APPENDIX K

APRIL 2014
TRAFFIC IMPACT STUDY

FEHR PEERS

MEMORANDUM

Date: April 28, 2014

To: Chad Kiltz, Lennar Corporation

From: Dan Hennessey and Ellen Poling, Fehr & Peers

Subject: Lafayette Residential Development Transportation Impact Study

WC14-3117

This memorandum summarizes the transportation impact study for the proposed 66-unit residential development, retail, and restaurant project (Project) in the City of Lafayette. The proposed Project is located at the northwest corner of the Mount Diablo Boulevard intersection with Dolores Drive. The study identifies Project impacts to the surrounding transportation system and recommends measures to mitigate significant impacts. The study assesses the operations and design parameters of key intersections that will provide primary access to the site, as well as a detailed site plan review from a circulation perspective.

PROJECT DESCRIPTION

The Project consists of 66 residential units, a 4,500-square foot restaurant, and 1,400 square feet of retail space. The parcel is currently occupied by Celia's Mexican Restaurant and three office buildings. Several access options have been evaluated for the site, all of which are assessed in the site access and circulation section of this memorandum. All options have a full access driveway located on Dolores Drive, and for the purposes of the off-site traffic impact analysis, only the project alternative that has just the full access Dolores Drive driveway has been evaluated (this scenario loads the most Project traffic at the Mount Diablo Boulevard / Dolores Drive intersection; the analysis at the other study intersections would be the same). **Figure 1** shows the Project location (all figures are attached at the end of this memo).

ANALYSIS LOCATIONS AND METHODS

Three intersections in the immediate vicinity of the site are evaluated for the weekday morning (7-9 AM) and evening (4-6 PM) peak periods:

- Mount Diablo Boulevard / Risa Road / Village Center
- Mount Diablo Boulevard / Dolores Drive / Mountain View Drive
- Mount Diablo Boulevard / Happy Valley Road
- Dolores Drive / Access Driveway

Figure 2 shows the study intersection locations in relationship to the site.

ANALYSIS METHODS

The operational performance of a roadway network is commonly described with the term level of service (LOS). LOS is a qualitative description of operating conditions, ranging from LOS A (free-flow traffic conditions with little or no delay) to LOS F (oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays.) LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F.

From the Downtown Lafayette Specific Plan: Environmental Impact Report (EIR), the City of Lafayette strives to maintain a "good" LOS D (less than 45 seconds of average control delay per vehicle). All three study intersections have been designated as "downtown" intersections; as such, they have a different level of service threshold, per General Plan definitions. A project is considered to have a significant impact when it causes a "downtown" intersection operation to deteriorate to LOS E or F. These standards apply to both signalized and unsignalized intersections. The LOS analysis methods used in this study are consistent with the 2000 Highway Capacity Manual (HCM) published by the Transportation Research Board. The HCM methods for calculating LOS for signalized intersections and unsignalized intersections are described below.

Signalized Intersections

Traffic operations at signalized intersections are evaluated using the LOS method described in Chapter 16 of the HCM. A signalized intersection's LOS is based on the weighted average control delay measured in seconds per vehicle and includes initial deceleration delay, queue move-up

time, stopped delay, and final acceleration. **Table 1** summarizes the relationship between the control delay and LOS for signalized intersections.

TABLE 1: SIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Average Control Delay (seconds per vehicle)
A	Operations with very low delay occurring with favorable traffic signal progression and/or short cycle lengths.	< 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55.0 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0

Source: *Highway Capacity Manual, Transportation Research Board, 2000.*

Unsignalized Intersections

Traffic conditions at unsignalized intersections are evaluated using the method from Chapter 17 of the HCM. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. For all-way stop-controlled intersections, the average control delay is calculated for the intersection as a whole. At two-way or side street-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left turn movement from the major street, and the entire intersection. **Table 2** summarizes the relationship between delay and LOS for unsignalized intersections.

TABLE 2: UNSIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Average Control Delay (seconds per vehicle)
A	Little or no delays	< 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: *Highway Capacity Manual, Transportation Research Board, 2000.*

TRAFFIC IMPACT ANALYSIS

Data Collection

Figure 2 shows the location of the proposed Project and the study intersections. These intersections have been identified as those most likely to be affected by the proposed Project.

Existing peak hour vehicle turning movement, bicycle, and pedestrian volume counts were collected from 7:00 to 9:00 AM and from 4:00 to 6:00 PM on Wednesday, March 12, 2014. 24-hour tube counts on Mount Diablo Boulevard (just west of the existing Celia's driveways) and Dolores Drive (just north of the existing Celia's driveways) were collected on the same date[1]. Additional data collection was also completed, including observations of the lane configurations, signal timings, intersection operations and vehicle queuing on three occasions.

These daily vehicle counts suggest that the peak periods for both streets are captured by the peak period turning movement counts; the peak 15-minute periods for both streets started at 8:30 AM and 5:30 PM. The daily traffic on Mount Diablo Boulevard is 15,800 vehicles per day, and

[1] The purpose of the ADT counts is to provide basic existing roadway volume information rather than to capture trip generation information for the existing site. Hoses are placed away from the intersection to avoid queued vehicles at the signal sitting on the hoses, which can lead to inaccurate counts. The peak period study intersection and existing driveway counts adequately capture the traffic at the driveways generated by other nearby land uses.

the daily traffic on Dolores Drive is 1,800 vehicles per day. The resulting peak hour vehicle volumes (8:00 to 9:00 AM and 4:45 to 5:45 PM), lane geometries, and traffic control can be seen in Figure 2. Traffic count data are available in **Attachment A**.

Existing Traffic Conditions

Traffic operations throughout the study area are analyzed using the Synchro 8.0 software program. Synchro calculations are based on the procedures outlined in the HCM. **Table 3** shows the LOS results for the existing weekday AM and PM peak hours. These results are mostly consistent with the Downtown Lafayette Specific Plan EIR. The LOS difference at the intersection of Mount Diablo Boulevard / Dolores Drive / Mountain View Drive is due to updated signal timings and new vehicle counts (and peak hour factors), as well as other minor inputs.

Existing vehicle queues were also observed at the study intersections to ensure that the Synchro models were properly calibrated. Most queues were observed to be contained within their allotted storage lengths, though the eastbound left-turn queue at the Mount Diablo Boulevard / Happy Valley Road intersection extends one or two cars beyond the pocket in the AM peak hour and out of its pocket to near the Trader Joe's driveway in the PM peak hour. The queue lengths reported by the Synchro software were consistent with the observations. The 95th percentile queue length for the southbound approach on Dolores Drive is approximately 110 to 120 feet in both peak hours.

TABLE 3: EXISTING CONDITIONS INTERSECTION OPERATIONS SUMMARY

Intersection	Control[1]	Peak Hour	Existing Conditions		Existing Conditions from Specific Plan EIR	
			Delay[2]	LOS[2]	Delay[2]	LOS[2]
Mount Diablo Boulevard / Risa Road / Village Center	Signal	AM PM	8.8 10.5	A B	11.9 9.8	B A
Mount Diablo Boulevard / Dolores Drive / Mountain View Drive	Signal	AM PM	21.2 26.4	C C	11.3 17.1	B B
Mount Diablo Boulevard / Happy Valley Road	Signal	AM PM	16.9 25.7	B C	17.5 32.5	B C
Dolores Drive / Existing Celia's Driveway[3]	SSSC	AM PM	0.8 (8.9) 0.7 (8.8)	A (A) A (A)	n/a n/a	n/a n/a

Notes:
1. Signal = signalized intersection; SSSC = side-street stop controlled intersection.
2. Traffic operations results include LOS (level of service) and delay (seconds per vehicle). LOS is based on delay thresholds published in the Highway Capacity Manual (Transportation Research Board, 2000).
3. Delay is reported as: Average delay for intersection (Average delay for worst movement).

Source: *Fehr & Peers, 2014.*

PROJECT VEHICLE TRIP GENERATION

Vehicle trip generation estimates for the proposed Project during both AM and PM peak hours have been developed using the trip generation equations and rates presented in Institute of Transportation Engineers' (ITE) Trip Generation, 9th Edition. No reductions are made to account for internal trips, pass-by trips, or transit use, and no reductions are made for the elimination of current land uses. For comparison purposes only, the existing restaurant and office uses generate approximately 470 daily trips, 19 AM peak hour trips, and 45 PM peak hour trips.

Vehicle trip generation for the 66 residential units is estimated using rates and equations for the Apartment Category (Land Use 220) in ITE Trip Generation, 9th Edition. Vehicle trip generation for the 4,500 square feet of restaurant space is estimated using rates and equations for the Quality Restaurant Category (Land Use 931). Vehicle trip generation for the 1,400 square feet of retail space is estimated using rates and equations for the Shopping Center Category (Land Use 820). The proposed development would generate approximately 904 daily trips, 39 AM peak hour trips and 80 PM peak hour trips. **Table 4** shows the vehicle trip generation estimates.

