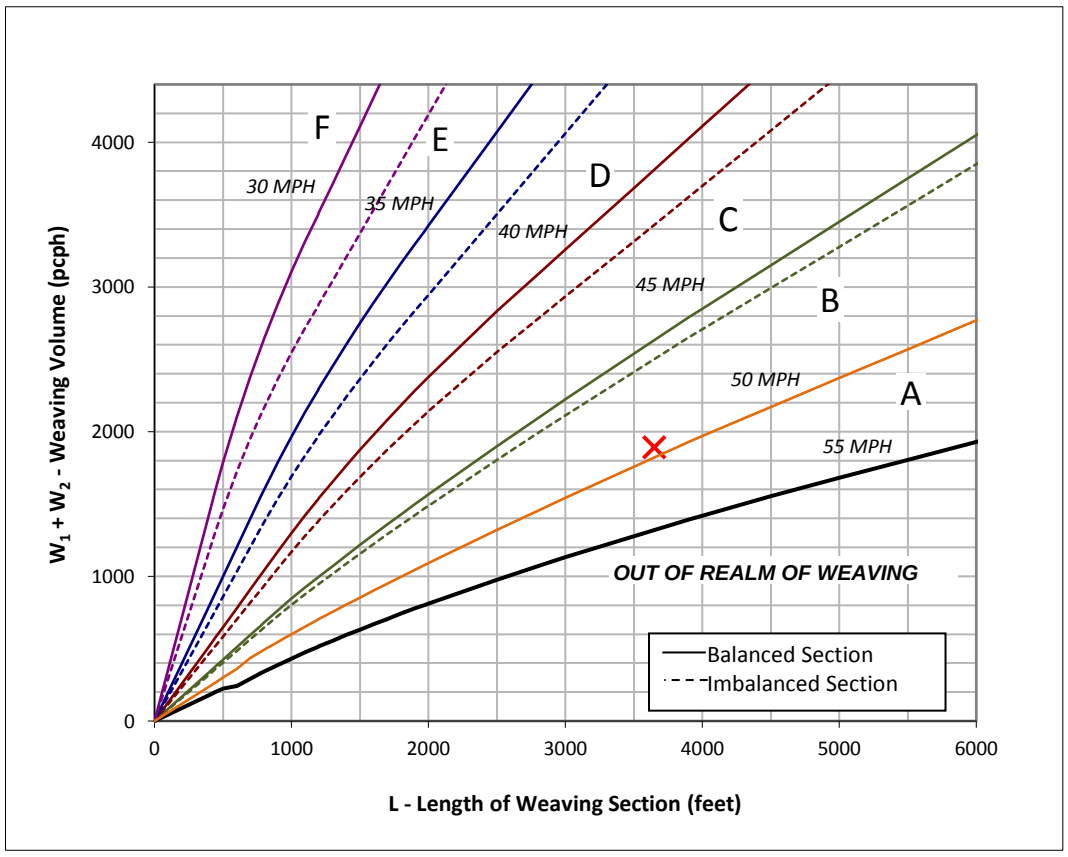
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - PM
Freeway	SR 99 NB
On-ramp	E 20th Street
Off-ramp	SR 32

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,878	Volume (vph)*	1,275	Volume (vph)*	588
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	5,039	Volume (pcph)	1,294	Volume (pcph)	597



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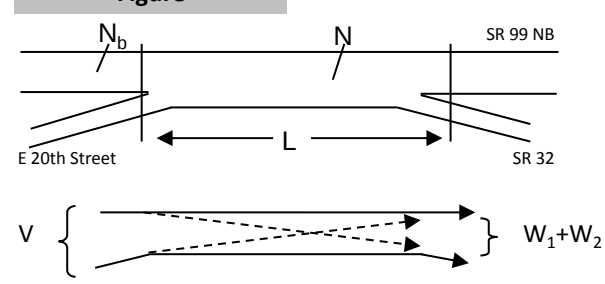


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   45 MPH and **50 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **49.5**
4. Weaving Intensity Factor (k) **1.03**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,685**

6. Level of Service (LOS) **E**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

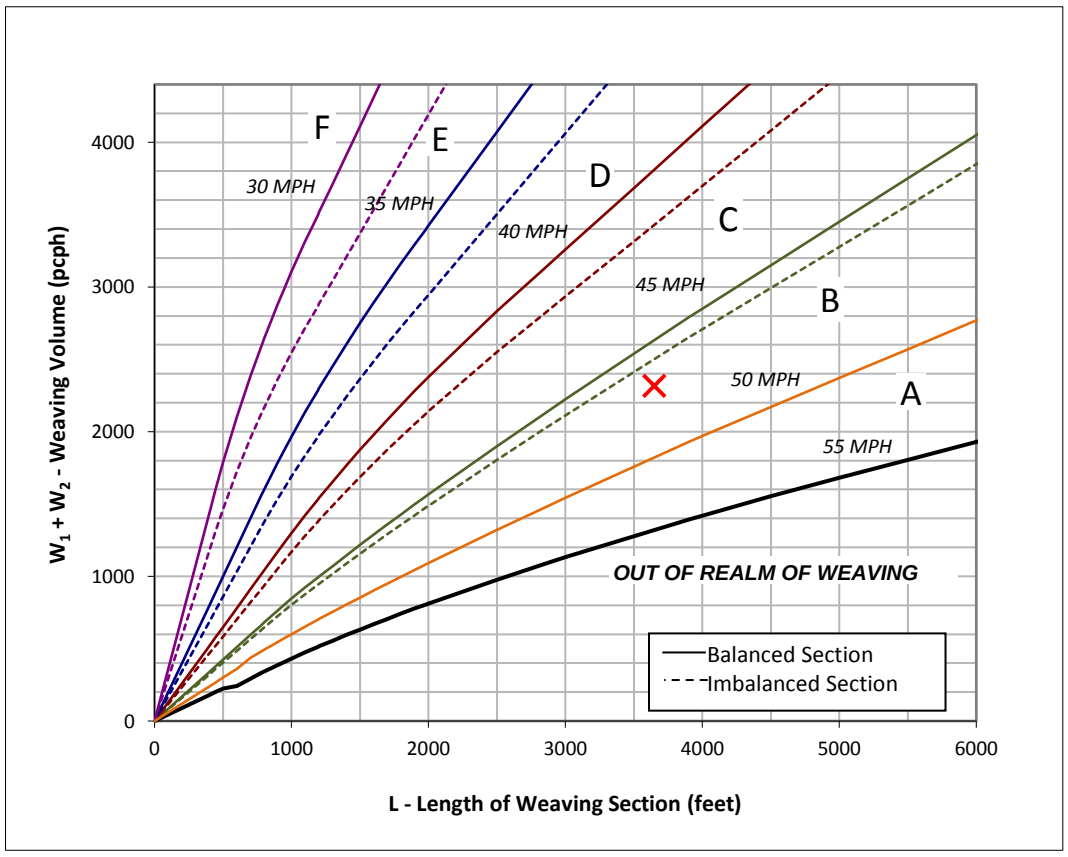
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,968	Volume (vph)*	865	Volume (vph)*	1,417
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	5,132	Volume (pcph)	878	Volume (pcph)	1,438

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - PM
Freeway	SR 99 SB
On-ramp	SR 32
Off-ramp	E 20th Street



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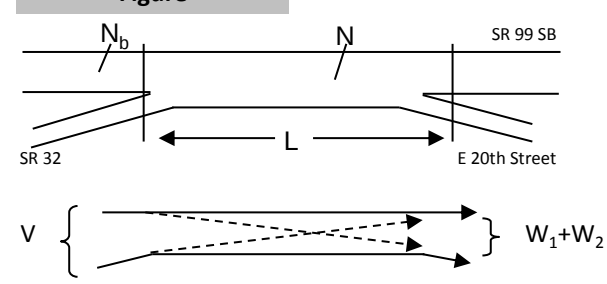


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   45 MPH and **50 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **46.4**
4. Weaving Intensity Factor (k) **1.53**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,865**

6. Level of Service (LOS) **E**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

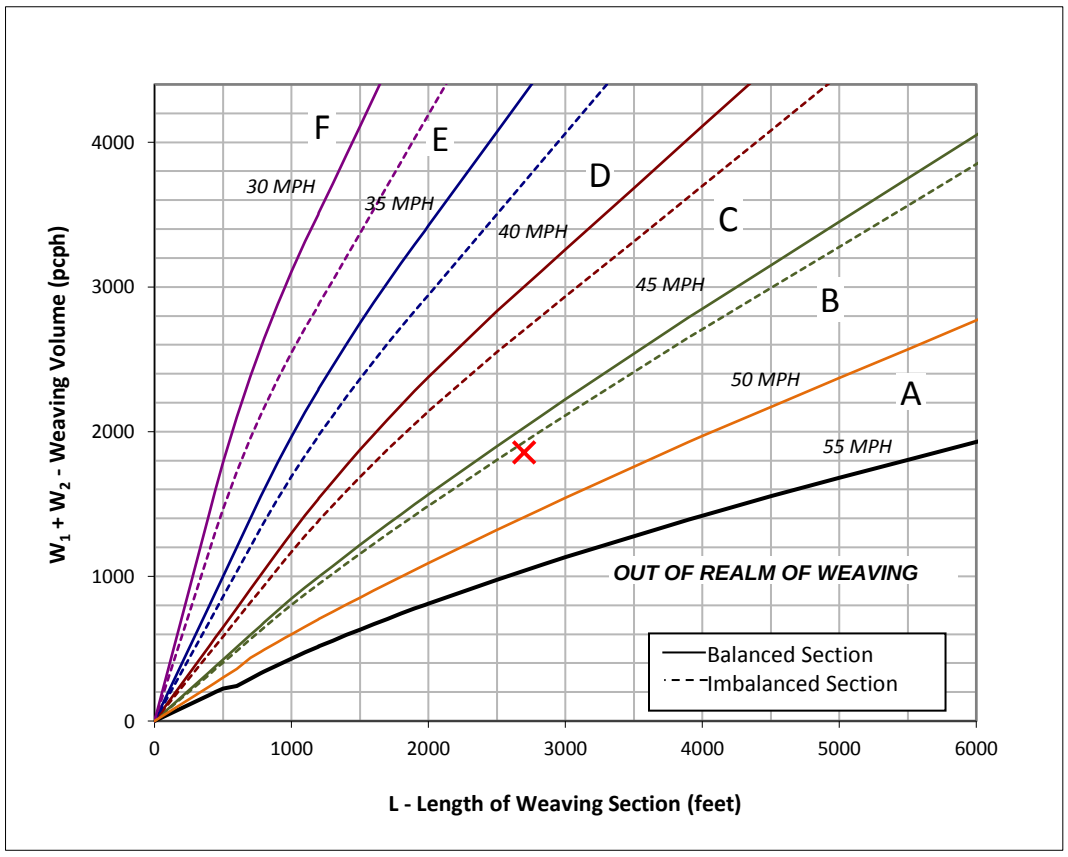
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,700

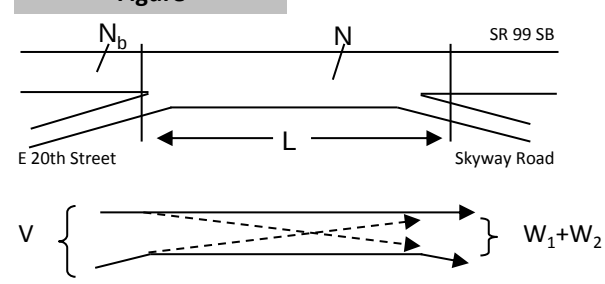
Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - PM
Freeway	SR 99 SB
On-ramp	E 20th Street
Off-ramp	Skyway Road

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,077	Volume (vph)*	561	Volume (vph)*	1,267
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,212	Volume (pcph)	569	Volume (pcph)	1,286



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   45 MPH and **50 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **45.7**
4. Weaving Intensity Factor (k) **1.67**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,531**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th St Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Define Freeway Segment							
Type	Basic	Diverge	Basic	Merge	Weave	Basic	Weave
Length (ft)	5,150	1,500	1,850	1,850	3,100	2,500	3,650
Accel Length				250			
Decel Length		100					
Mainline Volume	1,811	1,811	1,516	1,516	1,803	2,017	2,017
On Ramp Volume				287	676		1,283
Off Ramp Volume		295			462		572
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	1,811	1,811	1,516	1,803	2,479	2,017	3,300
PHF	0.9	0.9	0.9	0.9	0.9	0.95	0.95
GP Lanes	2	2	2	2	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,079	2,079	1,740	2,069	2,845	2,193	3,588
GP Flow (pcphpl)	1,039	1,039	870	1,035	948	1,097	1,196
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.2	1.8	1.2
Calculated FFS	73.6	73.6	73.6	73.6	74.2	73.6	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.44	0.44	0.37	0.44	0.40	0.47	0.51
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	16.0	16.0	13.4	15.9	14.6	16.9	18.4
LOS	B	B	B	B	B	B	C
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)		2,079		1,753	2,100		2,246
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{IN} v/c ratio		0.44		0.37	0.45		0.48
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)		1,753		2,069	2,352		2,977
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{OUT} v/c ratio		0.37		0.44	0.50		0.63

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th St Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)				287	676		1,283
PHF				0.92	0.92		0.97
Total Lanes				1	1		1
Terrain				Level	Level		Level
Grade %				0.0%	0.0%		0.0%
Grade Length (mi)				0.00	0.00		0.00
Truck & Bus %				3.0%	3.0%		3.0%
RV %				0.0%	0.0%		0.0%
E_T				1.5	1.5		1.5
E_R				1.2	1.2		1.2
f_{HV}				0.985	0.985		0.985
f_p				1.00	1.00		1.00
On Flow (pcph)				317	746		1,343
On Flow (pcphpl)				317	746		1,343
Calculate On Ramp Roadway Operations							
On Ramp Type				Right	Right		Right
On Ramp Speed (mph)				25	45		45
On Ramp Cap (pcph)				1,900	2,100		2,100
On Ramp v/c ratio				0.17	0.36		0.64

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th St Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Off Ramp Flow Rate							
Off Volume (vph)		295			462		572
PHF		0.92			0.95		0.95
Total Lanes		1			1		1
Terrain		Level			Level		Level
Grade %		0.0%			2.0%		0.0%
Grade Length (mi)		0.00			0.00		0.00
Truck & Bus %		3.0%			3.0%		3.0%
RV %		0.0%			0.0%		0.0%
E_T		1.5			1.5		1.5
E_R		1.2			1.2		1.2
f_{HV}		0.985			0.985		0.985
f_p		1.00			1.00		1.00
Off Flow (pcph)		325			494		611
Off Flow (pcphpl)		325			494		611
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		2,100					
Off Ramp v/c ratio		0.15					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)				1,753			
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)				0.585			
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}				1.000			
v_{12} (pcph)				1,753			
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)				1,753			
v_{R12a} (pcph)				2,069			
Merge Speed Index				0.34			
Merge Area Speed				57.2			
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed				57.2			
Merge v/c ratio				0.45			
Merge Density				19.9			
Merge LOS				B			

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th St Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)		2,079					
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)		0.693					
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}		1.000					
v_{12} (pcph)		2,079					
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)		2,079					
Diverge Speed Index		0.33					
Diverge Area Speed		57.5					
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed		57.5					
Diverge v/c ratio		0.47					
Diverge Density		21.2					
Diverge LOS		C					

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th St Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.985
f_p					1.00		1.00
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					8.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.962		0.985
f_p					1.00		1.00
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					4.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.980		0.971
f_p					1.00		1.00
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.971
f_p					1.00		1.00
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

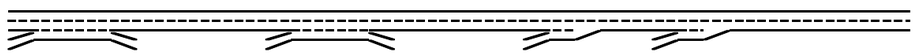
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th St Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Weave Type					One-sided		One-sided
Weave Length					2,100		2,650
Segment Lanes					3		3
Weave Lanes							
Weave Flow (pcph)					#VALUE!		#VALUE!
Non-Weave Flow					#VALUE!		#VALUE!
Segment Flow					#VALUE!		#VALUE!
Max Weave Length					#VALUE!		#VALUE!
Length Check					#VALUE!		#VALUE!
Ideal Weave Capacity					#VALUE!		#VALUE!
f_{HV}					#VALUE!		#VALUE!
f_p					#VALUE!		#VALUE!
Capacity Condition 1					#VALUE!		#VALUE!
Capacity Condition 2					#VALUE!		#VALUE!
Weave v/c ratio					#VALUE!		#VALUE!
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	0.44	0.47	0.37	0.45	#VALUE!	0.47	#VALUE!
Segment Density	16.0	21.2	13.4	19.9	#VALUE!	16.9	#VALUE!
Segment LOS	B	C	B	B	#VALUE!	B	#VALUE!
Over Capacity					#VALUE!		#VALUE!