TABLE 4: PROJECT TRIP GENERATION

Land Use	ITE Code	Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Apartment	220[1]	66 dwelling units	439	7	27	34	27	14	41
Restaurant	931[2]	4,500 square feet	405	3	1	4	23	11	34
Retail	820[3]	1,400 square feet	60	1	0	1	2	3	5
Total			***904***	***11***	***28***	***39***	***52***	***28***	***80***

Notes:
1. Following ITE trip generation average rates used (ITE Code 220 – Apartment):
   Daily: T = 6.65 * X AM: T = 0.51 * X; Enter = 20%, Exit = 80% PM: T = 0.62 * X; Enter = 65%, Exit = 35%
   Where X = total dwelling units, T = number of vehicle trips
2. Following ITE trip generation average rates used (ITE Code 931 – Quality Restaurant):
   Daily: T = 89.95 * X AM: T = 0.96 * X; Enter = 62%, Exit = 38% PM: T = 3.71 * X; Enter = 48%, Exit = 52%
   Where X = total square footage, T = number of vehicle trips
3. Following ITE trip generation average rates used (ITE Code 820 –Shopping Center):
   Daily: T = 42.70 * X AM: T = 0.81 * X; Enter = 82%, Exit = 18% PM: T = 7.49 * X; Enter = 67%, Exit = 33%
   Where X = total square footage, T = number of vehicle trips

Source: Trip Generation Manual (9th Edition), ITE, 2012.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution is defined as the directions of approach and departure that vehicles would use to arrive at and depart from the site. This traffic analysis assumes that all new Project trips would be distributed proportionately based on an assessment of the current movements at the existing driveways on Dolores Drive and Mount Diablo Boulevard and at the intersection of Mount Diablo Boulevard and Dolores Drive. Because the external traffic impact analysis is performed for the alternative with a single driveway on Dolores Drive, all project trips are shown entering or existing the site at the Dolores Drive driveway.

Figure 3 shows the Project vehicle trips assigned to the intersection turning movements; **Figure 4** shows the Project trips combined with the existing traffic volumes shown on Figure 2.

EXISTING PLUS PROJECT TRAFFIC OPERATIONS

Traffic operations throughout the study area are analyzed using the Synchro models used in the evaluation of the existing peak hours. **Table 5** shows the LOS results for both scenarios; as shown, the additional traffic due to the Project is not projected to impact the study intersections.

Table 6 shows the 50th and 95th percentile queue results for both scenarios. The queue lengths reports are estimated from equations that approximate the length of the 50th and 95th longest queues from a sample of 100 observed maximum queues.

The analysis shows that the southbound approach on Dolores Drive at Mount Diablo Boulevard can accommodate the additional traffic generated by the Project with the current lane configuration. The southbound 95th percentile queue on Dolores Drive at Mount Diablo Boulevard would grow approximately 30 to 40 feet, reaching the proposed access driveway. Queues during most of the peak hour would be shorter than this maximum queue. The average cycle length at the intersection would increase approximately four to five seconds during each peak hour.

Additionally, vehicles turning left into the project site from Dolores Drive experience minimal delay yielding to vehicles coming southbound on Dolores Drive toward Mount Diablo Boulevard. The queue that results from the northbound left turn movement into the project site should not affect operations on Dolores Drive, at the project driveway, or at the private driveway across the street for 3658 Mount Diablo Boulevard.

TABLE 5: EXISTING PLUS PROJECT CONDITIONS INTERSECTION OPERATIONS SUMMARY

Intersection	Control[1]	Peak Hour	Existing Conditions		Existing Plus Project Conditions	
			Delay[2]	LOS[2]	Delay[2]	LOS[2]
Mount Diablo Boulevard / Risa Road / Village Center	Signal	AM PM	8.8 10.5	A B	8.8 10.6	A B
Mount Diablo Boulevard / Dolores Drive / Mountain View Drive	Signal	AM PM	21.2 26.4	C C	23.2 30.6	C C
Mount Diablo Boulevard / Happy Valley Road	Signal	AM PM	16.9 25.7	B C	17.2 26.1	B C
Dolores Drive / Existing Celia's Driveway (or Proposed Driveway)[3]	SSSC	AM PM	0.8 (8.9) 0.7 (8.8)	A (A) A (A)	1.7 (8.9) 2.9 (8.8)	A (A) A (A)

Notes:
1. Signal = signalized intersection; SSSC = side-street stop controlled intersection.
2. Traffic operations results include LOS (level of service) and delay (seconds per vehicle). LOS is based on delay thresholds published in the Highway Capacity Manual (Transportation Research Board, 2000).
3. Delay is reported as: Average delay for intersection (Average delay for worst movement).

Source: *Fehr & Peers, 2014.*

TABLE 6: EXISTING AND EXISTING PLUS PROJECT CONDITIONS QUEUE SUMMARY

Intersection	Move-ment	Storage Length	Existing Conditions[1]		Existing Plus Project Conditions[1]	
			50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Mount Diablo Boulevard / Risa Road / Village Center	EBL	125	10 (10)	30 (30)	10 (10)	30 (30)
	EBT-R	-	30 (60)	60 (120)	30 (60)	70 (130)
	WBL	100	10 (20)	40 (50)	10 (20)	40 (50)
	WBT-R	-	20 (30)	80 (100)	20 (30)	80 (110)
	NB	-	10 (10)	40 (40)	10 (10)	40 (40)
	SB	-	10 (30)	40 (90)	10 (30)	40 (90)
Mount Diablo Boulevard / Dolores Drive / Mountain View Drive	EBL	75	10 (20)	50 (50)	20 (30)	60 (90)
	EBT-R	-	90 (270)	180 (470)	100 (290)	190 (510)
	WBL	100	20 (60)	60 **(130)**	20 (60)	70 **(130)**
	WBT-R	500	150 (130)	280 (230)	170 (150)	310 (280)
	NB	-	50 (120)	120 (230)	50 (130)	130 (250)
	SB	130	40 (50)	120 (110)	60 (70)	**150 (150)**
Mount Diablo Boulevard / Happy Valley Road	EBL	100	70 **(230)**	**180 (490)**	80 **(240)**	**190 (510)**
	EBT-R	500	20 (110)	50 (190)	20 (110)	60 (190)
	WBL	75	20 (60)	60 **(120)**	20 (60)	60 **(120)**
	WBT-R	-	50 (110)	110 (180)	50 (120)	110 (190)
	NB	-	20 (70)	70 (140)	20 (70)	70 (140)
	SBL-T	-	40 (110)	110 (210)	40 (120)	110 (210)
	SBR	125	10 (10)	80 (70)	10 (10)	80 (70)
Dolores Drive / Existing Celia's Driveway (or Proposed Driveway)	EB	-	10 (10)	10 (10)	10 (10)	10 (10)
	NB	130	10 (10)	10 (10)	10 (10)	10 (10)

Notes:
1. Reported queues are AM peak hour (PM peak hour).
2. All distances are measured in feet.
3. Bold indicates queue length exceeds storage length.

Source: *Fehr & Peers, 2014.*

CUMULATIVE TRAFFIC CONDITIONS

Traffic forecasts are from the *Downtown Lafayette Specific Plan EIR*. The "Cumulative with Specific Plan Project" scenario from the EIR represents the "Cumulative No Project" scenario for this traffic analysis. The forecasts from the EIR are adjusted slightly to reflect the existing traffic data and to account for new developments expected to be built and occupied in the project vicinity in the near-term. **Figure 5** shows the resulting traffic forecasts at the study intersections and **Table 7**

shows the LOS results. Also shown are the results from the Specific Plan EIR, which are generally consistent with the findings of this analysis. The difference at the intersection of Mount Diablo Boulevard / Dolores Drive / Mountain View Drive is due to updated signal timings and new vehicle forecasts, influenced by the recently obtained vehicle counts, as well as other minor inputs.

TABLE 7: CUMULATIVE CONDITIONS INTERSECTION OPERATIONS SUMMARY

Intersection	Control[1]	Peak Hour	Cumulative Conditions No Project		Cumulative Conditions with Specific Plan Project from Specific Plan EIR	
			Delay[2]	LOS[2]	Delay[2]	LOS[2]
Mount Diablo Boulevard / Risa Road / Village Center	Signal	AM PM	11.2 13.2	B B	10.0 11.2	A B
Mount Diablo Boulevard / Dolores Drive / Mountain View Drive	Signal	AM PM	25.8 42.1	C D	12.1 18.0	B B
Mount Diablo Boulevard / Happy Valley Road	Signal	AM PM	27.3 49.5	C D	27.2 45.4	C D
Dolores Drive / Existing Celia's Driveway[3]	SSSC	AM PM	1.5 (9.4) 0.9 (10.0)	A (A) A (A)	n/a n/a	n/a n/a

Notes:
1. Signal = signalized intersection; SSSC = side-street stop controlled intersection.
2. Traffic operations results include LOS (level of service) and delay (seconds per vehicle). LOS is based on delay thresholds published in the Highway Capacity Manual (Transportation Research Board, 2000).
3. Delay is reported as: Average delay for intersection (Average delay for worst movement).

Source: *Fehr & Peers, 2014.*

CUMULATIVE PLUS PROJECT TRAFFIC OPERATIONS

The Project vehicle trip turning movements at the study intersections (Figure 3) are added to the Cumulative No Project traffic volumes (Figure 5) to obtain the Cumulative Plus Project traffic volumes shown on **Figure 6**. The Synchro models are used to evaluate the cumulative traffic forecasts (without and with Project) and the resulting LOS is shown in **Table 8**. As shown, the additional traffic due to the Project is not projected to impact the study intersections. **Table 9** shows the 50th and 95th percentile queue results for both scenarios. The queue lengths reports are estimated from equations that approximate the length of the 50th and 95th longest queues from a sample of 100 observed maximum queues.

TABLE 8: CUMULATIVE PLUS PROJECT INTERSECTION OPERATIONS SUMMARY

Intersection	Control[1]	Peak Hour	Cumulative No Project		Cumulative Plus Project	
			Delay[2]	LOS[2]	Delay[2]	LOS[2]
Mount Diablo Boulevard / Risa Road / Village Center	Signal	AM PM	11.2 13.2	B B	12.0 13.5	B B
Mount Diablo Boulevard / Dolores Drive / Mountain View Drive	Signal	AM PM	25.8 42.1	C D	28.3 49.8	C D
Mount Diablo Boulevard / Happy Valley Road	Signal	AM PM	27.3 49.5	C D	27.5 51.7	C D
Dolores Drive / Existing Celia's Driveway (or Proposed Driveway)[3]	SSSC	AM PM	1.5 (9.4) 0.9 (10.0)	A (A) A (A)	1.4 (9.0) 2.0 (9.4)	A (A) A (A)

Notes:
1. Signal = signalized intersection; SSSC = side-street stop controlled intersection.
2. Traffic operations results include LOS (level of service) and delay (seconds per vehicle). LOS is based on delay thresholds published in the Highway Capacity Manual (Transportation Research Board, 2000).
3. Delay is reported as: Average delay for intersection (Average delay for worst movement).

Source: *Fehr & Peers, 2014.*

TABLE 9: CUMULATIVE AND CUMULATIVE PLUS PROJECT CONDITIONS QUEUE SUMMARY

Intersection	Move-ment	Storage Length	Cumulative Conditions[1]		Cumulative Plus Project Conditions[1]	
			50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Mount Diablo Boulevard / Risa Road / Village Center	EBL	125	10 (10)	50 (50)	10 (10)	50 (50)
	EBT-R	-	50 (90)	100 (190)	50 (100)	100 (200)
	WBL	100	20 (30)	60 (80)	20 (30)	70 (90)
	WBT-R	-	70 (80)	150 (160)	70 (80)	150 (170)
	NB	-	20 (10)	70 (50)	20 (10)	70 (50)
	SB	-	30 (50)	90 (130)	30 (50)	100 (140)
Mount Diablo Boulevard / Dolores Drive / Mountain View Drive	EBL	75	20 (40)	60 **(90)**	20 (50)	70 **(120)**
	EBT-R	-	160 (440)	310 (760)	180 (440)	330 (840)
	WBL	100	30 (80)	90 **(170)**	30 (80)	90 **(160)**
	WBT-R	500	210 (420)	390 **(680)**	240 (450)	430 **(840)**
	NB	-	70 (180)	170 (310)	70 (160)	180 (310)
	SB	130	70 **(140)**	**160 (250)**	90 **(150)**	**200 (270)**
Mount Diablo Boulevard / Happy Valley Road	EBL	100	**160 (380)**	**310 (720)**	**170 (400)**	**310 (730)**
	EBT-R	500	90 (230)	140 (340)	90 (240)	140 (340)
	WBL	75	50 **(150)**	**120 (250)**	50 **(150)**	**120 (250)**
	WBT-R	-	190 (230)	290 (290)	190 (230)	290 (300)
	NB	-	50 (110)	120 (290)	50 (120)	120 (290)
	SBL-T	-	130 (260)	320 (540)	140 (270)	320 (540)
	SBR	125	40 (80)	**210 (210)**	50 (80)	**220 (220)**
Dolores Drive / Existing Celia's Driveway (or Proposed Driveway)	EB	-	10 (10)	10 (10)	10 (10)	10 (10)
	NB	130	10 (10)	10 (10)	10 (10)	10 (10)

Notes:
1. Reported queues are AM peak hour (PM peak hour).
2. All distances are measured in feet.
3. Bold indicates queue length exceeds storage length.

Source: *Fehr & Peers, 2014.*

The analysis shows that the southbound approach on Dolores Drive at Mount Diablo Boulevard can accommodate the additional traffic generated by the Project with the current lane configuration. The southbound 95th percentile queue on Dolores Drive at Mount Diablo Boulevard would grow approximately 20 to 40 feet during both peak hour relative to Cumulative No Project Conditions; queues in both scenarios would reach the project driveway.

Again, vehicles turning left into the project site from Dolores Drive experience minimal delay yielding to vehicles coming southbound on Dolores Drive toward Mount Diablo Boulevard. The queue that results from the northbound left turn movement into the project site should not affect operations on Dolores Drive, at the project driveway, or at the private driveway across the street for 3658 Mount Diablo Boulevard.

TRAFFIC IMPACT SIGNIFICANCE DETERMINATION

As stated earlier, the City of Lafayette strives to maintain a "good" LOS D (less than 45 seconds of average control delay per vehicle) for intersection operations at most intersections. At downtown intersections, the City of Lafayette strives to maintain LOS D (less than 55 seconds of average control delay per vehicle). As shown in the previous tables, all intersections are projected to operate at LOS D or better under the evaluated scenarios; therefore, the Project does not have a significant impact on the study intersections, and intersection mitigation is not needed. The Synchro worksheets used to complete this analysis are provided in **Attachment B**.

SITE PLAN REVIEW

The Project site plans have been reviewed with consideration for safe and efficient circulation of vehicles and pedestrians through the project site and on the roadways adjacent to the project site. **Figures 7a, 7b, and 7c** show the site plans that are reviewed for this study. The review focuses on:

- Existing pedestrian, bicycle, and transit facilities
- Vehicle access and circulation, including parking layout within the site
- Emergency vehicle access to the site
- Pedestrian access and circulation within and adjacent to the site

EXISTING PEDESTRIAN, BICYCLE, AND TRANSIT FACILITIES

In the vicinity of the project area, there is a sidewalk on the north side of Mount Diablo Boulevard, which extends from Risa Road in the west to Pleasant Hill Road in the east. A continuous sidewalk exists from the same extents on the south side of Mount Diablo Boulevard, except for a 300-foot segment west of Mountain View Drive in front of Diamond K Supply. In this location there is a

wide, undefined driveway for supply trucks accessing materials at the Diamond K Supply storage yard, as well as parking in front of the Lescure Company building.

On the west side of Dolores Drive, there is a 100-foot segment of sidewalk between Mount Diablo Boulevard and the existing Celia's driveway; the west side sidewalk begins again at the SR 24 overpass. On the east side of Dolores Drive, there is sidewalk from Mount Diablo Boulevard to the connection with Via Roble in the north. There are also crosswalks across all four approaches of the Mount Diablo Boulevard / Dolores Drive / Mountain View Drive intersection. The next crosswalk across Mount Diablo Boulevard west of the Dolores Drive intersection is approximately 2,000 feet to the west at Risa Road / Village Center. The next crosswalk across Mount Diablo Boulevard east of the Dolores Drive intersection is approximately 500 feet to the east at Happy Valley Road.

A Class II Bikeway (Bicycle Lane) provides a restricted right-of-way and is designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally four to six feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted. A Class III Bikeway (Bicycle Route) provides for a right-of-way designated by signs or pavement markings (sharrows) for shared use with pedestrians or motor vehicles. Sharrows are a type of pavement marking (bike and arrow stencil) placed to guide bicyclists to the best place to ride on the road, avoid car doors, and remind drivers to share the road with cyclists.

Currently, there are Class II bicycle lanes in both directions on Mount Diablo Boulevard from Acalanes Road in the west to Dolores Drive in the east. East of Dolores Drive, there are Class III bicycle routes designated to First Street, where the Class II bicycle lanes pick up again and continue to Pleasant Hill Road. Typically, the Class II bicycle lanes are placed between a vehicle travel lane and vehicle parking. There is currently parking on both sides of Mount Diablo Boulevard in the vicinity of the project.

The project site is approximately one-half mile from the Lafayette Bay Area Rapid Transit (BART) Station. BART provides regional commuter rail service between San Francisco and the East Bay (Pittsburg/Bay Point, Richmond, Dublin/Pleasanton and Fremont), as well as between San Francisco and San Mateo County (SFO Airport and Millbrae). Weekday hours of operation are between 4 AM and midnight. During the weekday AM and PM peak periods, headways are five to 15 minutes along each line. Within Lafayette, BART operates above grade in the median of SR 24 and the Lafayette BART Station is located off Deer Hill Road between Oak Hill Road and Happy Valley Road.

Currently, two County Connection transit routes serve Lafayette in the vicinity of the project site. Route 6 runs between the Orinda BART Station and the Lafayette BART Station, serving Moraga and St. Mary's College via Moraga Way and Moraga Road. Route 6 runs from 6:00 AM to 9:00 PM on weekdays and 9:30 AM to 6:00 PM on weekends, and headways for Route 6 are 30 minutes during the weekday peak periods, 90 minutes during the weekday off peak periods, and 80 minutes during the weekend. The closest bus stop for Route 6 is at the Lafayette BART Station.

Route 25 runs between the Lafayette BART Station and the Walnut Creek BART Station along Mount Diablo Boulevard. Route 25 runs from 7:30 AM to 6:30 PM on weekdays only, and headways for Route 25 are 60 minutes. The closest bus stop for Route 25 is at Happy Valley Road.