Location	1	2	3	4	5	6	7



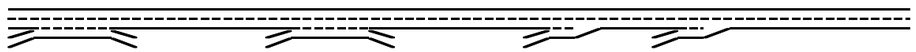
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment							
Type	Weave	Basic	Weave	Basic	Merge	Merge	Basic
Length (ft)	3,650	1,100	2,700	2,000	2,000	1,050	5,150
Accel Length					400	400	
Decel Length							
Mainline Volume	3,258	2,360	2,360	2,054	2,054	2,264	2,433
On Ramp Volume	614		529		210	169	
Off Ramp Volume	1,512		835				
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	3,872	2,360	2,889	2,054	2,264	2,433	2,433
PHF	0.97	0.97	0.97	0.87	0.87	0.87	0.87
GP Lanes	3	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,123	2,513	3,077	2,439	2,688	2,889	2,889
GP Flow (pcphpl)	1,374	1,257	1,026	1,219	1,344	1,444	1,444
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.2	1.8	1.2	1.8	1.8	1.8	1.8
Calculated FFS	74.2	73.6	74.2	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.58	0.53	0.44	0.52	0.57	0.61	0.61
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	21.1	19.3	15.8	18.8	20.7	22.2	22.2
LOS	C	C	B	C	C	C	C
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,112		2,529		2,468	2,698	
GP_{IN} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio	0.87		0.54		0.53	0.57	
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	2,508		2,185		2,688	2,889	
GP_{OUT} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio	0.53		0.46		0.57	0.61	

Location	1	2	3	4	5	6	7



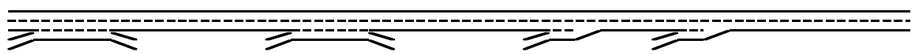
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)	614		529		210	169	
PHF	55		0.98		0.97	0.9	
Total Lanes	1		1		1	1	
Terrain	Level		Level		Level	Level	
Grade %	0.0%		0.0%		0.0%	0.0%	
Grade Length (mi)	0.00		0.00		0.00	0.00	
Truck & Bus %	3.0%		3.0%		3.0%	3.0%	
RV %	0.0%		0.0%		0.0%	0.0%	
E_T	1.5		1.5		1.5	1.5	
E_R	1.2		1.2		1.2	1.2	
f_{HV}	0.985		0.985		0.985	0.985	
f_p	1.00		1.00		1.00	1.00	
On Flow (pcph)	11		548		220	191	
On Flow (pcphpl)	11		548		220	191	
Calculate On Ramp Roadway Operations							
On Ramp Type			Right		Right	Right	
On Ramp Speed (mph)			45		25	45	
On Ramp Cap (pcph)			2,100		1,900	2,100	
On Ramp v/c ratio			0.26		0.12	0.09	

Location	1	2	3	4	5	6	7



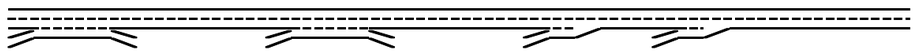
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate							
Off Volume (vph)	1,512		835				
PHF	0.95		0.95				
Total Lanes	1		1				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
Off Flow (pcph)	1,615		892				
Off Flow (pcphpl)	1,615		892				
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		#VALUE!					
Off Ramp v/c ratio		#VALUE!					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)					2,468	2,698	
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.589	0.589	
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000	1.000	
v_{12} (pcph)					2,468	2,698	
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					2,468	2,698	
v_{R12a} (pcph)					2,688	2,889	
Merge Speed Index					0.36	0.36	
Merge Area Speed					56.8	56.8	
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					56.8	56.8	
Merge v/c ratio					0.58	0.63	
Merge Density					23.8	25.4	
Merge LOS					C	C	

Location	1	2	3	4	5	6	7



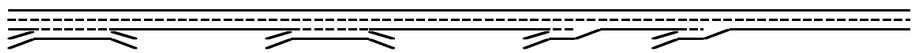
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)							
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)							
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}							
v_{12} (pcph)							
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)							
Diverge Speed Index							
Diverge Area Speed							
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							
Diverge v/c ratio							
Diverge Density							
Diverge LOS							

Location	1	2	3	4	5	6	7



Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type	One-sided		One-sided				
Weave Length	2,650		1,700				
Segment Lanes	3		3				
Weave Lanes							
Weave Flow (pcph)	#VALUE!		#VALUE!				
Non-Weave Flow	#VALUE!		#VALUE!				
Segment Flow	#VALUE!		#VALUE!				
Max Weave Length	#VALUE!		#VALUE!				
Length Check	#VALUE!		#VALUE!				
Ideal Weave Capacity	#VALUE!		#VALUE!				
f_{HV}	#VALUE!		#VALUE!				
f_p	#VALUE!		#VALUE!				
Capacity Condition 1	#VALUE!		#VALUE!				
Capacity Condition 2	#VALUE!		#VALUE!				
Weave v/c ratio	#VALUE!		#VALUE!				
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	#VALUE!	0.53	#VALUE!	0.52	0.58	0.63	0.61
Segment Density	#VALUE!	#VALUE!	#VALUE!	18.8	23.8	25.4	22.2
Segment LOS	#VALUE!	#VALUE!	#VALUE!	C	C	C	C
Over Capacity	#VALUE!	#VALUE!	#VALUE!				

Leisch Method for Weaving Analysis

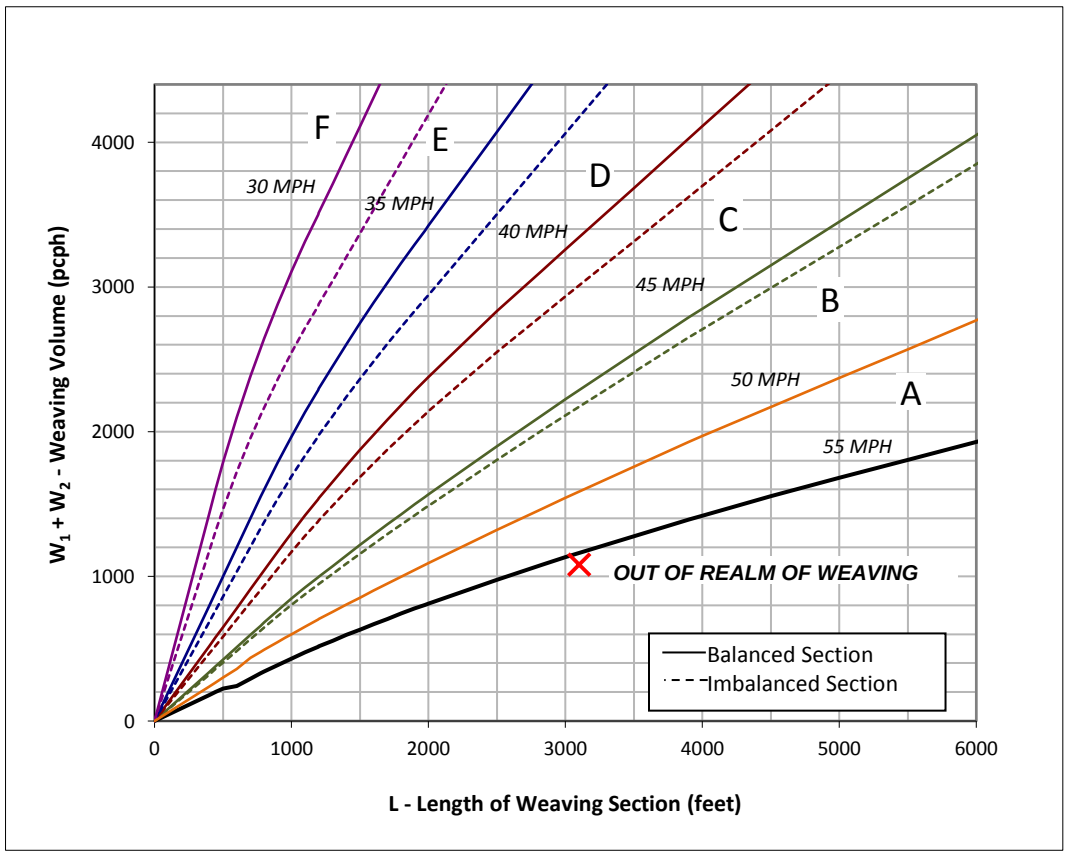
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,100

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - SAT
Freeway	SR 99 NB
On-ramp	Skyway Road
Off-ramp	E 20th Street

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	2,479	Volume (vph)*	640	Volume (vph)*	426
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,561	Volume (pcph)	650	Volume (pcph)	432



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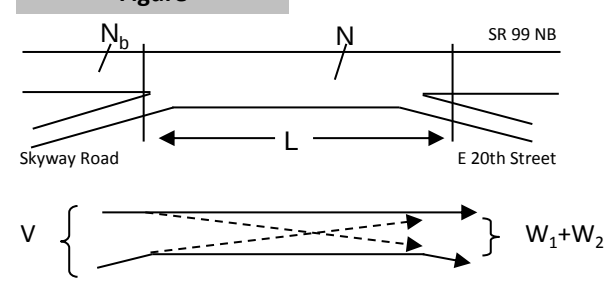


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **55.9**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **854**

6. Level of Service (LOS) **B**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

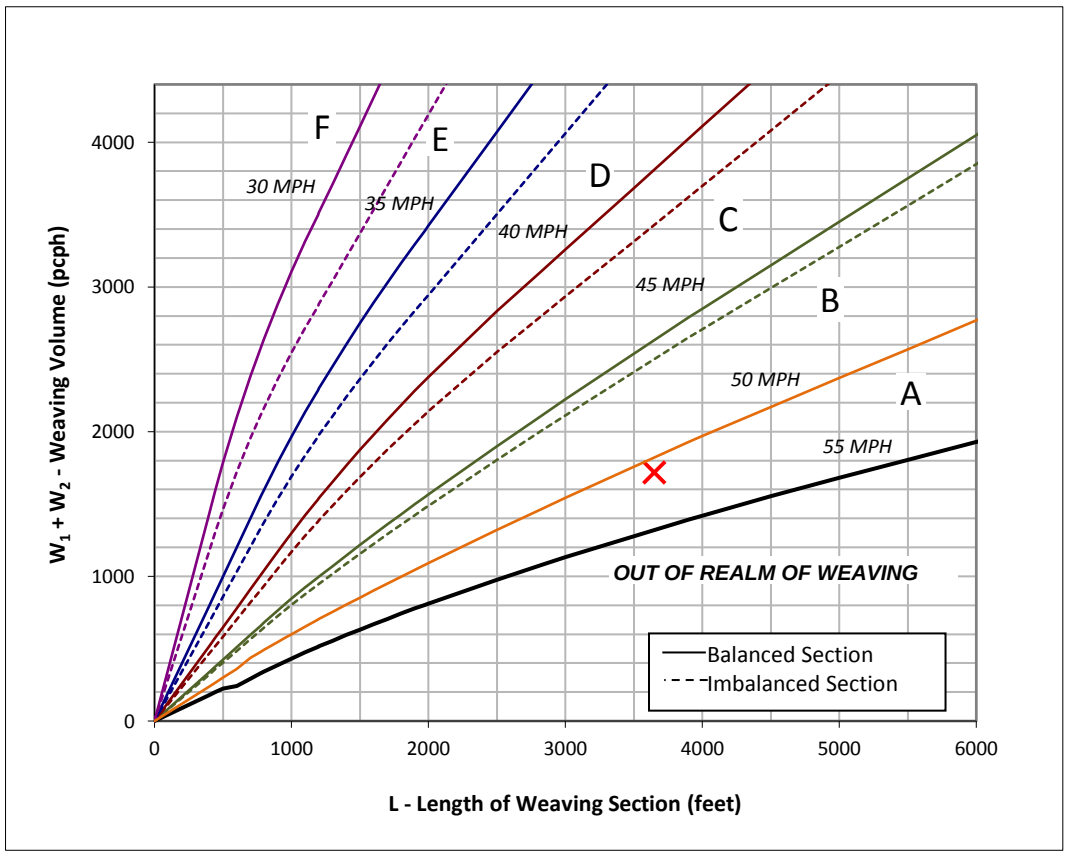
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - SAT
Freeway	SR 99 NB
On-ramp	E 20th Street
Off-ramp	SR 32

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,300	Volume (vph)*	1,202	Volume (vph)*	491
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,409	Volume (pcph)	1,220	Volume (pcph)	498



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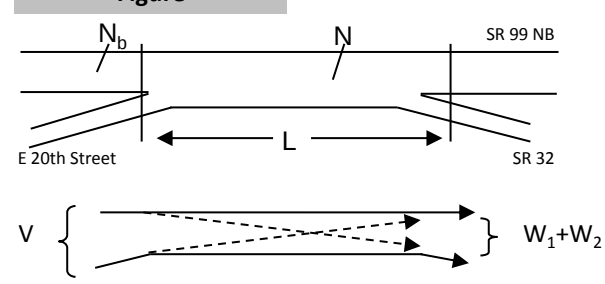


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **51.0**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,136**

6. Level of Service (LOS) **C**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

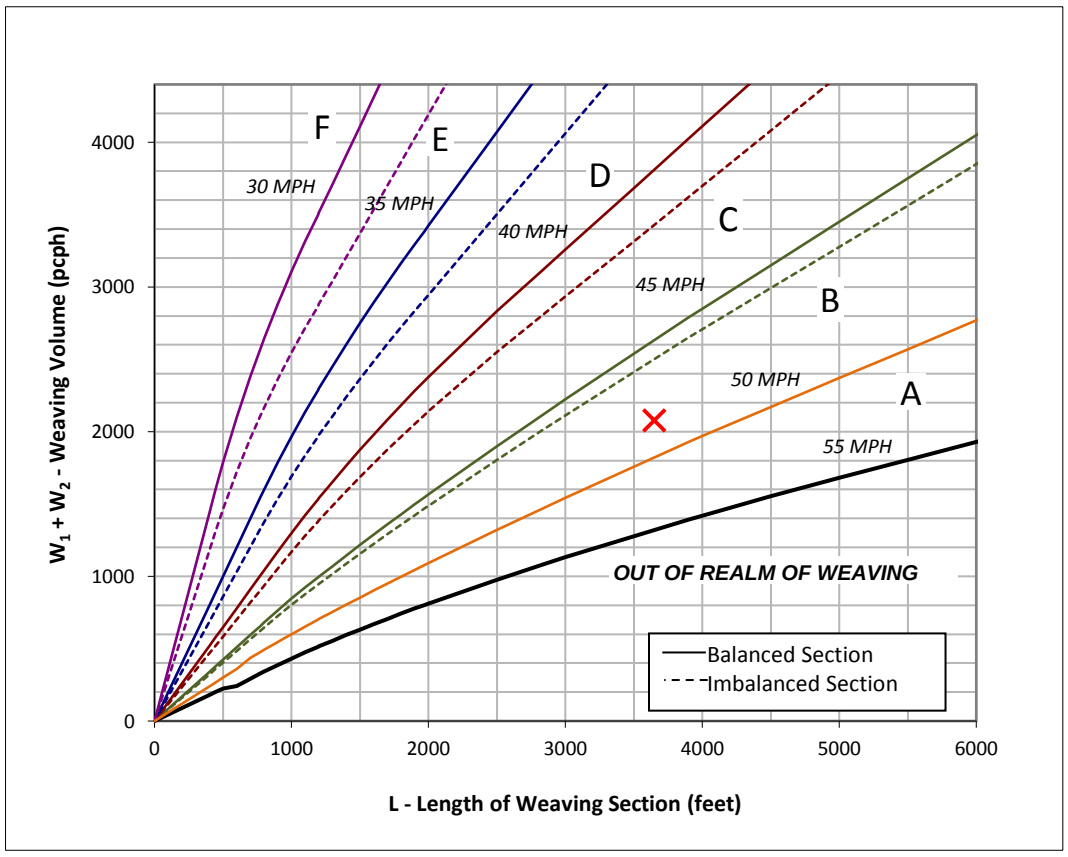
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - SAT
Freeway	SR 99 SB
On-ramp	SR 32
Off-ramp	E 20th Street