VEHICULAR ACCESS AND CIRCULATION

As mentioned, there are three access alternatives for the development. The alternative that has been studied in the traffic impact analysis portion of this memorandum has a full access unsignalized driveway on Dolores Drive, approximately 130 feet north of Mount Diablo Boulevard. A second alternative proposes a full unsignalized access midblock driveway on Mount Diablo Boulevard across from Diamond K Supply in addition to the Dolores Drive driveway. A third alternative proposes a full unsignalized access driveway at the west edge of the project site, directly east of the existing driveway for 3686 and 3688 Mount Diablo Boulevard, in addition to the Dolores Drive driveway. The following sections detail the evaluations and recommendations for each of the three alternatives.

Dolores Drive Only Alternative

Dolores Drive is signed with a 25 mile per hour speed limit, though observations and resident comments suggested that the prevailing speed southbound on Dolores Drive is higher. A 100-vehicle speed survey of southbound Dolores Drive showed that the 85th percentile speed is 33 miles per hour. Though somewhat winding, Dolores Drive has a downhill grade toward Mount Diablo Boulevard, likely a contributing factor to the higher speeds. A future pedestrian/bicycle trail along the East Bay Municipal Utility District (EBMUD) right-of-way is proposed to cross Dolores Drive just north of the project. Crossing treatments used for the trail could potentially decrease vehicle speeds as they approach the project driveway from the north. The proposed driveway does not conflict with plans for the trail or its Dolores Drive crossing treatment.

Section 205.3 of the Caltrans Highway Design Manual describes the requirements for urban driveways. It references sections 405.1 and 201.3, which provide the requirements for sight distance from a driveway. Corner sight distance is not required from an urban driveway, leaving stopping sight distance as the minimum standard. The required stopping sight distance from the driveway for a 25 mile per hour road would be 150 feet, while the required sight distance from the driveway for a 33 mile per hour road would be 230 feet.

Section 201.3 also warns that "the stopping sight distances in Table 201.1 should be increased by 20 percent on sustained downgrades steeper than 3 percent and longer than one mile." Though not longer than one mile, the required stopping sight distance when the downgrade is accounted for is 275 feet. Based on field measurements, there is approximately 300 feet of stopping sight distance from the proposed Dolores Drive driveway. The ramp into the garage should be carefully designed to maximize sight distance from the driveway. Vehicles should be close to level with Dolores Drive as they stop to look for clearance before entering Dolores Drive. Vehicles will also need to be able to see pedestrians on the sidewalk waiting to cross the driveway.

Consultant Recommendation A1: Ensure adequate sight distance is maintained at the Dolores Drive driveway after the installation of the garage ramp and that vehicles will be able to see pedestrians on the sidewalk waiting to cross the driveway. Prohibit on-street parking on the west side of Dolores Drive north of the proposed driveway.

The traffic operations analysis also shows that the driveway impacts on Dolores Drive will be occasional and restricted to the peak hours only. Southbound Dolores Drive vehicles will experience minor increases in delay from the additional southbound queue, but will still be able to pass through the intersection during each signal cycle. Northbound vehicles will also be delayed occasionally when a vehicle is turning left into the driveway and must wait for a gap in southbound traffic, though this delay is expected to be minimal.

The curb cuts on the Dolores Drive driveway appear to be wider than necessary; curb radii should be smaller to decrease speeds at the proposed driveways.

Consultant Recommendation A2: Decrease the curb radii at the driveways to slow vehicles entering and exiting the project site.

There is angled on-street parking proposed on Mount Diablo Boulevard to supplement the parking provided on-site. These parking stalls should be designed to allow back-in angled parking, given the Class II bicycle lane on westbound Mount Diablo Boulevard. Back-in angled

parking has been shown to reduce the number of conflicts and collisions between bicyclists and vehicles on roadway segments.[2]

Consultant Recommendation A3: The applicant should consider converting the proposed Mount Diablo Boulevard angled parking to back-in angled parking.

Mount Diablo Boulevard Midblock Alternative

A second alternative has a full access, unsignalized driveway on Mount Diablo Boulevard across from the Diamond K Supply driveway. Traffic counts were collected for this driveway which showed eight vehicles using the driveway in the AM peak hour and 11 vehicles using the driveway in the PM peak hour. The proposed driveway would be very similar to the existing condition in terms of layout, though there is an opportunity to align the proposed driveway with the driveway on the south side of Mount Diablo Boulevard, which would remove some potential conflicts for vehicles entering and exiting both driveways.

Additionally, there are currently six driveways on what would be the Project's Mount Diablo Boulevard frontage. Eliminating these driveways (Dolores Drive only alternative) or consolidating them to a single main driveway would remove some of the conflicts associated with vehicles entering and exiting several closely spaced driveways and the driveways on the south side of Mount Diablo Boulevard. Elimination or consolidation of the existing Mount Diablo Boulevard driveways also improves safety for pedestrians and westbound cyclists on Mount Diablo Boulevard.

With the proposed on-street angled parking (forward-in or back-in), the midblock driveway's location between two on-street parking zones will decrease sight distance coming into and out of the driveway. This will be a potentially busy pedestrian area, increasing the importance of appropriate sight distance at this location.

Additionally, traffic counts suggest that about half of the vehicles for the current restaurant access the site via Dolores Drive and half of the vehicles access the site via the driveways on Mount Diablo Boulevard. This new Mount Diablo Boulevard driveway would only be used for residents accessing the secure parking in the garage, limiting vehicle demand at the driveway. However, providing a driveway on Mount Diablo Boulevard could lead to confusion for restaurant/retail

[2] "Back-in/Head-out Angle Parking," Nelson\Nygaard Consulting Associates, January 2005.

customers, who will not be able to access the guest parking from this driveway, necessitating additional turn around movements on the driveway and in the parking garage.

Although not in the operations analysis above, the Mount Diablo Boulevard driveway has been analyzed to ensure that vehicles would be able to exit without unnecessarily long delays. The driveway (under either scenario) would operate at LOS B during both peak hours in the Existing Plus Project scenario. Queues would rarely be more than one vehicle long, and the signal at Dolores Drive would provide a significant number of gaps for vehicles to turn into and out of the driveway, effectively metering westbound traffic.

The recommendations for Dolores Drive driveway scenario apply to this scenario as well, and recommendations B1 and B2 apply to the Mount Diablo Boulevard driveway as well.

Consultant Recommendation B1: Ensure adequate sight distance is maintained at the Dolores Drive and Mount Diablo Boulevard driveways after the installation of the garage ramp and that vehicles will be able to see pedestrians on the sidewalk waiting to cross the driveway. Prohibit on-street parking on the west side of Dolores Drive north of the proposed driveway.

Consultant Recommendation B2: Decrease the curb radii at the driveways to slow vehicles entering and exiting the project site.

Consultant Recommendation B3: The applicant should consider converting the proposed Mount Diablo Boulevard angled parking to back-in angled parking.

Mount Diablo Boulevard West End Alternative

A third alternative has a full access, unsignalized driveway on Mount Diablo Boulevard at the west end of the project site. The proposed driveway would be less than 40 feet from the existing driveway serving 3686 and 3688 Mount Diablo Boulevard. There is an existing tree line and brick wall separating the two parcels currently, as well as a grade difference between them. Locating the new driveway next to the existing driveway, as well as slightly offset from the driveway to the office building across the street, would significantly increase the potential for vehicle conflicts turning into and out of the driveways (whether the driveway was a full access driveway or a right-in, right-our driveway). The midblock alternative results in fewer conflicts with vehicles entering and exiting nearby driveways.

The Mount Diablo Boulevard driveway in this scenario appears to have a standard driveway apron, an option that should be considered for the other driveway and alternatives. The recommendations for the Dolores Drive driveway scenario apply to this scenario as well, and recommendation C1 applies to the Mount Diablo Boulevard driveway as well.

Consultant Recommendation C1: Ensure adequate sight distance is maintained at the Dolores Drive and Mount Diablo Boulevard driveways after the installation of the garage ramp and that vehicles will be able to see pedestrians on the sidewalk waiting to cross the driveway. Prohibit on-street parking on the west side of Dolores Drive north of the proposed driveway.

Consultant Recommendation C2: Decrease the curb radii at the driveways to slow vehicles entering and exiting the project site.

Consultant Recommendation C3: The applicant should consider converting the proposed Mount Diablo Boulevard angled parking to back-in angled parking.

EMERGENCY VEHICLE ACCESS

Factors such as number of access points, roadway width, and proximity to fire stations determine whether a project provides sufficient emergency access. The proposed Project provides a point of entry on Dolores Drive and potentially a second entry on Mount Diablo Boulevard, and all proposed points of entry are full access. Section 6-623 of the *Lafayette, California Municipal Code* states that access drives must be at least 20 feet wide; the driveway proposed in the plans shown on Figure 7a, 7b, and 7c appear to meet this requirement, though the driveway widths should be checked to ensure the proposed driveways are adequate for emergency vehicle access.

The fire station most likely to serve the site is located on Mount Diablo Boulevard, just over one mile to the east. Emergency vehicles would travel west directly down Mount Diablo Boulevard to access the site and would not have to complete any U-turns to gain entry. Given these considerations, the Project provides sufficient emergency access.

PEDESTRIAN ACCESS AND CIRCULATION

There are sidewalks proposed fronting the project site on both Dolores Drive and Mount Diablo Boulevard. The existing sidewalks, which are approximately five feet wide with numerous curb cuts would be replaced. This is compliant with *Americans with Disabilities Act Standards for*

Accessible Design, which requires four feet of clear distance, but eight-foot sidewalks on Mount Diablo Boulevard fronting the Project and a reduction in the number of curb cuts will make the sidewalks more comfortable for users.

The overall plan provides good connectivity throughout the site and to the surrounding sidewalks, particularly with the plaza at the southeast corner of the Project. Internal pedestrian paths should be at least six feet wide to ensure a comfortable passage for pedestrians walking next to each other. All building frontages are set back an appropriate distance from Mount Diablo Boulevard and Dolores Drive. ADA-compliant curb ramps should be built at this corner of the intersection when the sidewalks are rebuilt. This corner provides the access to downtown and to transit connections (both BART and County Connection).

Consultant Recommendation A4/B4/C4: Ensure that all internal pedestrian paths are at least six feet wide.

As stated earlier, elimination of the Mount Diablo Boulevard driveways would most improve safety for pedestrians along the north side of Mount Diablo Boulevard, though consolidation to one driveway also improves on the existing condition.

PARKING SUPPLY AND DEMAND

The site plan shows 185 parking spaces, including 114 gated spaces for residents, 53 underground parking spaces for guests of residents and customers of the restaurant and retail locations, and 18 on-street parking spaces for restaurant and retail customers. This is sufficient parking to meet code requirements as discussed below.

CITY CODE REQUIREMENTS

Currently, the parcel is classified as part of the General Commercial District (C-1). The City of Lafayette's off-street parking requirement in the General Commercial District is one parking space per one bedroom dwelling unit, 1.2 parking spaces per two bedroom dwelling unit, and 1.5 parking spaces per three bedroom dwelling unit (Section 6-992 of the *Lafayette, California Municipal Code*) in a multi-family residential district. In addition, for multi-family residential developments, one guest parking space is required for each five dwelling units.

With 66 dwelling units, 122 parking spaces are required if the parcel is zoned as part of the multi-family residential townhouse district (M-R-T district); both spaces for each unit are accessible from the unit per code. In addition, thirteen parking spaces for guests would be required in the garage.

The 4,500 square foot restaurant will require one parking space for every 500 feet of gross kitchen area and an additional space for every 45 square feet of gross dining area (Section 6-641 (r) of the *Lafayette, California Municipal Code*). Based on the floor space estimates from the architect, 52 parking spaces will be required for the restaurant use. The 1,400 square foot retail space will require one parking space for every 250 feet of net retail floor area (Section 6-641 (v) of the *Lafayette, California Municipal Code*). Based on the floor space estimates from the architect, 6 parking spaces will be required for the restaurant use.

On-street parking on Mount Diablo Boulevard could also supplement the parking provided on-site. There are currently five parking spaces on Mount Diablo Boulevard along the project frontage; these parking spaces will be removed in favor of new on-street parking stalls. As recommended, these parking stalls should be designed to allow back-in angled parking, given the Class II bicycle lane on westbound Mount Diablo Boulevard.

Based on observations, three to four of the existing parking spaces were occupied during a weekday afternoon. These parking spaces were limited to two hours from Monday to Saturday during the hours of 7:00 AM to 6:00 PM. More on-street parking exists on the north side of Mount Diablo Boulevard to the west of the project site that could potentially supplement the proposed parking supply. There are two parking stalls located on the west side of Dolores Drive south of the proposed driveway. These parking stalls should be used for loading and unloading only, and a plan to determine the maximum size truck that can access the spaces and how they get there should be developed. Time of day restrictions should be in place for trucks that will need to stop on Mount Diablo Boulevard to drop off/pick up from the project site. There is an additional zone on Mount Diablo Boulevard in the Dolores Drive driveway only scenario. This location should be treated similarly.

Consultant Recommendation A5/B5/C5: Paint the curb white or yellow in the parking area to denote a loading (or commercial loading) zone south of the proposed driveway.

Table 8 displays the parking requirements per code and the supply proposed for the Project.

TABLE 8: PARKING REQUIREMENTS AND SUPPLY

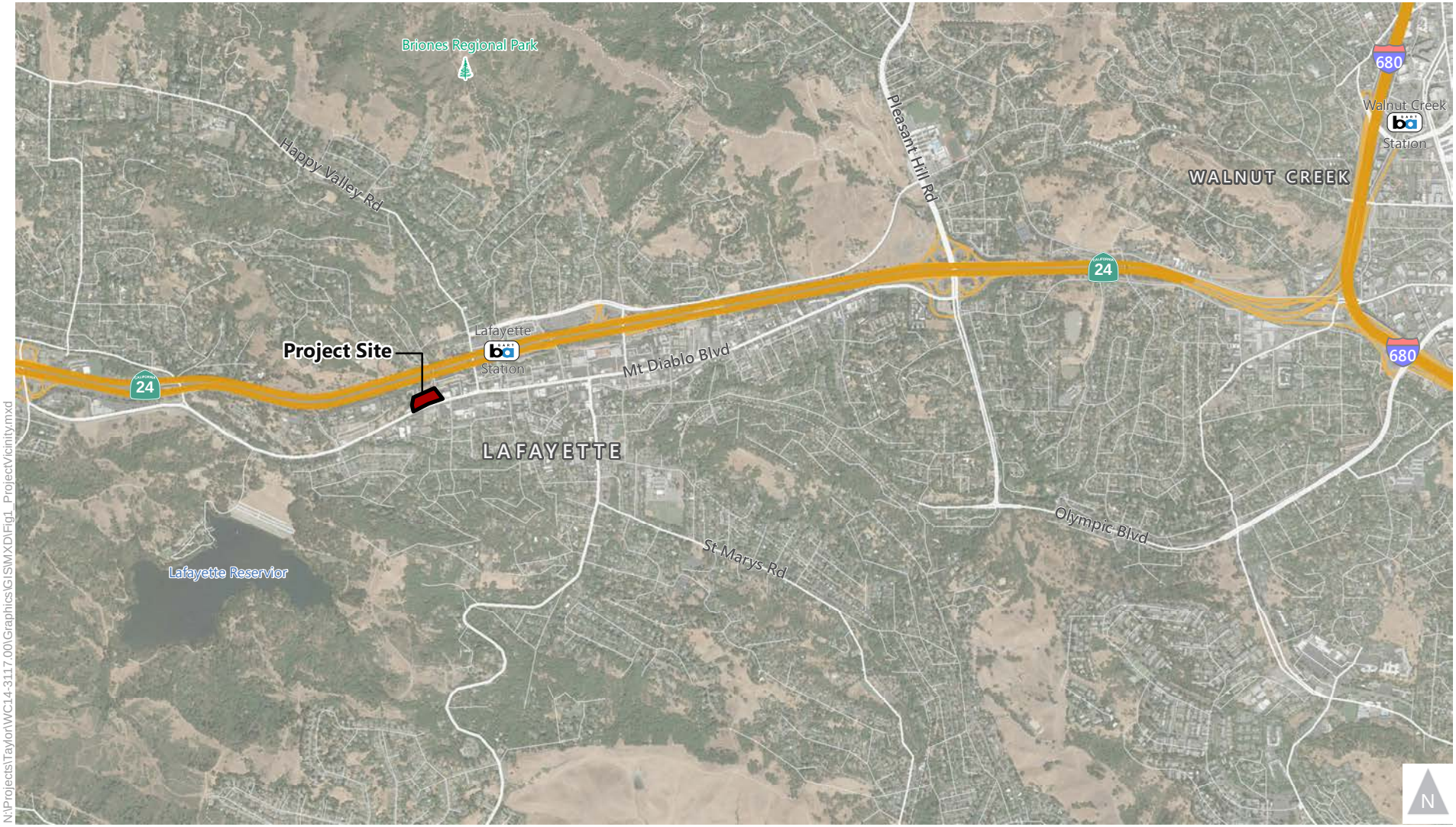
Land Use	For Residents			For Guests			Does Parking Supply Meet City Code?
	Required	Supplied	Surplus / Deficit	Required	Supplied	Surplus / Deficit	
Residential	82	114	+32	13	13	-	Yes
Retail	-	-	-	6	58[1]	-	Yes
Restaurant	-	-	-	52		-	Yes
Total	***82***	***114***	***+32***	***71***	***71***	***-***	***Yes***

Notes:
1. Includes 40 parking spaces in basement and 18 on-street parking spaces
Source: Fehr & Peers, 2014.

In the parking garage, the parking spaces provided are of adequate depth and width and there is adequate space to maneuver in/out of each space. The spaces near the Mount Diablo Boulevard driveway are not ideally located. Typically, about 50 feet should be provided between the driveway entry and the first parking space. However, given the small project size it is expected that internal conflicts will appear infrequently. In addition, recommendations to reduce the curb radii will slow vehicle speeds entering and exiting the site. The dead-end aisles, while typically not recommended, are located in areas with assigned parking spaces only, which will eliminate the need for turnarounds when vehicles searching for a parking space are not able to find one.