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,872	Volume (vph)*	575	Volume (vph)*	1,473
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,000	Volume (pcph)	584	Volume (pcph)	1,495



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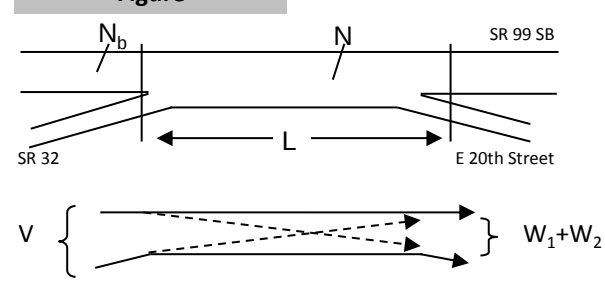


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   45 MPH and **50 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **48.1**
4. Weaving Intensity Factor (k) **1.23**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,377**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

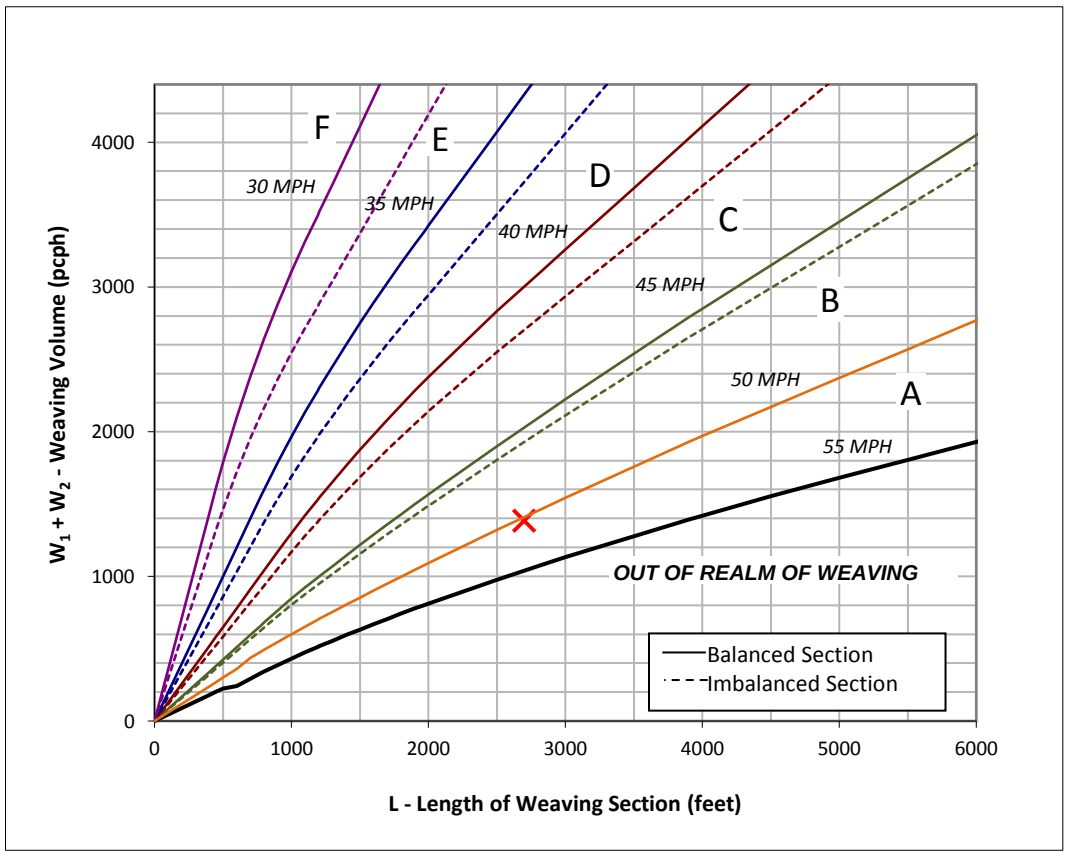
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,700

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative No Project - SAT
Freeway	SR 99 SB
On-ramp	E 20th Street
Off-ramp	Skyway Road

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	2,889	Volume (vph)*	529	Volume (vph)*	835
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,984	Volume (pcph)	537	Volume (pcph)	848



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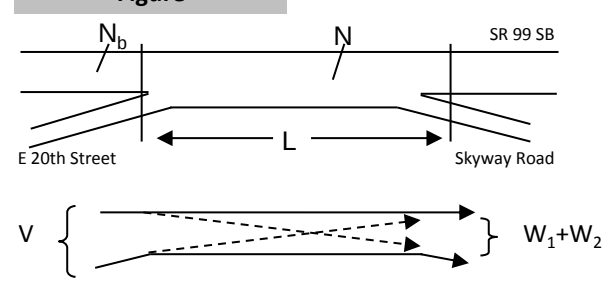


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **50.3**
4. Weaving Intensity Factor (k) **0.94**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **983**

6. Level of Service (LOS) **B**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Define Freeway Segment							
Type	Basic	Diverge	Basic	Merge	Weave	Basic	Weave
Length (ft)	5,150	1,500	1,850	1,850	3,100	2,500	3,650
Accel Length				250			
Decel Length		100					
Mainline Volume	2,646	2,646	2,262	2,262	2,537	3,162	3,162
On Ramp Volume				275	991		840
Off Ramp Volume		384			366		614
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	2,646	2,646	2,262	2,537	3,528	3,162	4,002
PHF	0.75	0.75	0.75	0.75	0.75	0.76	0.76
GP Lanes	2	2	2	2	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,644	3,644	3,116	3,494	4,859	4,298	5,440
GP Flow (pcphpl)	1,822	1,822	1,558	1,747	1,620	2,149	1,813
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.2	1.8	1.2
Calculated FFS	73.6	73.6	73.6	73.6	74.2	73.6	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.78	0.78	0.66	0.74	0.69	0.91	0.77
Speed (mph)	62.5	62.5	64.6	63.3	64.3	57.0	62.6
Density (pcphpl)	29.2	29.2	24.1	27.6	25.2	37.7	29.0
LOS	D	D	C	D	C	E	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)		3,644		3,191	3,766		4,561
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{IN} v/c ratio		0.78		0.68	0.80		0.97
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)		3,221		3,494	4,468		4,784
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{OUT} v/c ratio		0.69		0.74	0.95		1.02

Key

<> Express Lane (HOV)

No Trucks

Location	1	2	3	4	5	6	7
Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)				275	991		840
PHF				0.92	0.92		0.97
Total Lanes				1	1		1
Terrain				Level	Level		Level
Grade %				0.0%	0.0%		0.0%
Grade Length (mi)				0.00	0.00		0.00
Truck & Bus %				3.0%	3.0%		3.0%
RV %				0.0%	0.0%		0.0%
E_T				1.5	1.5		1.5
E_R				1.2	1.2		1.2
f_{HV}				0.985	0.985		0.985
f_p				1.00	1.00		1.00
On Flow (pcph)				303	1,093		879
On Flow (pcphpl)				303	1,093		879
Calculate On Ramp Roadway Operations							
On Ramp Type				Right	Right		Right
On Ramp Speed (mph)				25	45		45
On Ramp Cap (pcph)				1,900	2,100		2,100
On Ramp v/c ratio				0.16	0.52		0.42

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Off Ramp Flow Rate							
Off Volume (vph)		384			366		614
PHF		0.92			0.95		0.95
Total Lanes		1			1		1
Terrain		Level			Level		Level
Grade %		0.0%			2.0%		0.0%
Grade Length (mi)		0.00			0.00		0.00
Truck & Bus %		3.0%			3.0%		3.0%
RV %		0.0%			0.0%		0.0%
E_T		1.5			1.5		1.5
E_R		1.2			1.2		1.2
f_{HV}		0.985			0.985		0.985
f_p		1.00			1.00		1.00
Off Flow (pcph)		424			391		656
Off Flow (pcphpl)		424			391		656
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		2,100					
Off Ramp v/c ratio		0.20					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)				3,191			
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)				0.585			
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}				1.000			
v_{12} (pcph)				3,191			
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)				3,191			
v_{R12a} (pcph)				3,494			
Merge Speed Index				0.44			
Merge Area Speed				55.0			
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed				55.0			
Merge v/c ratio				0.76			
Merge Density				31.0			
Merge LOS				D			

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)		3,644					
Up Ramp L_{FQ}							
Down Ramp L_{FQ}							
P_{FD} (Eqn 13-9)		0.649					
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}		1.000					
v_{12} (pcph)		3,644					
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)		3,644					
Diverge Speed Index		0.34					
Diverge Area Speed		57.3					
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed		57.3					
Diverge v/c ratio		0.83					
Diverge Density		34.7					
Diverge LOS		D					

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On-Ramp to SR 32 Off Ramp
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.985
f_p					1.00		1.00
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					8.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.962		0.985
f_p					1.00		1.00
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					4.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.980		0.971
f_p					1.00		1.00
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.971
f_p					1.00		1.00
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

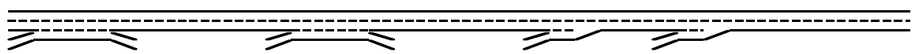
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Weave Type					One-sided		One-sided
Weave Length					2,100		2,650
Segment Lanes					3		3
Weave Lanes							
Weave Flow (pcph)					#VALUE!		#VALUE!
Non-Weave Flow					#VALUE!		#VALUE!
Segment Flow					#VALUE!		#VALUE!
Max Weave Length					#VALUE!		#VALUE!
Length Check					#VALUE!		#VALUE!
Ideal Weave Capacity					#VALUE!		#VALUE!
f_{HV}					#VALUE!		#VALUE!
f_p					#VALUE!		#VALUE!
Capacity Condition 1					#VALUE!		#VALUE!
Capacity Condition 2					#VALUE!		#VALUE!
Weave v/c ratio					#VALUE!		#VALUE!
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	0.78	0.83	0.66	0.76	#VALUE!	0.91	#VALUE!
Segment Density	29.2	34.7	24.1	31.0	#VALUE!	37.7	#VALUE!
Segment LOS	D	D	C	D	#VALUE!	E	#VALUE!
Over Capacity					#VALUE!		#VALUE!

Location	1	2	3	4	5	6	7



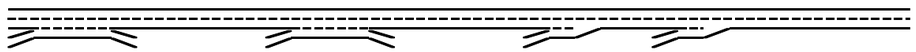
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment							
Type	Weave	Basic	Weave	Basic	Merge	Merge	Basic
Length (ft)	3,650	1,100	2,700	2,000	2,000	1,050	5,150
Accel Length					400	400	
Decel Length							
Mainline Volume	3,781	3,254	3,254	2,101	2,101	2,284	2,505
On Ramp Volume	571		286		183	221	
Off Ramp Volume	1,098		1,439				
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,352	3,254	3,540	2,101	2,284	2,505	2,505
PHF	0.84	0.84	0.84	0.81	0.81	0.81	0.81
GP Lanes	3	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	5,352	4,002	4,353	2,679	2,913	3,195	3,195
GP Flow (pcphpl)	1,784	2,001	1,451	1,340	1,456	1,597	1,597
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.2	1.8	1.2	1.8	1.8	1.8	1.8
Calculated FFS	74.2	73.6	74.2	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.76	0.85	0.62	0.57	0.62	0.68	0.68
Speed (mph)	62.9	59.9	65.0	65.0	65.0	64.4	64.4
Density (pcphpl)	28.4	33.4	22.3	20.6	22.4	24.8	24.8
LOS	D	D	C	C	C	C	C
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	5,341		4,051		2,721	2,945	
GP_{IN} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio	1.14		0.86		0.58	0.63	
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	4,179		2,816		2,913	3,195	
GP_{OUT} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio	0.89		0.60		0.62	0.68	

Location	1	2	3	4	5	6	7



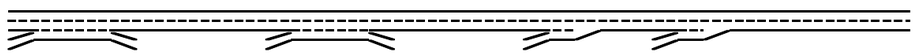
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)	571		286		183	221	
PHF	55		0.96		0.97	0.9	
Total Lanes	1		1		1	1	
Terrain	Level		Level		Level	Level	
Grade %	0.0%		0.0%		0.0%	0.0%	
Grade Length (mi)	0.00		0.00		0.00	0.00	
Truck & Bus %	3.0%		3.0%		3.0%	3.0%	
RV %	0.0%		0.0%		0.0%	0.0%	
E_T	1.5		1.5		1.5	1.5	
E_R	1.2		1.2		1.2	1.2	
f_{HV}	0.985		0.985		0.985	0.985	
f_p	1.00		1.00		1.00	1.00	
On Flow (pcph)	11		302		191	249	
On Flow (pcphpl)	11		302		191	249	
Calculate On Ramp Roadway Operations							
On Ramp Type			Right		Right	Right	
On Ramp Speed (mph)			45		25	45	
On Ramp Cap (pcph)			2,100		1,900	2,100	
On Ramp v/c ratio			0.14		0.10	0.12	

Location	1	2	3	4	5	6	7



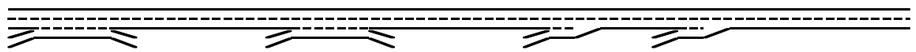
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate							
Off Volume (vph)	1,098		1,439				
PHF	0.95		0.95				
Total Lanes	1		1				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
Off Flow (pcph)	1,173		1,537				
Off Flow (pcphpl)	1,173		1,537				
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		#VALUE!					
Off Ramp v/c ratio		#VALUE!					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)					2,721	2,945	
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.589	0.589	
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000	1.000	
v_{12} (pcph)					2,721	2,945	
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					2,721	2,945	
v_{R12a} (pcph)					2,913	3,195	
Merge Speed Index					0.37	0.38	
Merge Area Speed					56.4	56.3	
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					56.4	56.3	
Merge v/c ratio					0.63	0.69	
Merge Density					25.6	27.8	
Merge LOS					C	C	

Location	1	2	3	4	5	6	7



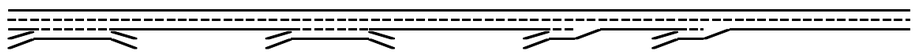
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)							
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)							
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}							
v_{12} (pcph)							
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)							
Diverge Speed Index							
Diverge Area Speed							
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							
Diverge v/c ratio							
Diverge Density							
Diverge LOS							

Location	1	2	3	4	5	6	7



Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type	One-sided		One-sided				
Weave Length	2,650		1,700				
Segment Lanes	3		3				
Weave Lanes							
Weave Flow (pcph)	#VALUE!		#VALUE!				
Non-Weave Flow	#VALUE!		#VALUE!				
Segment Flow	#VALUE!		#VALUE!				
Max Weave Length	#VALUE!		#VALUE!				
Length Check	#VALUE!		#VALUE!				
Ideal Weave Capacity	#VALUE!		#VALUE!				
f_{HV}	#VALUE!		#VALUE!				
f_P	#VALUE!		#VALUE!				
Capacity Condition 1	#VALUE!		#VALUE!				
Capacity Condition 2	#VALUE!		#VALUE!				
Weave v/c ratio	#VALUE!		#VALUE!				
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	#VALUE!	0.85	#VALUE!	0.57	0.63	0.69	0.68
Segment Density	#VALUE!	#VALUE!	#VALUE!	20.6	25.6	27.8	24.8
Segment LOS	#VALUE!	#VALUE!	#VALUE!	C	C	C	C
Over Capacity	#VALUE!	#VALUE!	#VALUE!				