Attachments:

Figure 1	Project Vicinity
Figure 2	Existing Traffic Control, Lane Configurations, and Peak Hour Traffic Volumes
Figure 3	Project Trip Turning Movements
Figure 4	Existing Plus Project Peak Hour Traffic Forecasts
Figure 5	Cumulative Conditions Peak Hour Traffic Forecasts
Figure 6	Cumulative Plus Project Peak Hour Traffic Forecasts
Figure 7a	Site Plan Recommendations – Dolores Drive Driveway Only Plan
Figure 7b	Site Plan Recommendations – Mid-block Mount Diablo Driveway Plan
Figure 7c	Site Plan Recommendations – Western Mount Diablo Driveway Plan
Attachment A	Traffic Counts
Attachment B	Synchro Worksheets

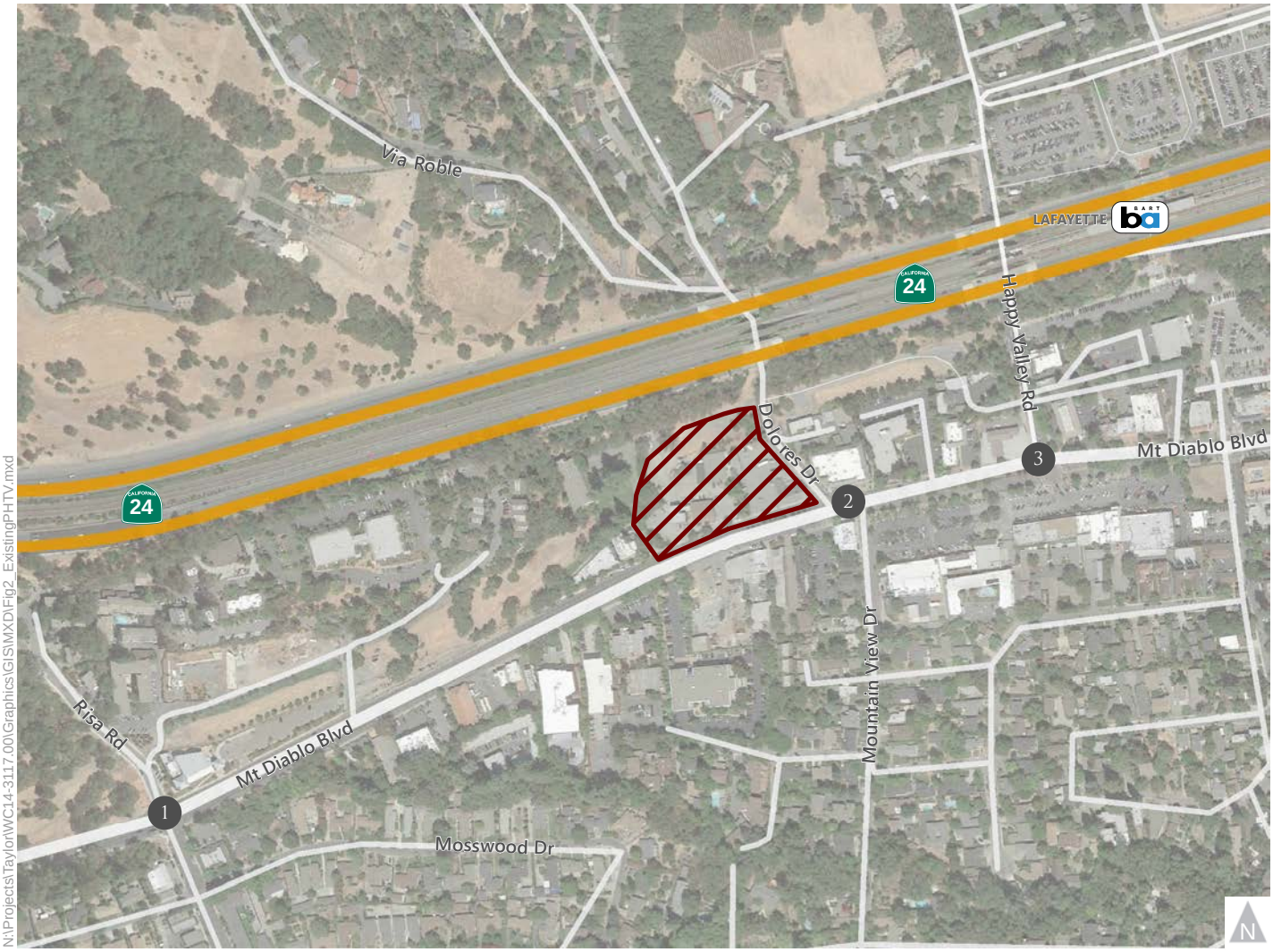


Project Site

BART Station

Figure 1

Project Vicinity



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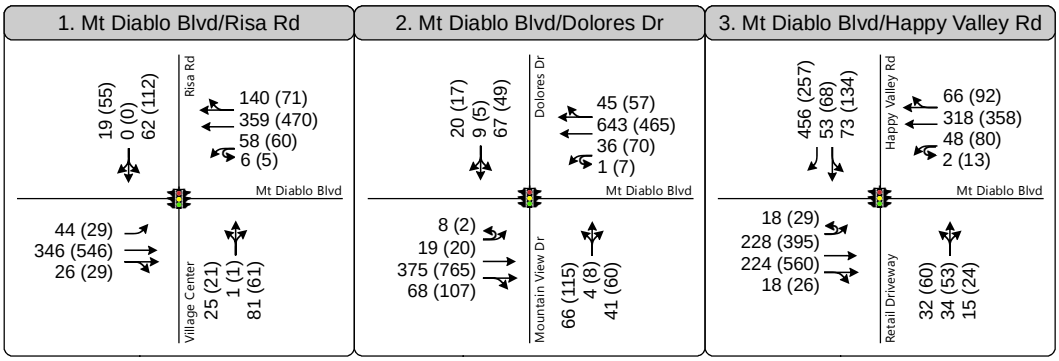


1 Study Intersection

Traffic Signal

Turn Lane

BART Station

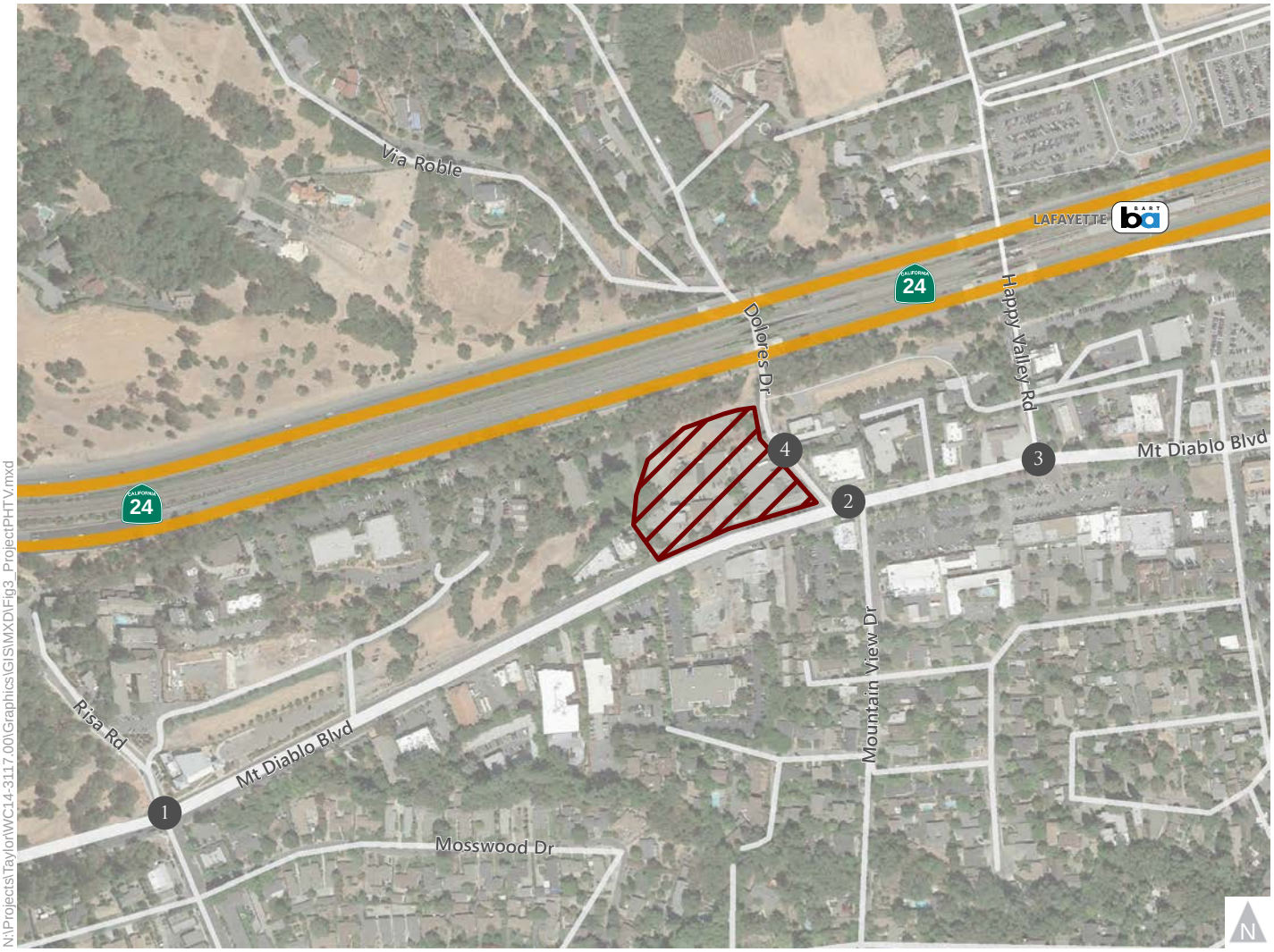
Stop Sign

AM (PM) Peak Hour Traffic Volume

Project Site

Figure 2

Existing Traffic Control, Lane Configurations, and Peak Hour Traffic Volumes



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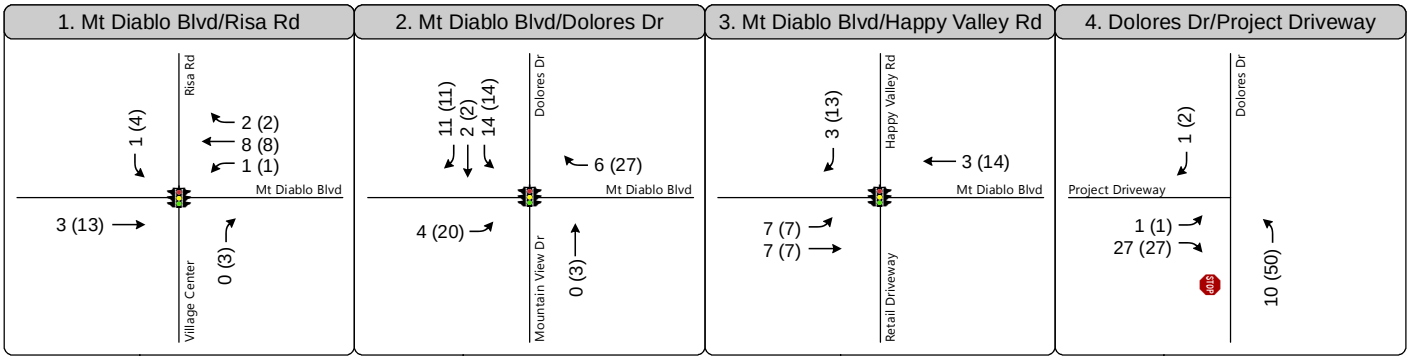


1 Study Intersection

Traffic Signal

Turn Lane

BART Station

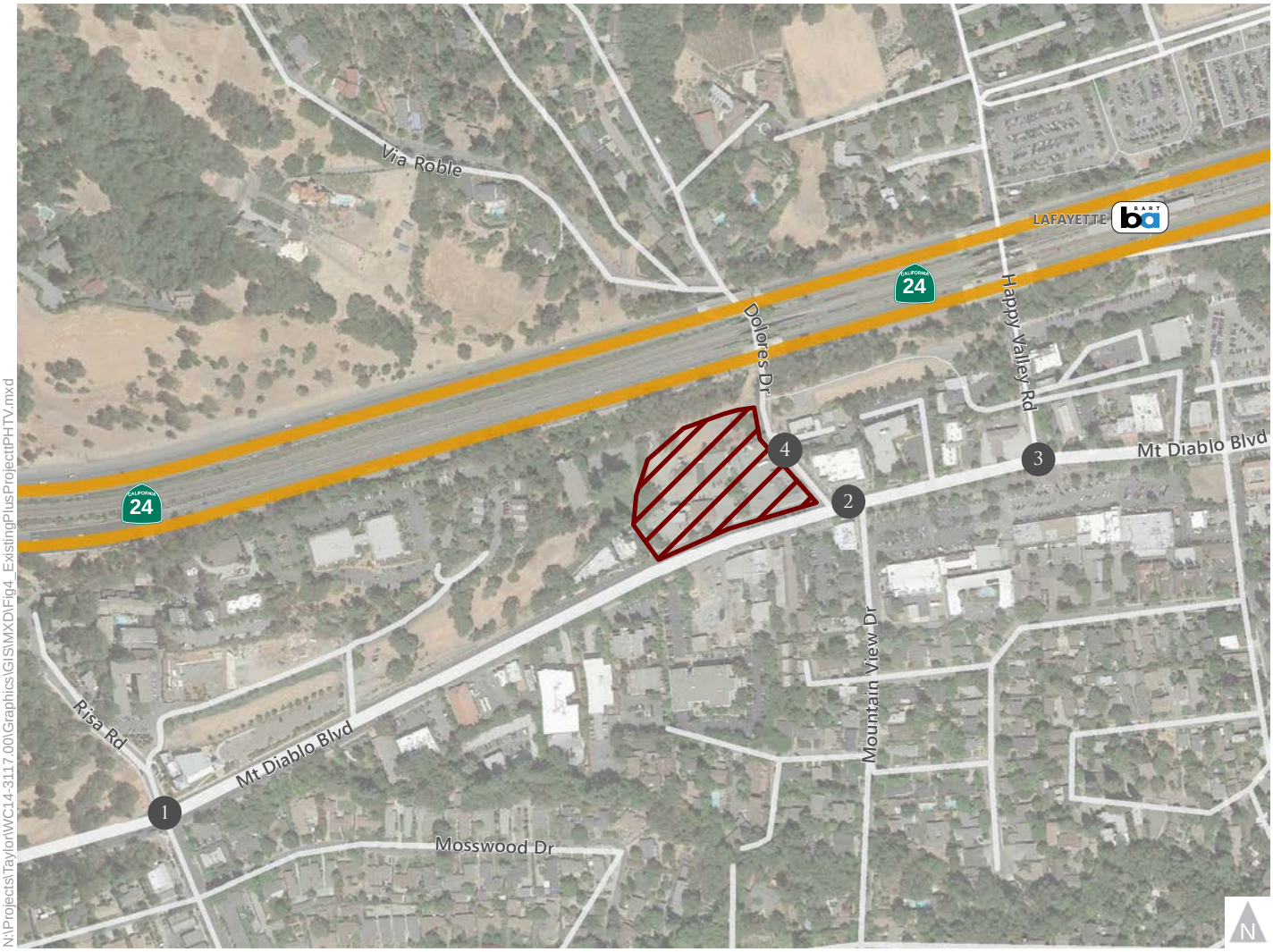
Stop Sign

AM (PM) Peak Hour Traffic Volume

Project Site

Figure 3

Project Trip Turning Movements



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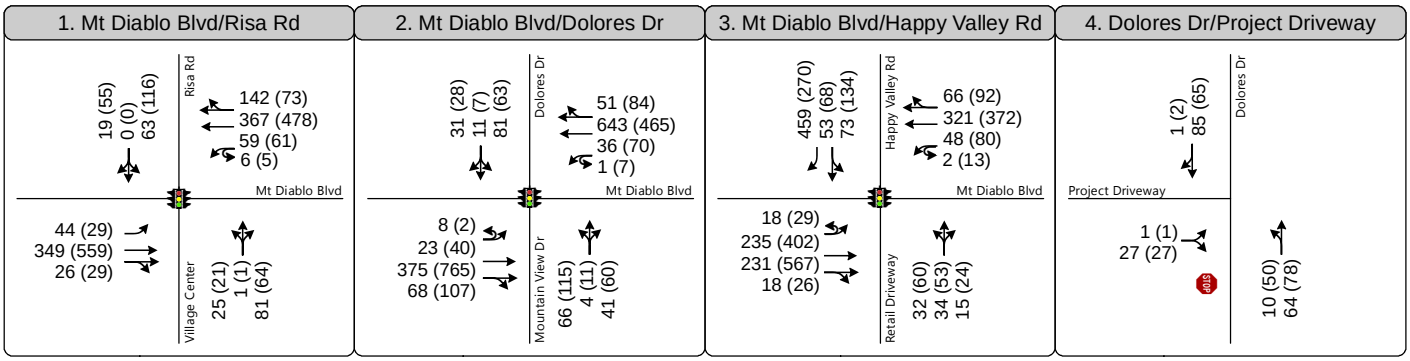