Leisch Method for Weaving Analysis

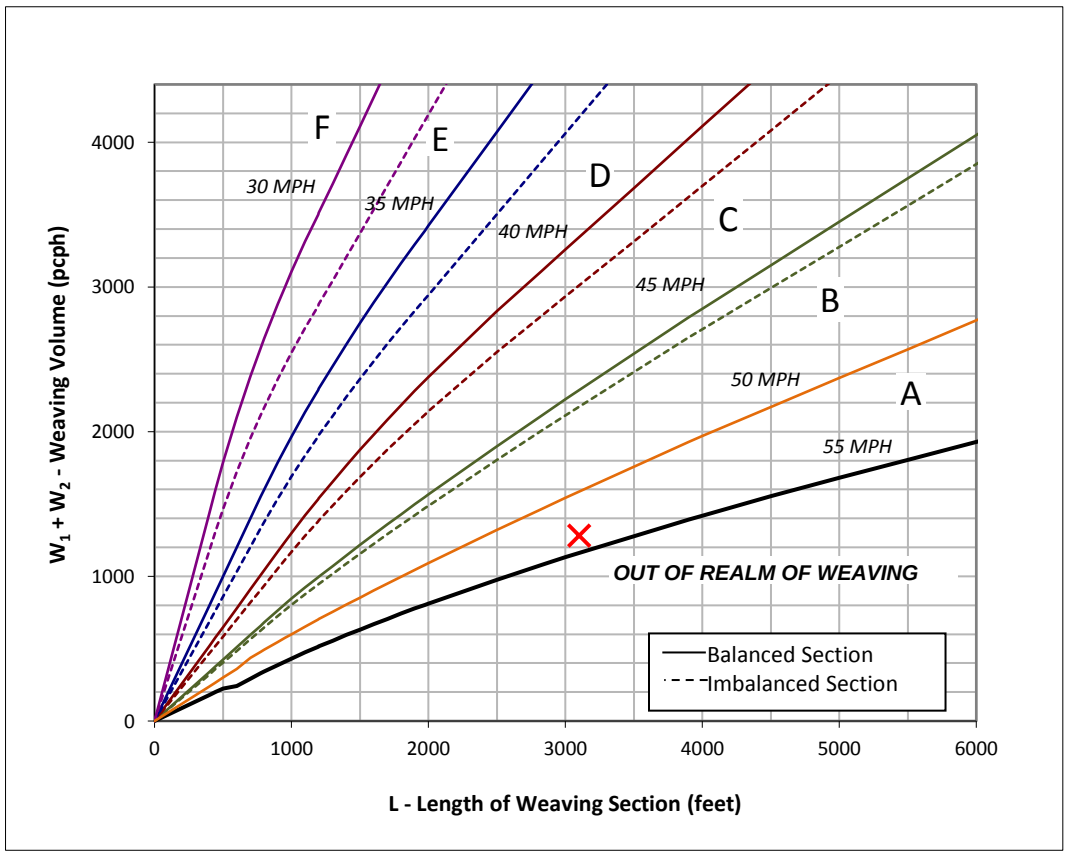
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,100

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - AM
Freeway	SR 99 NB
On-ramp	Skyway Road
Off-ramp	E 20th Street

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,528	Volume (vph)*	944	Volume (vph)*	319
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,644	Volume (pcph)	958	Volume (pcph)	324



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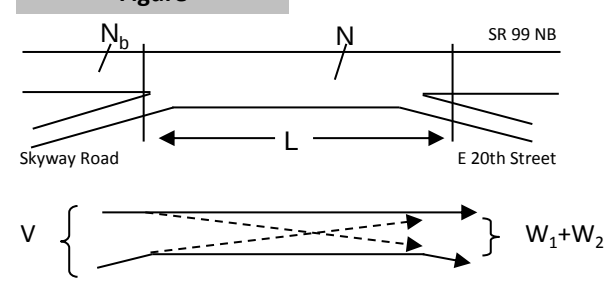


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **53.6**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,215**

6. Level of Service (LOS) **C**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

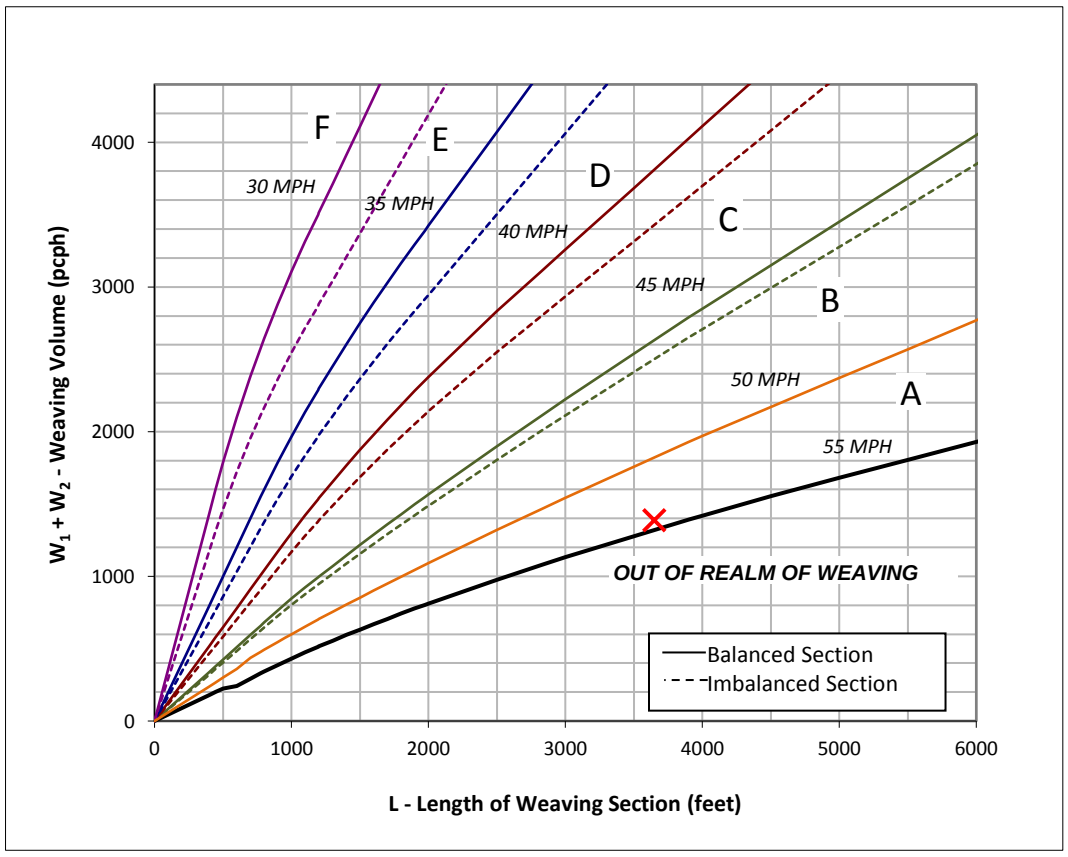
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - AM
Freeway	SR 99 NB
On-ramp	E 20th Street
Off-ramp	SR 32

	Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)
Volume (vph)*	4,002	Volume (vph)*	797	Volume (vph)*	571
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,134	Volume (pcph)	809	Volume (pcph)	580



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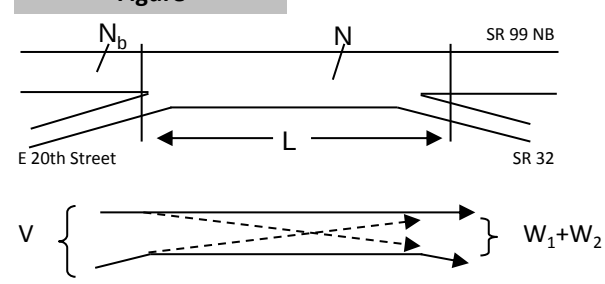


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **54.3**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,378**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

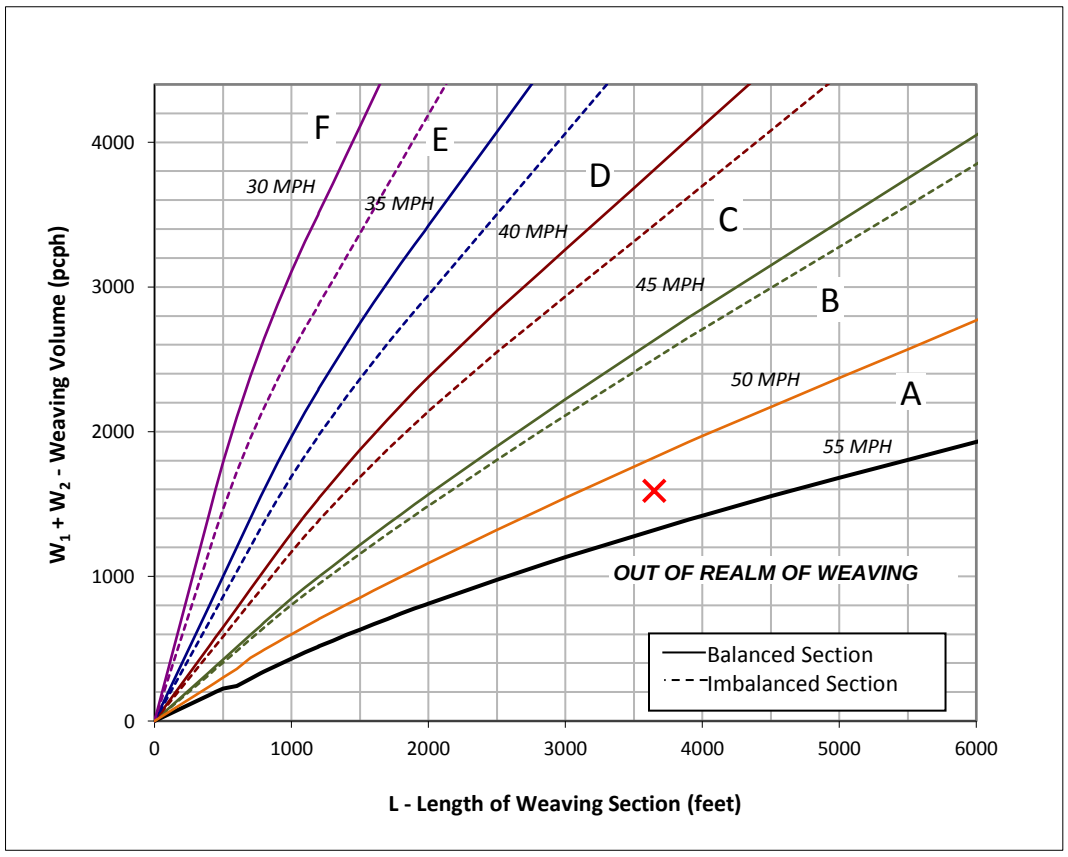
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,352	Volume (vph)*	521	Volume (vph)*	1,048
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,496	Volume (pcph)	529	Volume (pcph)	1,064

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - AM
Freeway	SR 99 SB
On-ramp	SR 32
Off-ramp	E 20th Street



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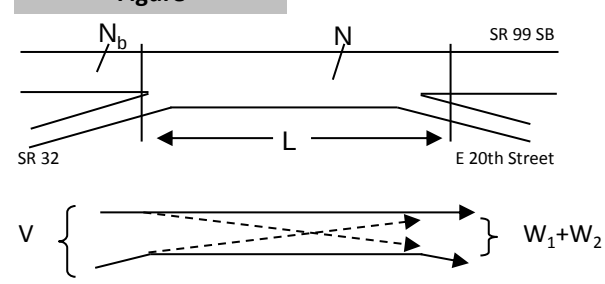


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **52.3**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,499**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

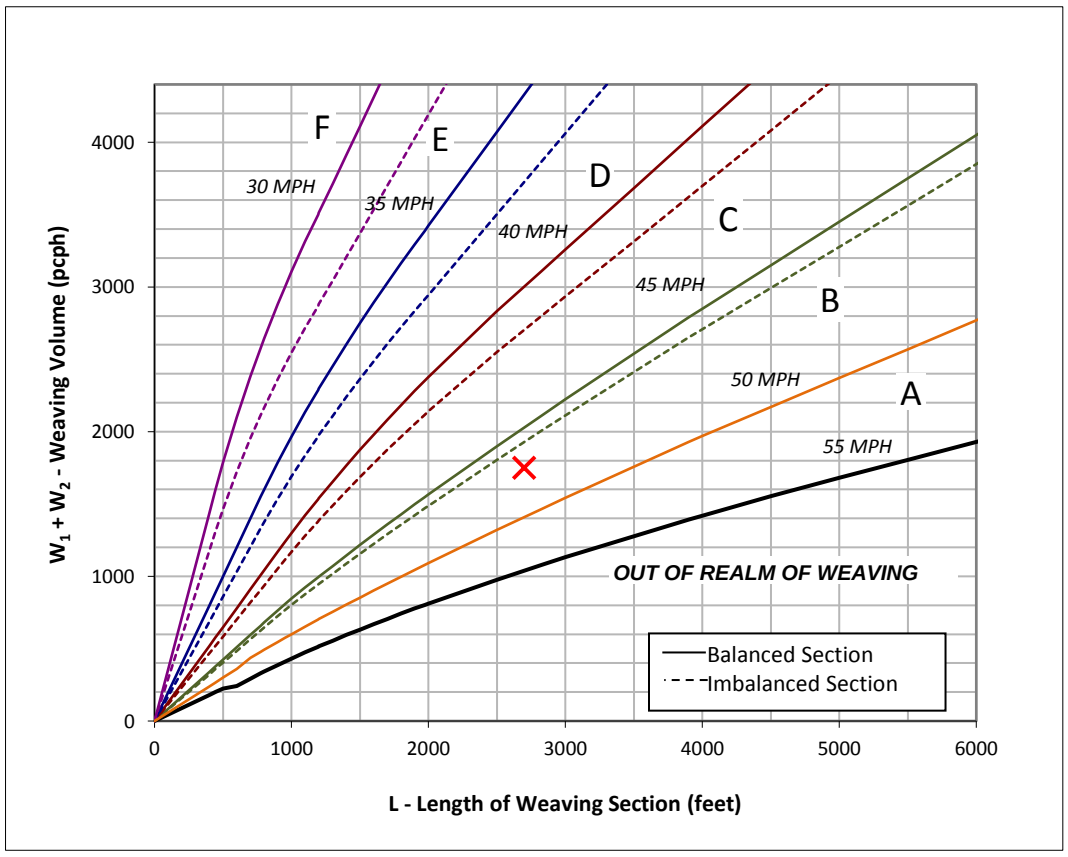
Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

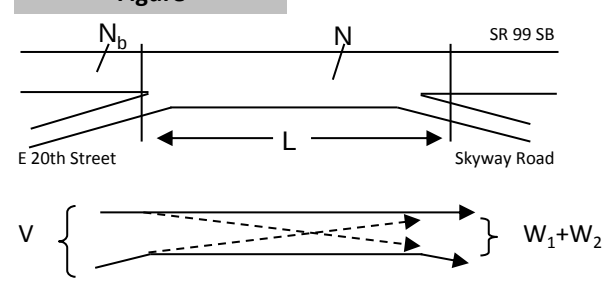
Data Input		
Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,700

Project Information	
Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - AM
Freeway	SR 99 SB
On-ramp	E 20th Street
Off-ramp	Skyway Road

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,542	Volume (vph)*	286	Volume (vph)*	1,439
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,659	Volume (pcph)	290	Volume (pcph)	1,461



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   45 MPH and **50 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **46.7**
4. Weaving Intensity Factor (k) **2.21**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,337**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Define Freeway Segment							
Type	Basic	Diverge	Basic	Merge	Weave	Basic	Weave
Length (ft)	5,150	1,500	1,850	1,850	3,100	2,500	3,650
Accel Length				250			
Decel Length		100					
Mainline Volume	2,858	2,858	2,376	2,376	2,952	3,500	3,500
On Ramp Volume				576	1,023		1,420
Off Ramp Volume		482			475		701
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	2,858	2,858	2,376	2,952	3,975	3,500	4,920
PHF	0.89	0.89	0.89	0.89	0.89	0.96	0.96
GP Lanes	2	2	2	2	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,317	3,317	2,758	3,426	4,614	3,766	5,294
GP Flow (pcphpl)	1,659	1,659	1,379	1,713	1,538	1,883	1,765
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.2	1.8	1.2
Calculated FFS	73.6	73.6	73.6	73.6	74.2	73.6	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.71	0.71	0.59	0.73	0.65	0.80	0.75
Speed (mph)	64.1	64.1	65.0	63.6	64.7	61.7	63.1
Density (pcphpl)	25.9	25.9	21.2	26.9	23.8	30.5	28.0
LOS	C	C	C	D	C	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)		3,317		2,791	3,485		3,808
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{IN} v/c ratio		0.71		0.59	0.74		0.81
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)		2,785		3,426	4,106		4,545
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{OUT} v/c ratio		0.59		0.73	0.87		0.97

Key

<> Express Lane (HOV)

No Trucks

Location	1	2	3	4	5	6	7
Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)				576	1,023		1,420
PHF				0.92	0.92		0.97
Total Lanes				1	1		1
Terrain				Level	Level		Level
Grade %				0.0%	0.0%		0.0%
Grade Length (mi)				0.00	0.00		0.00
Truck & Bus %				3.0%	3.0%		3.0%
RV %				0.0%	0.0%		0.0%
E_T				1.5	1.5		1.5
E_R				1.2	1.2		1.2
f_{HV}				0.985	0.985		0.985
f_p				1.00	1.00		1.00
On Flow (pcph)				635	1,129		1,486
On Flow (pcphpl)				635	1,129		1,486
Calculate On Ramp Roadway Operations							
On Ramp Type				Right	Right		Right
On Ramp Speed (mph)				25	45		25
On Ramp Cap (pcph)				1,900	2,100		1,900
On Ramp v/c ratio				0.33	0.54		0.78

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Off Ramp Flow Rate							
Off Volume (vph)		482			475		701
PHF		0.92			0.95		0.95
Total Lanes		1			1		1
Terrain		Level			Level		Level
Grade %		0.0%			2.0%		0.0%
Grade Length (mi)		0.00			0.00		0.00
Truck & Bus %		3.0%			3.0%		3.0%
RV %		0.0%			0.0%		0.0%
E_T		1.5			1.5		1.5
E_R		1.2			1.2		1.2
f_{HV}		0.985			0.985		0.985
f_p		1.00			1.00		1.00
Off Flow (pcph)		532			508		749
Off Flow (pcphpl)		532			508		749
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		2,100					
Off Ramp v/c ratio		0.25					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)				2,791			
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)				0.585			
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}				1.000			
v_{12} (pcph)				2,791			
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)				2,791			
v_{R12a} (pcph)				3,426			
Merge Speed Index				0.43			
Merge Area Speed				55.1			
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed				55.1			
Merge v/c ratio				0.74			
Merge Density				30.3			
Merge LOS				D			

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)		3,317					
Up Ramp L_{FQ}							
Down Ramp L_{FQ}							
P_{FD} (Eqn 13-9)		0.653					
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}		1.000					
v_{12} (pcph)		3,317					
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)		3,317					
Diverge Speed Index		0.35					
Diverge Area Speed		57.0					
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed		57.0					
Diverge v/c ratio		0.75					
Diverge Density		31.9					
Diverge LOS		D					

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On-Ramp to SR 32 Off Ramp
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.985
f_p					1.00		1.00
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					8.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.962		0.985
f_p					1.00		1.00
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					4.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.980		0.971
f_p					1.00		1.00
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.971
f_p					1.00		1.00
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

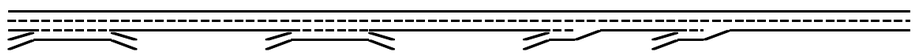
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Weave Type					One-sided		One-sided
Weave Length					2,100		2,650
Segment Lanes					3		3
Weave Lanes							
Weave Flow (pcph)					#VALUE!		#VALUE!
Non-Weave Flow					#VALUE!		#VALUE!
Segment Flow					#VALUE!		#VALUE!
Max Weave Length					#VALUE!		#VALUE!
Length Check					#VALUE!		#VALUE!
Ideal Weave Capacity					#VALUE!		#VALUE!
f_{HV}					#VALUE!		#VALUE!
f_P					#VALUE!		#VALUE!
Capacity Condition 1					#VALUE!		#VALUE!
Capacity Condition 2					#VALUE!		#VALUE!
Weave v/c ratio					#VALUE!		#VALUE!
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	0.71	0.75	0.59	0.74	#VALUE!	0.80	#VALUE!
Segment Density	25.9	31.9	21.2	30.3	#VALUE!	30.5	#VALUE!
Segment LOS	C	D	C	D	#VALUE!	D	#VALUE!
Over Capacity					#VALUE!		#VALUE!

Location	1	2	3	4	5	6	7



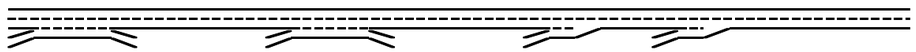
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment							
Type	Weave	Basic	Weave	Basic	Merge	Merge	Basic
Length (ft)	3,650	1,100	2,700	2,000	2,000	1,050	5,150
Accel Length					400	400	
Decel Length							
Mainline Volume	4,103	3,516	3,516	2,813	2,813	3,116	3,398
On Ramp Volume	912		564		303	282	
Off Ramp Volume	1,499		1,267				
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	5,015	3,516	4,080	2,813	3,116	3,398	3,398
PHF	0.9	0.9	0.9	0.88	0.88	0.88	0.88
GP Lanes	3	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	5,756	4,036	4,683	3,302	3,658	3,989	3,989
GP Flow (pcphpl)	1,919	2,018	1,561	1,651	1,829	1,994	1,994
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.2	1.8	1.2	1.8	1.8	1.8	1.8
Calculated FFS	74.2	73.6	74.2	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.82	0.86	0.66	0.70	0.78	0.85	0.85
Speed (mph)	61.2	59.6	64.6	64.1	62.4	60.0	60.0
Density (pcphpl)	31.4	33.9	24.2	25.8	29.3	33.2	33.2
LOS	D	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	5,739		4,087		3,341	3,671	
GP_{IN} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio	1.22		0.87		0.71	0.78	
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	4,155		3,329		3,658	3,989	
GP_{OUT} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio	0.88		0.71		0.78	0.85	

Location	1	2	3	4	5	6	7



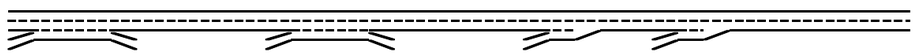
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)	912		564		303	282	
PHF	55		0.96		0.97	0.9	
Total Lanes	1		1		1	1	
Terrain	Level		Level		Level	Level	
Grade %	0.0%		0.0%		0.0%	0.0%	
Grade Length (mi)	0.00		0.00		0.00	0.00	
Truck & Bus %	3.0%		3.0%		3.0%	3.0%	
RV %	0.0%		0.0%		0.0%	0.0%	
E_T	1.5		1.5		1.5	1.5	
E_R	1.2		1.2		1.2	1.2	
f_{HV}	0.985		0.985		0.985	0.985	
f_p	1.00		1.00		1.00	1.00	
On Flow (pcph)	17		596		317	318	
On Flow (pcphpl)	17		596		317	318	
Calculate On Ramp Roadway Operations							
On Ramp Type			Right		Right	Right	
On Ramp Speed (mph)			45		25	45	
On Ramp Cap (pcph)			2,100		1,900	2,100	
On Ramp v/c ratio			0.28		0.17	0.15	

Location	1	2	3	4	5	6	7



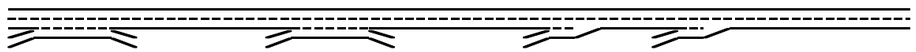
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate							
Off Volume (vph)	1,499		1,267				
PHF	0.95		0.95				
Total Lanes	1		1				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
Off Flow (pcph)	1,602		1,354				
Off Flow (pcphpl)	1,602		1,354				
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		#VALUE!					
Off Ramp v/c ratio		#VALUE!					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)					3,341	3,671	
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.589	0.589	
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000	1.000	
v_{12} (pcph)					3,341	3,671	
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,341	3,671	
v_{R12a} (pcph)					3,658	3,989	
Merge Speed Index					0.45	0.50	
Merge Area Speed					54.6	53.6	
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					54.6	53.6	
Merge v/c ratio					0.80	0.87	
Merge Density					31.4	33.9	
Merge LOS					D	D	

Location	1	2	3	4	5	6	7



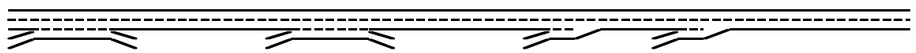
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)							
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)							
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}							
v_{12} (pcph)							
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)							
Diverge Speed Index							
Diverge Area Speed							
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							
Diverge v/c ratio							
Diverge Density							
Diverge LOS							

Location	1	2	3	4	5	6	7



Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type	One-sided		One-sided				
Weave Length	2,650		1,700				
Segment Lanes	3		3				
Weave Lanes							
Weave Flow (pcph)	#VALUE!		#VALUE!				
Non-Weave Flow	#VALUE!		#VALUE!				
Segment Flow	#VALUE!		#VALUE!				
Max Weave Length	#VALUE!		#VALUE!				
Length Check	#VALUE!		#VALUE!				
Ideal Weave Capacity	#VALUE!		#VALUE!				
f_{HV}	#VALUE!		#VALUE!				
f_P	#VALUE!		#VALUE!				
Capacity Condition 1	#VALUE!		#VALUE!				
Capacity Condition 2	#VALUE!		#VALUE!				
Weave v/c ratio	#VALUE!		#VALUE!				
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	#VALUE!	0.86	#VALUE!	0.70	0.80	0.87	0.85
Segment Density	#VALUE!	#VALUE!	#VALUE!	25.8	31.4	33.9	33.2
Segment LOS	#VALUE!	#VALUE!	#VALUE!	C	D	D	D
Over Capacity	#VALUE!	#VALUE!	#VALUE!				

Leisch Method for Weaving Analysis

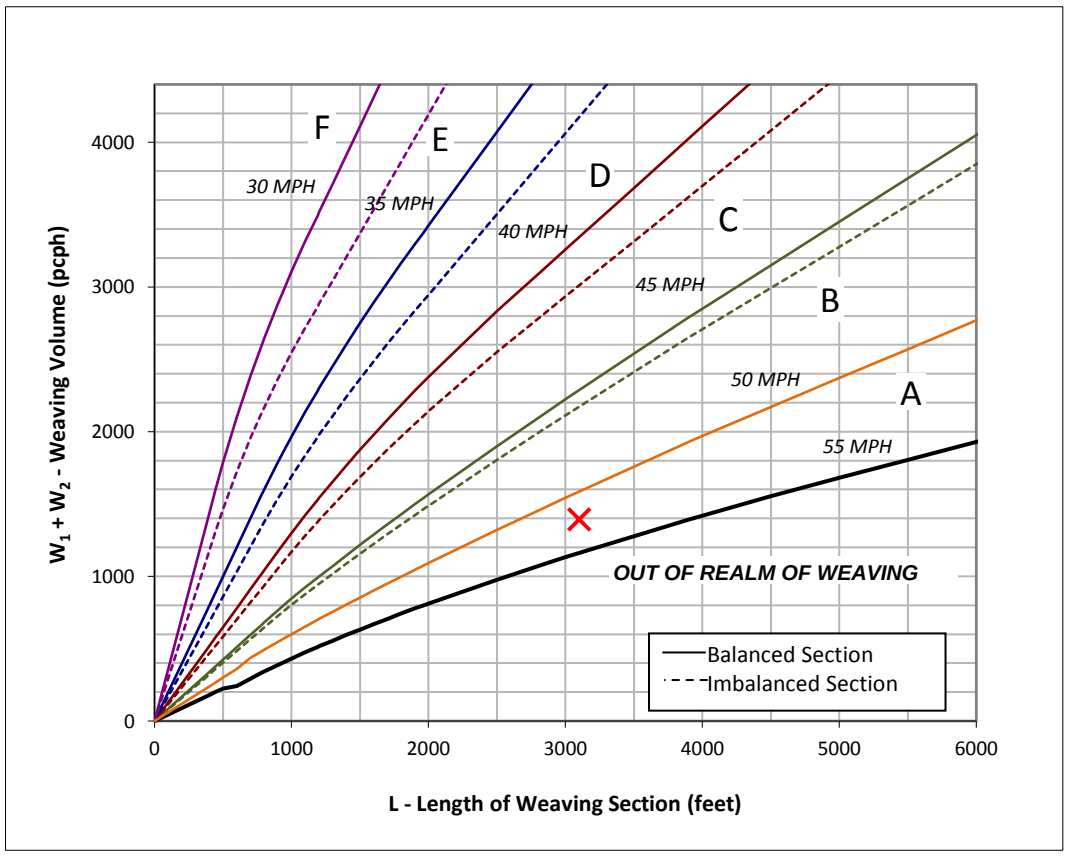
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,100

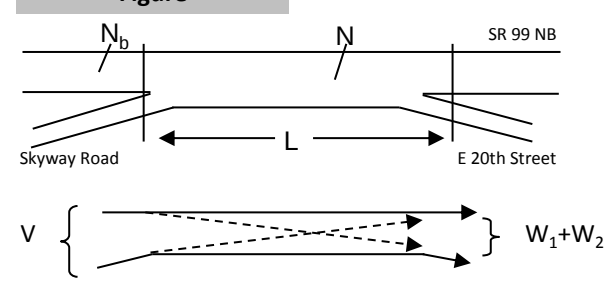
Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - PM
Freeway	SR 99 NB
On-ramp	Skyway Road
Off-ramp	E 20th Street

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,975	Volume (vph)*	961	Volume (vph)*	413
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,106	Volume (pcph)	975	Volume (pcph)	419



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)?	N
If optional exit lane, then "Y". Otherwise "N".	
2. In the chart to the left, which two speed curves is the red "x" between?	**50 MPH** and **55 MPH**
If left of the 30 MPH curve, LOS is F. Select "-".	
If below the 55 MPH curve, out of the realm of weaving.	
3. Interpolated Weaving Speed (S_w, mph)	52.2
4. Weaving Intensity Factor (k)	1.00
5. Service Volume (SV, pcph)	
SV = (1/N)*[V + (k - 1)*min(W_1, W_2)]	1,369
6. Level of Service (LOS)	D

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

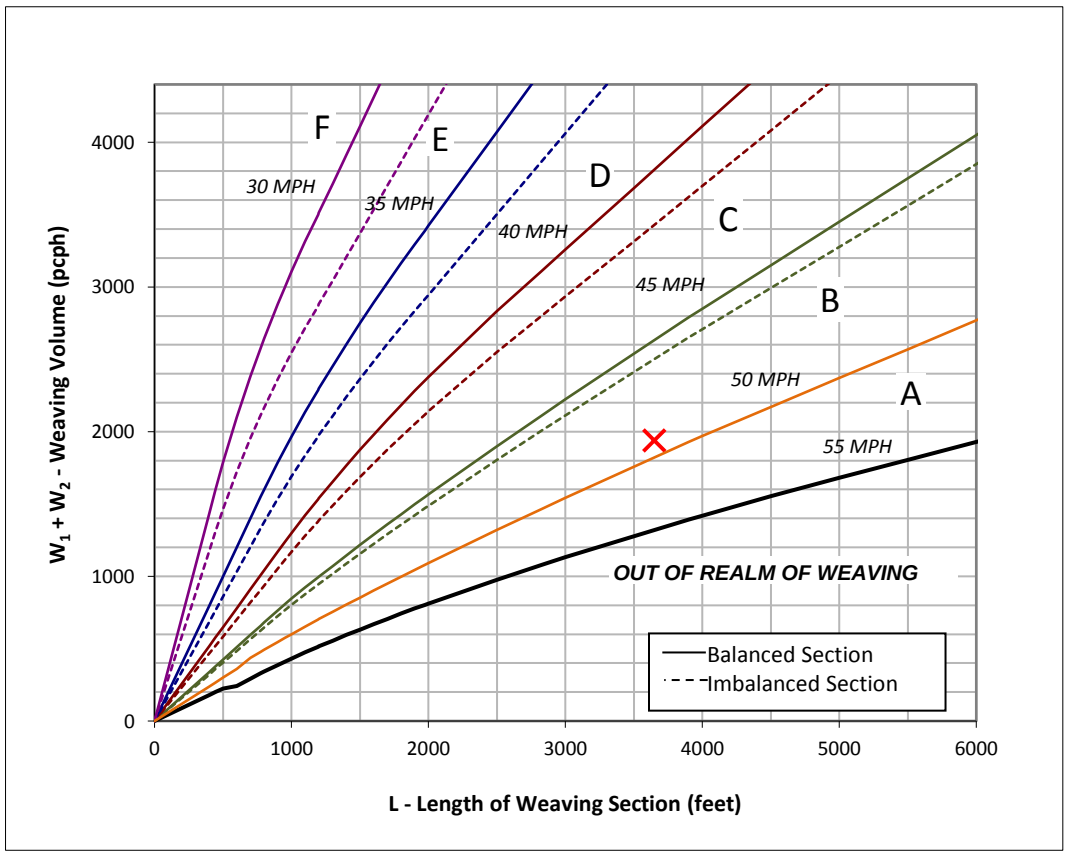
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - PM
Freeway	SR 99 NB
On-ramp	E 20th Street
Off-ramp	SR 32

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,002	Volume (vph)*	1,314	Volume (vph)*	595
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,134	Volume (pcph)	1,334	Volume (pcph)	604



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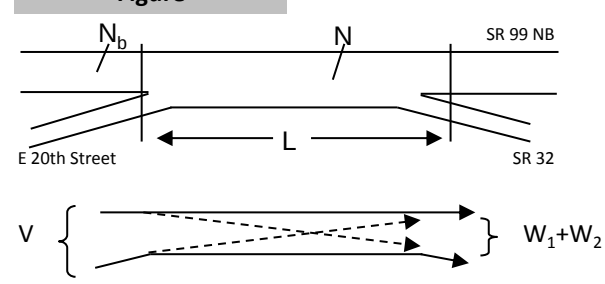


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   45 MPH and **50 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **49.2**
4. Weaving Intensity Factor (k) **1.07**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,391**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

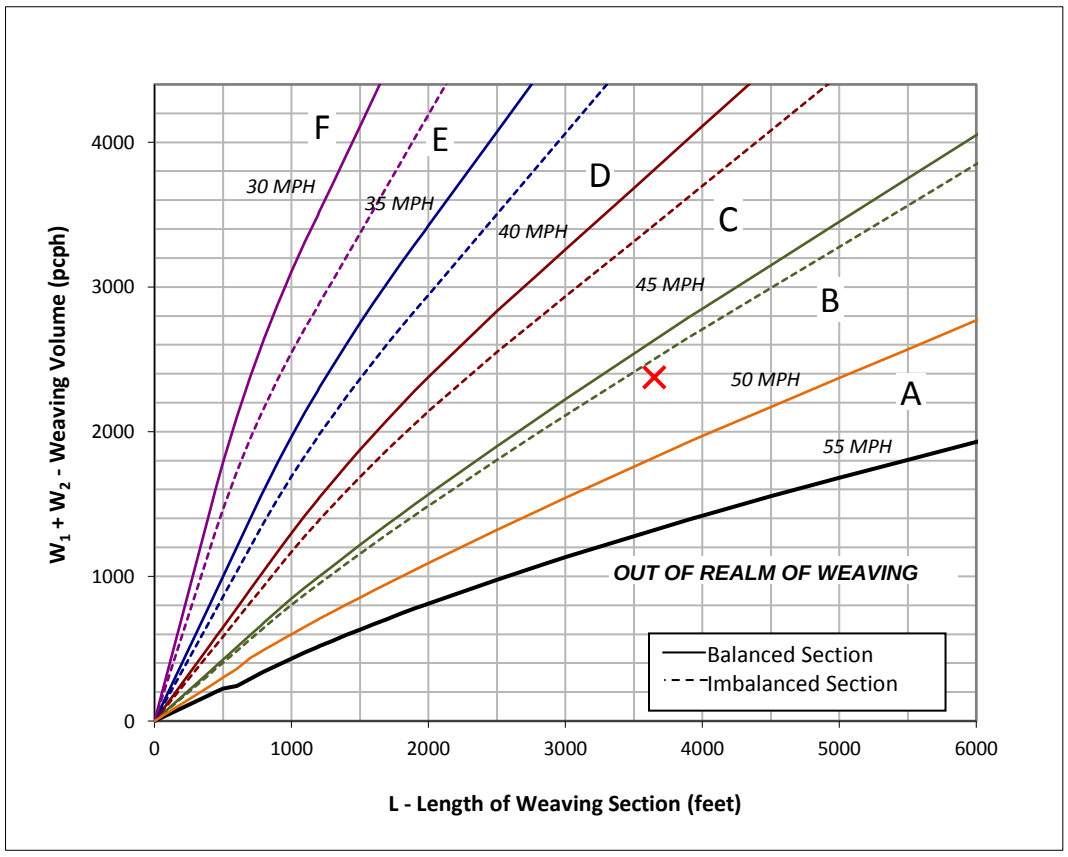
Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

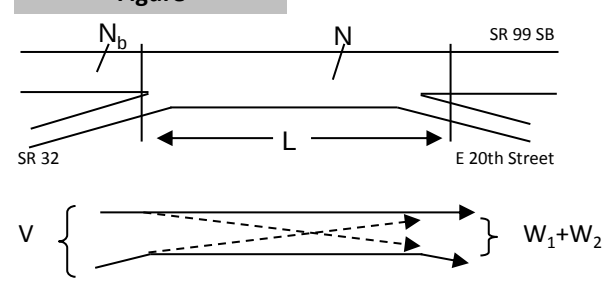
Data Input		
Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Project Information	
Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - PM
Freeway	SR 99 SB
On-ramp	SR 32
Off-ramp	E 20th Street

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	5,015	Volume (vph)*	877	Volume (vph)*	1,464
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	5,180	Volume (pcph)	890	Volume (pcph)	1,486



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   45 MPH and **50 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **45.9**
4. Weaving Intensity Factor (k) **1.63**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,914**

6. Level of Service (LOS) **F**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

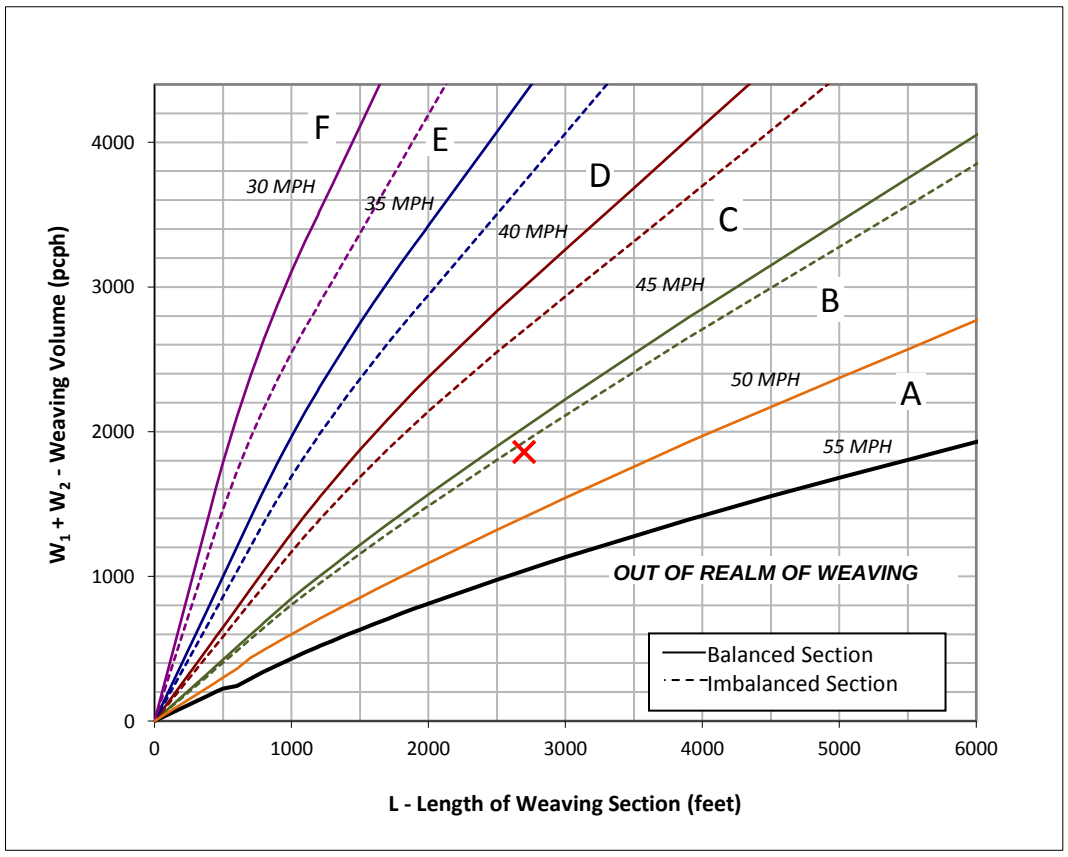
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,700

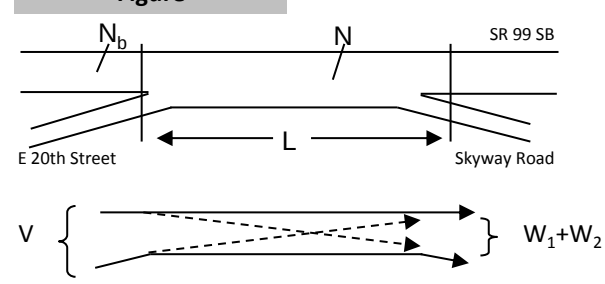
Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - PM
Freeway	SR 99 SB
On-ramp	E 20th Street
Off-ramp	Skyway Road

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,080	Volume (vph)*	564	Volume (vph)*	1,267
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,215	Volume (pcph)	572	Volume (pcph)	1,286



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   45 MPH and **50 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **45.7**
4. Weaving Intensity Factor (k) **1.67**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,533**

6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Define Freeway Segment							
Type	Basic	Diverge	Basic	Merge	Weave	Basic	Weave
Length (ft)	5,150	1,500	1,850	1,850	3,100	2,500	3,650
Accel Length				250			
Decel Length		100					
Mainline Volume	1,856	1,856	1,536	1,536	1,823	2,017	2,017
On Ramp Volume				287	676		1,337
Off Ramp Volume		320			482		585
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	1,856	1,856	1,536	1,823	2,499	2,017	3,354
PHF	0.9	0.9	0.9	0.9	0.9	0.95	0.95
GP Lanes	2	2	2	2	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,130	2,130	1,763	2,092	2,868	2,193	3,647
GP Flow (pcphpl)	1,065	1,065	881	1,046	956	1,097	1,216
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.8	1.8	1.8	1.8	1.2	1.8	1.2
Calculated FFS	73.6	73.6	73.6	73.6	74.2	73.6	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.45	0.45	0.38	0.45	0.41	0.47	0.52
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	16.4	16.4	13.6	16.1	14.7	16.9	18.7
LOS	B	B	B	B	B	B	C
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)		2,130		1,776	2,122		2,248
GP_{IN} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{IN} v/c ratio		0.45		0.38	0.45		0.48
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)		1,777		2,092	2,353		3,022
GP_{OUT} Cap (pcph)		4,700		4,700	4,700		4,700
GP_{OUT} v/c ratio		0.38		0.45	0.50		0.64

Key

<> Express Lane (HOV)

No Trucks

Location	1	2	3	4	5	6	7
Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)				287	676		1,337
PHF				0.92	0.92		0.97
Total Lanes				1	1		1
Terrain				Level	Level		Level
Grade %				0.0%	0.0%		0.0%
Grade Length (mi)				0.00	0.00		0.00
Truck & Bus %				3.0%	3.0%		3.0%
RV %				0.0%	0.0%		0.0%
E_T				1.5	1.5		1.5
E_R				1.2	1.2		1.2
f_{HV}				0.985	0.985		0.985
f_p				1.00	1.00		1.00
On Flow (pcph)				317	746		1,399
On Flow (pcphpl)				317	746		1,399
Calculate On Ramp Roadway Operations							
On Ramp Type				Right	Right		Right
On Ramp Speed (mph)				25	45		45
On Ramp Cap (pcph)				1,900	2,100		2,100
On Ramp v/c ratio				0.17	0.36		0.67

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Off Ramp Flow Rate							
Off Volume (vph)		320			482		585
PHF		0.92			0.95		0.95
Total Lanes		1			1		1
Terrain		Level			Level		Level
Grade %		0.0%			2.0%		0.0%
Grade Length (mi)		0.00			0.00		0.00
Truck & Bus %		3.0%			3.0%		3.0%
RV %		0.0%			0.0%		0.0%
E_T		1.5			1.5		1.5
E_R		1.2			1.2		1.2
f_{HV}		0.985			0.985		0.985
f_p		1.00			1.00		1.00
Off Flow (pcph)		353			515		625
Off Flow (pcphpl)		353			515		625
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		2,100					
Off Ramp v/c ratio		0.17					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)				1,776			
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)				0.585			
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}				1.000			
v_{12} (pcph)				1,776			
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)				1,776			
v_{R12a} (pcph)				2,092			
Merge Speed Index				0.34			
Merge Area Speed				57.2			
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed				57.2			
Merge v/c ratio				0.45			
Merge Density				20.1			
Merge LOS				C			

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)		2,130					
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)		0.691					
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}		1.000					
v_{12} (pcph)		2,130					
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)		2,130					
Diverge Speed Index		0.33					
Diverge Area Speed		57.4					
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed		57.4					
Diverge v/c ratio		0.48					
Diverge Density		21.7					
Diverge LOS		C					

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On-Ramp to SR 32 Off Ramp
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.985
f_p					1.00		1.00
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					8.0%		3.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.962		0.985
f_p					1.00		1.00
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					4.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.980		0.971
f_p					1.00		1.00
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF					0.83		0.95
Terrain					Level		Level
Grade %					0.0%		0.0%
Grade Length (mi)					0.00		0.00
Truck & Bus %					10.0%		6.0%
RV %					0.0%		0.0%
E_T					1.5		1.5
E_R					1.2		1.2
f_{HV}					0.952		0.971
f_p					1.00		1.00
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

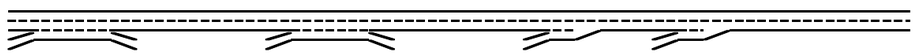
Key

<> Express Lane (HOV)

No Trucks

Name	South of Skyway Road	Skyway Road Off Ramp	Between Skyway Road Ramp	Skyway Road Loop On Ramp	Skyway Road On-Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to SR 32 Off Ramp
Weave Type					One-sided		One-sided
Weave Length					2,100		2,650
Segment Lanes					3		3
Weave Lanes							
Weave Flow (pcph)					#VALUE!		#VALUE!
Non-Weave Flow					#VALUE!		#VALUE!
Segment Flow					#VALUE!		#VALUE!
Max Weave Length					#VALUE!		#VALUE!
Length Check					#VALUE!		#VALUE!
Ideal Weave Capacity					#VALUE!		#VALUE!
f_{HV}					#VALUE!		#VALUE!
f_p					#VALUE!		#VALUE!
Capacity Condition 1					#VALUE!		#VALUE!
Capacity Condition 2					#VALUE!		#VALUE!
Weave v/c ratio					#VALUE!		#VALUE!
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	0.45	0.48	0.38	0.45	#VALUE!	0.47	#VALUE!
Segment Density	16.4	21.7	13.6	20.1	#VALUE!	16.9	#VALUE!
Segment LOS	B	C	B	C	#VALUE!	B	#VALUE!
Over Capacity					#VALUE!		#VALUE!

Location	1	2	3	4	5	6	7



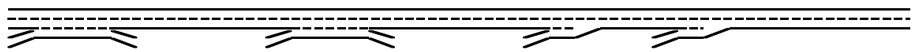
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Define Freeway Segment							
Type	Weave	Basic	Weave	Basic	Merge	Merge	Basic
Length (ft)	3,650	1,100	2,700	2,000	2,000	1,050	5,150
Accel Length					400	400	
Decel Length							
Mainline Volume	3,935	2,990	2,990	2,685	2,685	2,895	3,109
On Ramp Volume	630		530		210	214	
Off Ramp Volume	1,575		835				
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,565	2,990	3,520	2,685	2,895	3,109	3,109
PHF	0.97	0.97	0.97	0.87	0.87	0.87	0.87
GP Lanes	3	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.968	0.968	0.968	0.968	0.968	0.968	0.968
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,861	3,184	3,749	3,188	3,437	3,691	3,691
GP Flow (pcphpl)	1,620	1,592	1,250	1,594	1,719	1,846	1,846
Calculate Speed in General Purpose Lanes							
Lane Width (ft)	12	12	12	12	12	12	12
Shoulder Width	3	3	3	3	3	3	3
TRD							
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	1.2	1.8	1.2	1.8	1.8	1.8	1.8
Calculated FFS	74.2	73.6	74.2	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.69	0.68	0.53	0.68	0.73	0.79	0.79
Speed (mph)	64.3	64.5	65.0	64.5	63.6	62.2	62.2
Density (pcphpl)	25.2	24.7	19.2	24.7	27.0	29.7	29.7
LOS	C	C	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,850		3,200		3,218	3,450	
GP_{IN} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{IN} v/c ratio	1.03		0.68		0.68	0.73	
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	3,179		2,856		3,437	3,691	
GP_{OUT} Cap (pcph)	4,700		4,700		4,700	4,700	
GP_{OUT} v/c ratio	0.68		0.61		0.73	0.79	

Location	1	2	3	4	5	6	7



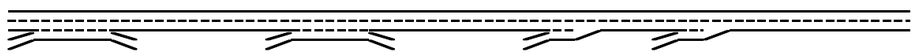
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Flow Rate in Express Lanes (EL)							
EL Volume (vph)							
PHF							
Express Lanes	0	0	0	0	0	0	0
Terrain							
Grade %							
Grade Length (mi)							
Truck & Bus %							
RV %							
E_T							
E_R							
f_{HV}							
f_p							
EL Flow (pcph)							
EL Flow (pcphpl)							
Calculate Speed in Express Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calc'd FFS							
Measured FFS							
FFS							
Calculate Operations in Express Lanes							
EL_{IN} v/c ratio							
Calculate On Ramp Flow Rate							
On Volume (vph)	630		530		210	214	
PHF	55		0.98		0.97	0.9	
Total Lanes	1		1		1	1	
Terrain	Level		Level		Level	Level	
Grade %	0.0%		0.0%		0.0%	0.0%	
Grade Length (mi)	0.00		0.00		0.00	0.00	
Truck & Bus %	3.0%		3.0%		3.0%	3.0%	
RV %	0.0%		0.0%		0.0%	0.0%	
E_T	1.5		1.5		1.5	1.5	
E_R	1.2		1.2		1.2	1.2	
f_{HV}	0.985		0.985		0.985	0.985	
f_p	1.00		1.00		1.00	1.00	
On Flow (pcph)	12		549		220	241	
On Flow (pcphpl)	12		549		220	241	
Calculate On Ramp Roadway Operations							
On Ramp Type			Right		Right	Right	
On Ramp Speed (mph)			45		25	45	
On Ramp Cap (pcph)			2,100		1,900	2,100	
On Ramp v/c ratio			0.26		0.12	0.11	

Location	1	2	3	4	5	6	7



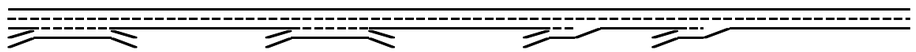
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Off Ramp Flow Rate							
Off Volume (vph)	1,575		835				
PHF	0.95		0.95				
Total Lanes	1		1				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
Off Flow (pcph)	1,683		892				
Off Flow (pcphpl)	1,683		892				
Calculate Off Ramp Roadway Operations							
Off Ramp Type		Right					
Off Ramp Speed		45					
Off Ramp Cap (pcph)		#VALUE!					
Off Ramp v/c ratio		#VALUE!					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_p (pcph)					3,218	3,450	
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.589	0.589	
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000	1.000	
v_{12} (pcph)					3,218	3,450	
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,218	3,450	
v_{R12a} (pcph)					3,437	3,691	
Merge Speed Index					0.42	0.44	
Merge Area Speed					55.3	54.8	
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					55.3	54.8	
Merge v/c ratio					0.75	0.80	
Merge Density					29.7	31.6	
Merge LOS					D	D	

Location	1	2	3	4	5	6	7



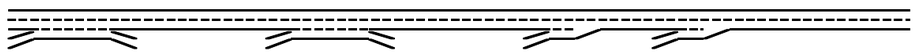
Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)							
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)							
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}							
v_{12} (pcph)							
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)							
Diverge Speed Index							
Diverge Area Speed							
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							
Diverge v/c ratio							
Diverge Density							
Diverge LOS							

Location	1	2	3	4	5	6	7



Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments							
On to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to Off Flow (pcph)							
Calculate On Ramp to Mainline Flow Rate for Weave Segments							
On to ML Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	3.0%		3.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.985		0.985				
f_p	1.00		1.00				
On to ML Flow (pcph)							
Calculate Mainline to Off Ramp Flow Rate for Weave Segments							
ML to Off Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
ML to Off Flow (pcph)							
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments							
GP to GP Volume (vph)							
PHF	0.95		0.95				
Terrain	Level		Level				
Grade %	0.0%		0.0%				
Grade Length (mi)	0.00		0.00				
Truck & Bus %	6.0%		6.0%				
RV %	0.0%		0.0%				
E_T	1.5		1.5				
E_R	1.2		1.2				
f_{HV}	0.971		0.971				
f_p	1.00		1.00				
GP to GP Flow (pcph)							
Calculate Weave Segment Operations							

Location	1	2	3	4	5	6	7

Key

<> Express Lane (HOV)

No Trucks

Name	SR 32 On Ramp to E 20th Street Off Ramp	Between E 20th Street Ramps	E 20th Street On Ramp to Skyway Road Off Ramp	Between Skyway Road Ramps	Skyway Road Loop On Ramp	Skyway Road On Ramp	South of Skyway Road
Weave Type	One-sided		One-sided				
Weave Length	2,650		1,700				
Segment Lanes	3		3				
Weave Lanes							
Weave Flow (pcph)	#VALUE!		#VALUE!				
Non-Weave Flow	#VALUE!		#VALUE!				
Segment Flow	#VALUE!		#VALUE!				
Max Weave Length	#VALUE!		#VALUE!				
Length Check	#VALUE!		#VALUE!				
Ideal Weave Capacity	#VALUE!		#VALUE!				
f_{HV}	#VALUE!		#VALUE!				
f_P	#VALUE!		#VALUE!				
Capacity Condition 1	#VALUE!		#VALUE!				
Capacity Condition 2	#VALUE!		#VALUE!				
Weave v/c ratio	#VALUE!		#VALUE!				
Interchange Density							
Lane Changes On to ML							
Lane Changes ML to Off							
Lane Changes On to Off							
Min Lane Change Rate							
Weave LC Rate							
Non-Weave LC Rate 1							
Non-Weave LC Rate 2							
Non-Weave LC Rate 3							
Segment LC Rate							
Weave Intensity Factor							
Weave Speed							
Non-Weave Speed							
Segment Speed							
Weave Density							
Weave LOS							
Summarize Segment Operations							
Segment v/c ratio	#VALUE!	0.68	#VALUE!	0.68	0.75	0.80	0.79
Segment Density	#VALUE!	#VALUE!	#VALUE!	24.7	29.7	31.6	29.7
Segment LOS	#VALUE!	#VALUE!	#VALUE!	C	D	D	D
Over Capacity	#VALUE!	#VALUE!	#VALUE!				

Leisch Method for Weaving Analysis

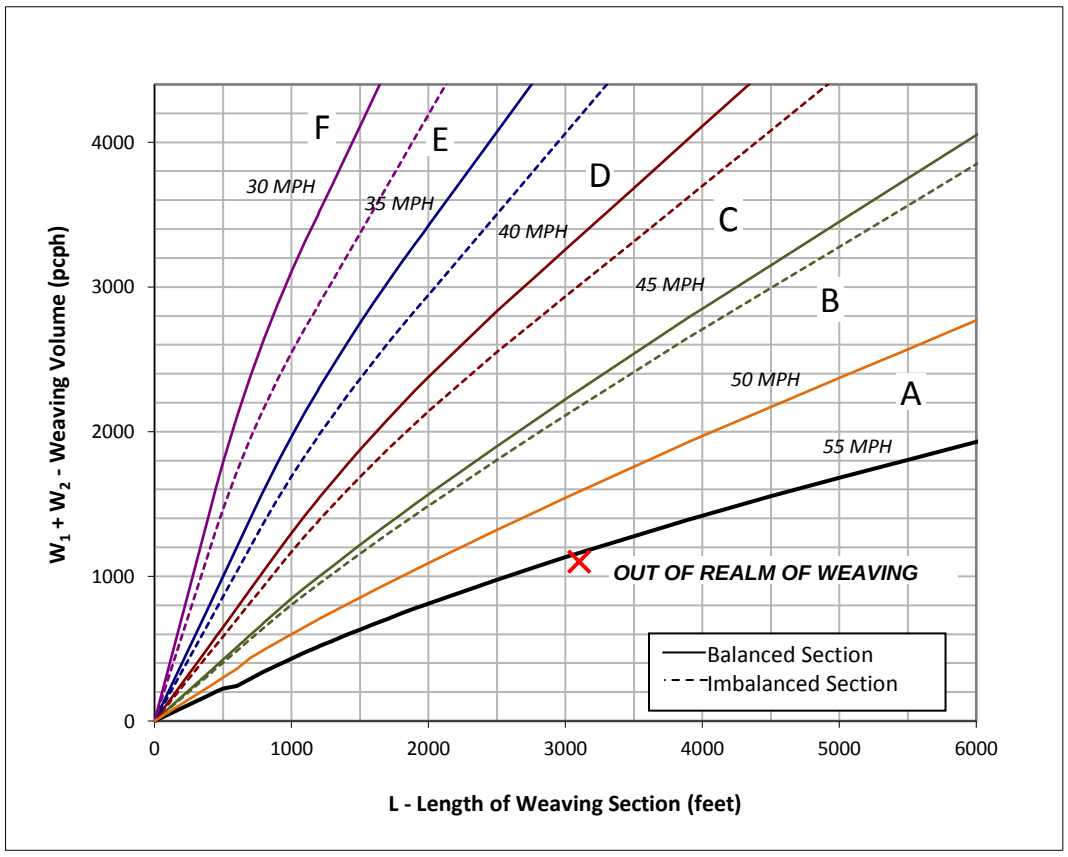
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,100

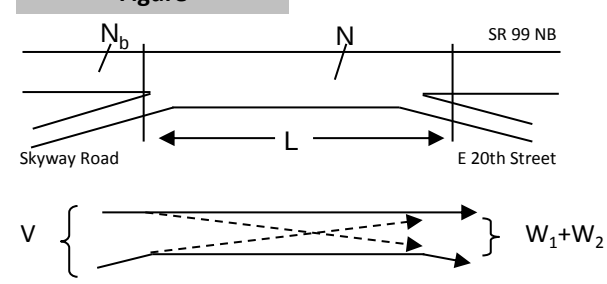
Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - SAT
Freeway	SR 99 NB
On-ramp	Skyway Road
Off-ramp	E 20th Street

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	2,499	Volume (vph)*	640	Volume (vph)*	446
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,581	Volume (pcph)	650	Volume (pcph)	453



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **55.7**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **860**

6. Level of Service (LOS) **B**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

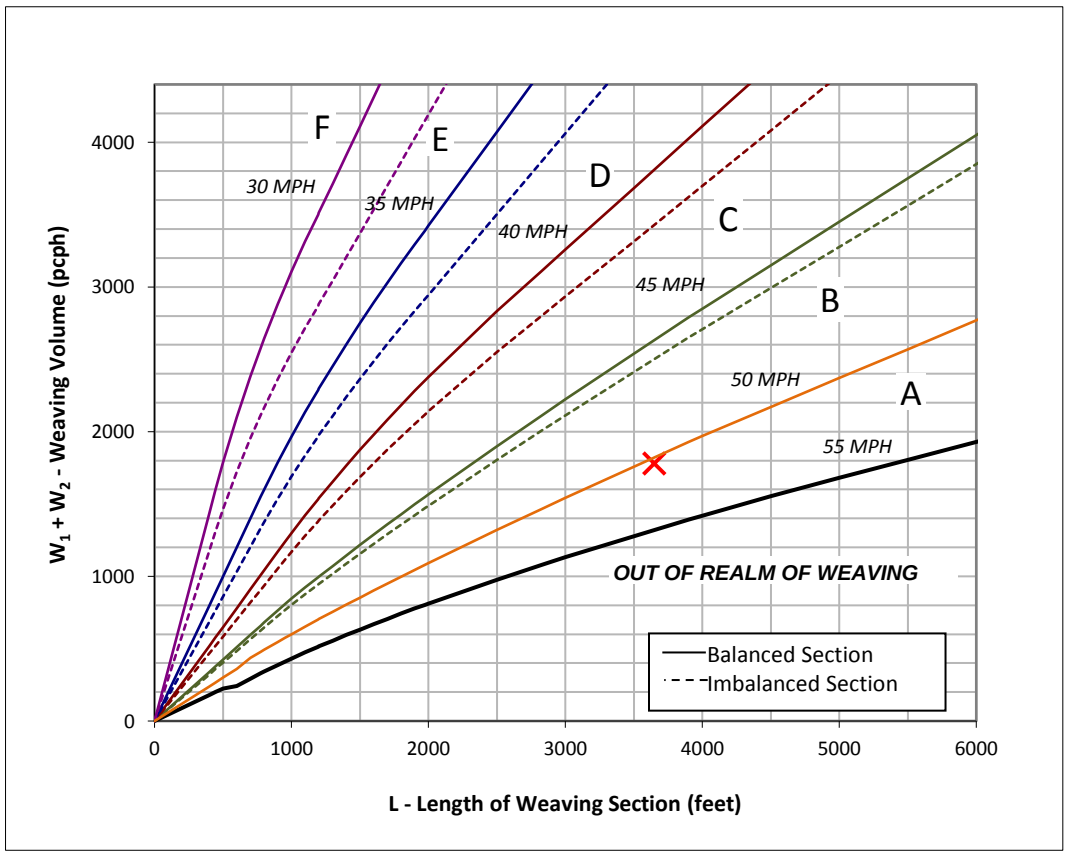
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - SAT
Freeway	SR 99 NB
On-ramp	E 20th Street
Off-ramp	SR 32

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,354	Volume (vph)*	1,253	Volume (vph)*	501
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,465	Volume (pcph)	1,272	Volume (pcph)	509



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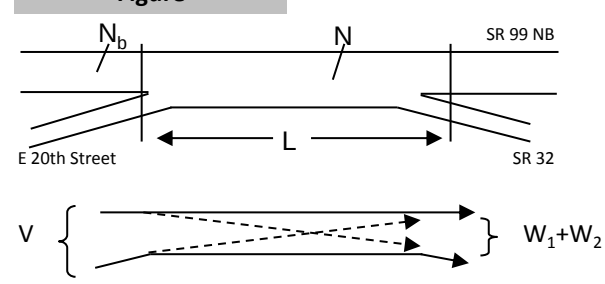


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **50.4**
4. Weaving Intensity Factor (k) **0.93**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,142**

6. Level of Service (LOS) **C**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

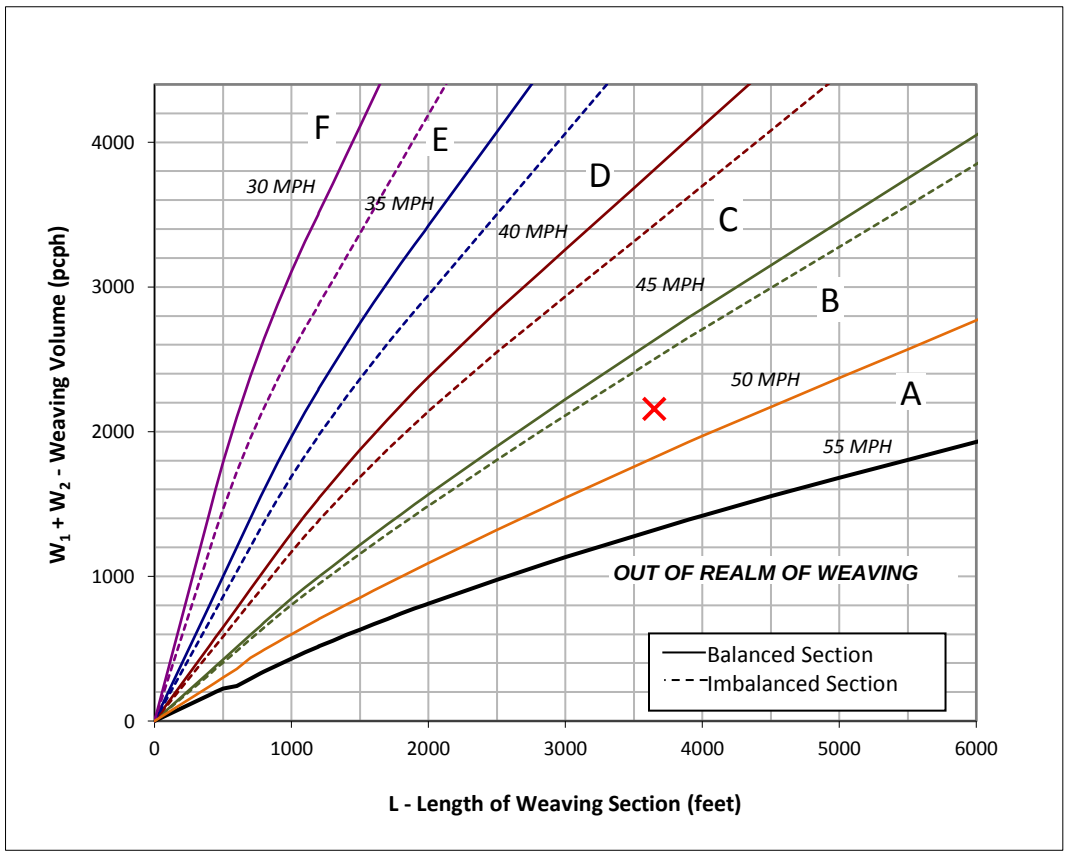
Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

Data Input		
Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	3,650

Project Information	
Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - SAT
Freeway	SR 99 SB
On-ramp	SR 32
Off-ramp	E 20th Street

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,935	Volume (vph)*	590	Volume (vph)*	1,535
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,065	Volume (pcph)	599	Volume (pcph)	1,558



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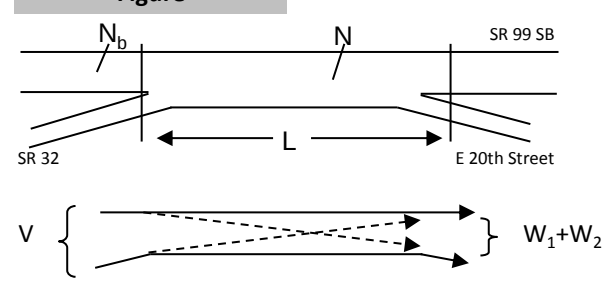


Capacity Analysis

1. Is the weaving section balanced (Y / N)?	N
If optional exit lane, then "Y". Otherwise "N".	
2. In the chart to the left, which two speed curves is the red "x" between?	**45 MPH** and **50 MPH**
If left of the 30 MPH curve, LOS is F. Select "-".	
If below the 55 MPH curve, out of the realm of weaving.	
3. Interpolated Weaving Speed (S_w, mph)	47.5
4. Weaving Intensity Factor (k)	1.32
5. Service Volume (SV, pcph)	
SV = (1/N)*[V + (k - 1)*min(W_1, W_2)]	1,420
6. Level of Service (LOS)	D

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

Leisch Method for Weaving Analysis

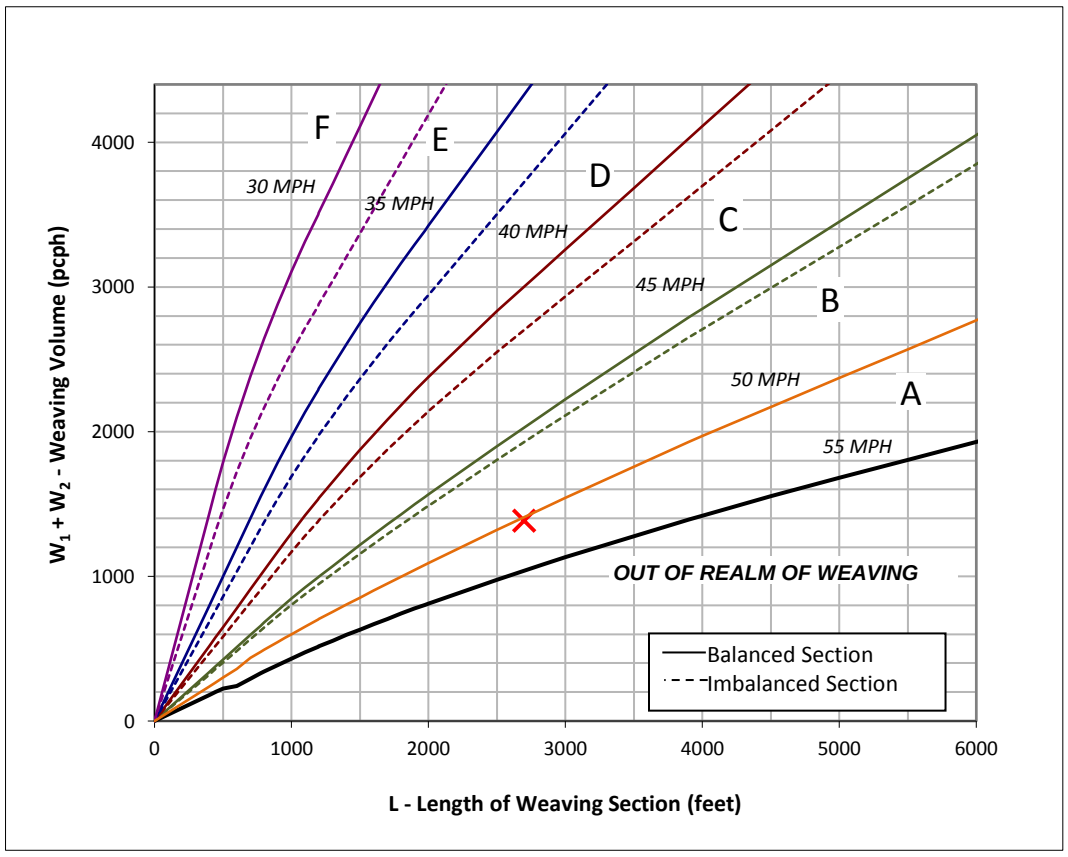
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,700

Project Information

Project	Chico Walmart Expansion EIR
Scenario	Cumulative Plus Project - SAT
Freeway	SR 99 SB
On-ramp	E 20th Street
Off-ramp	Skyway Road

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	2,890	Volume (vph)*	530	Volume (vph)*	835
Truck Percentage	7%	Truck Percentage	3%	Truck Percentage	3%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,985	Volume (pcph)	538	Volume (pcph)	848



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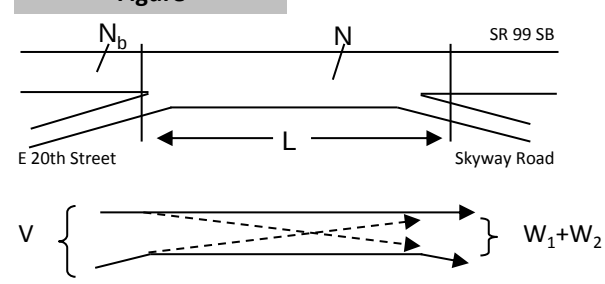


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **N**

   If optional exit lane, then "Y". Otherwise "N".

2. In the chart to the left, which two speed curves is the red "x" between?

   50 MPH and **55 MPH**

   If left of the 30 MPH curve, LOS is F. Select "-".

   If below the 55 MPH curve, out of the realm of weaving.

3. Interpolated Weaving Speed (S_w, mph) **50.3**
4. Weaving Intensity Factor (k) **0.94**
5. Service Volume (SV, pcph)

   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **984**

6. Level of Service (LOS) **B**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections* , Jack E. Leisch & Associates, September 1983 and *Highway Design Manual* , California Department of Transportation, 2014

APPENDIX D: CA MUTCD 2012 PEAK HOUR SIGNAL WARRANTS

FEHR PEERS

Sheet No	1	of	1

Project	Chico WalMart Expansion
Scenario	Existing Plus Project Conditions
Peak Hour	AM

Major Street	Forest Avenue
Minor Street	Wittmeier Drive

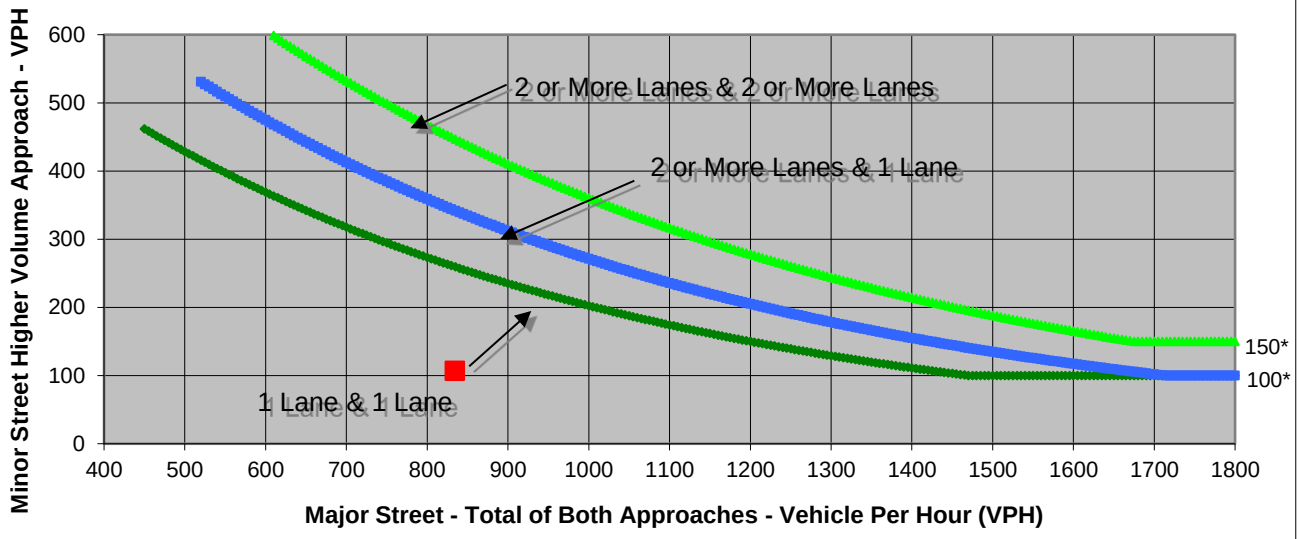
Turn Movement Volumes

	NB	SB	EB	WB
Left	68	79	56	0
Through	211	402	4	5
Right	21	53	47	25
Total	300	534	107	30

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street Forest Avenue	Minor Street Wittmeier Drive	Warrant Met
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**834**	**107**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Chico WalMart Expansion
Scenario	Existing Plus Project Conditions
Peak Hour	PM

Major Street	Forest Avenue
Minor Street	Wittmeier Drive

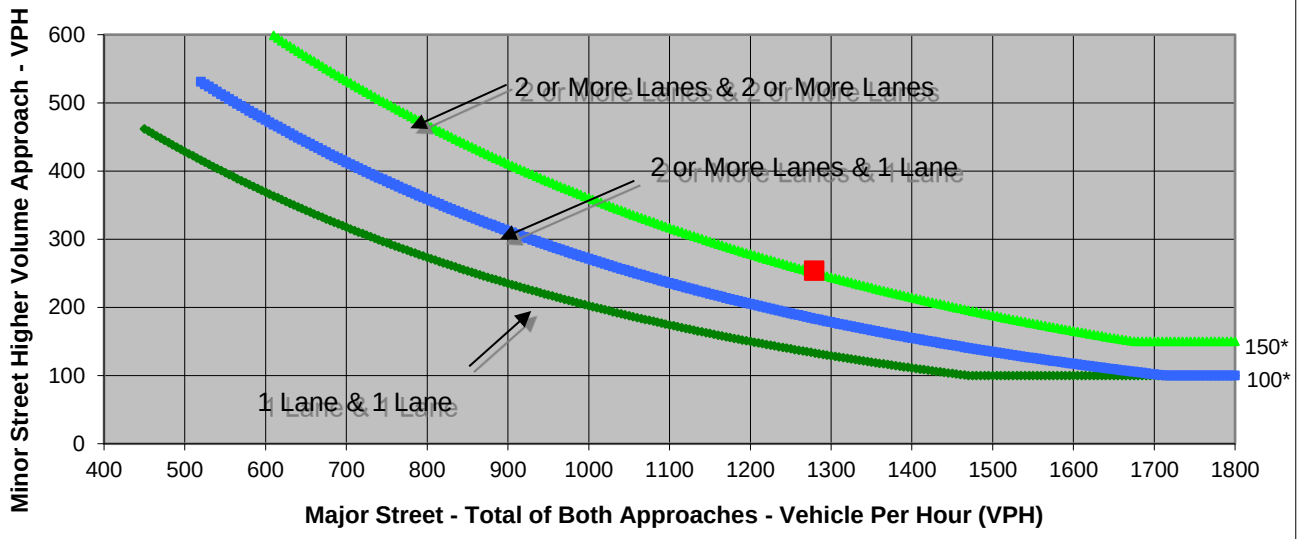
Turn Movement Volumes

	NB	SB	EB	WB
Left	106	42	121	8
Through	536	550	6	9
Right	7	38	127	46
Total	649	630	254	63

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Forest Avenue	Wittmeier Drive	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,279**	**254**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.