1 Study Intersection

Traffic Signal

Turn Lane

BART Station

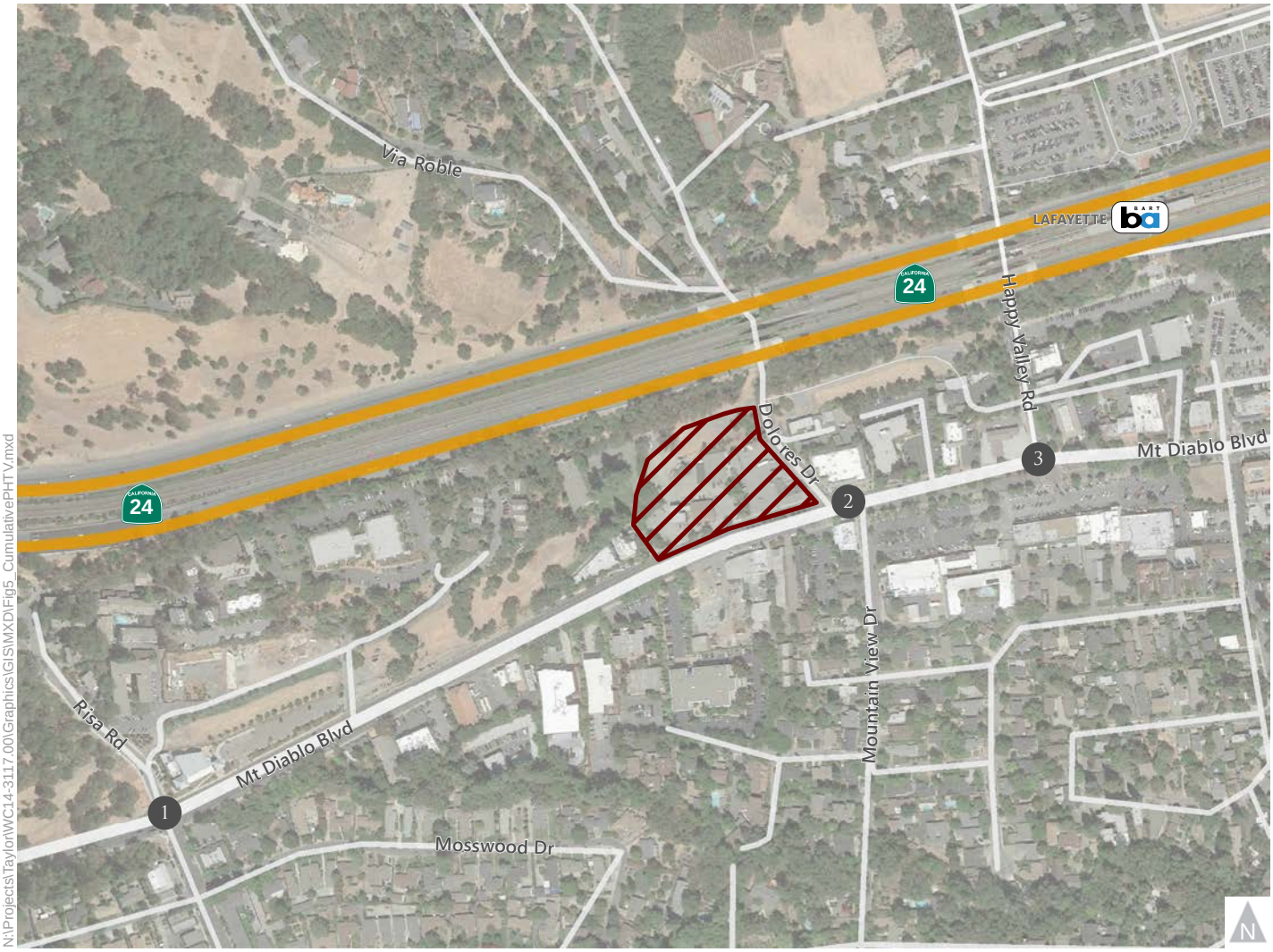
Stop Sign

AM (PM) Peak Hour Traffic Volume

Project Site

Figure 4

Existing Plus Project Peak Hour Traffic Forecasts



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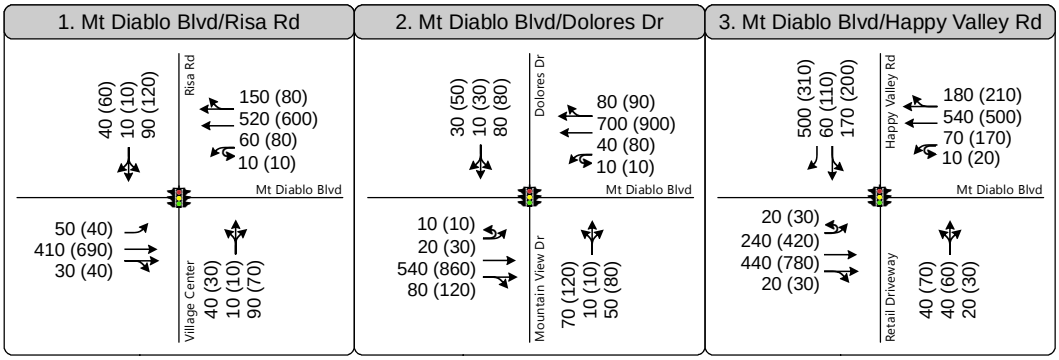


1 Study Intersection

Traffic Signal

Turn Lane

BART Station

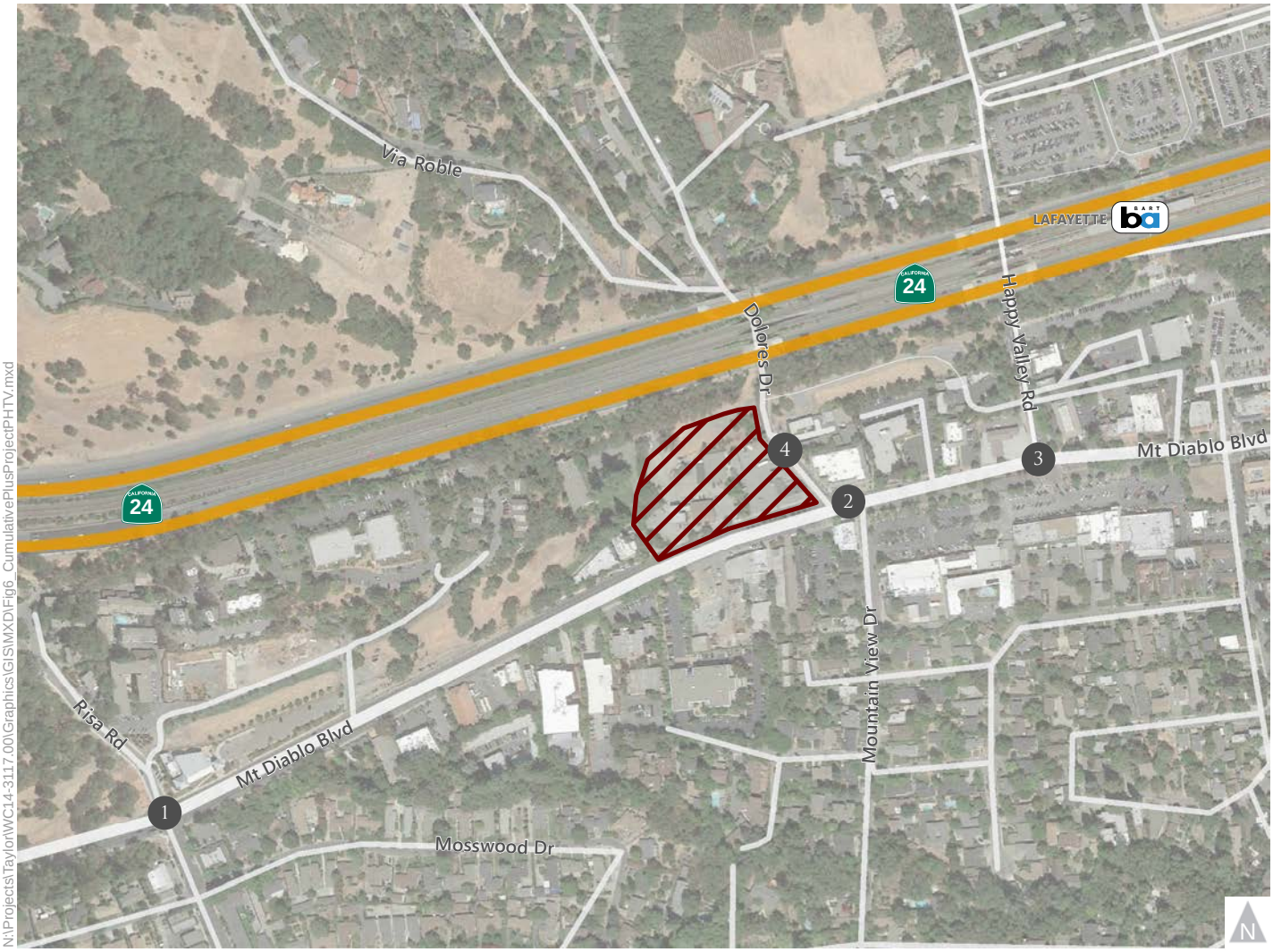
Stop Sign

AM (PM) Peak Hour Traffic Volume

Project Site

Figure 5

Cumulative Conditions Peak Hour Traffic Forecasts



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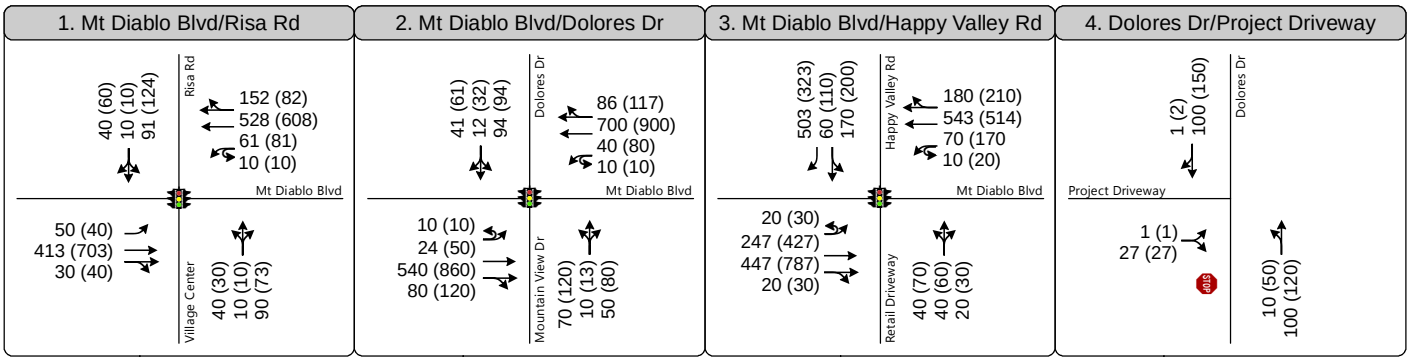


1 Study Intersection

Traffic Signal

Turn Lane

BART Station

Stop Sign

AM (PM) Peak Hour Traffic Volume

Project Site

Figure 6

Cumulative Plus Project Conditions Peak Hour Traffic Forecasts

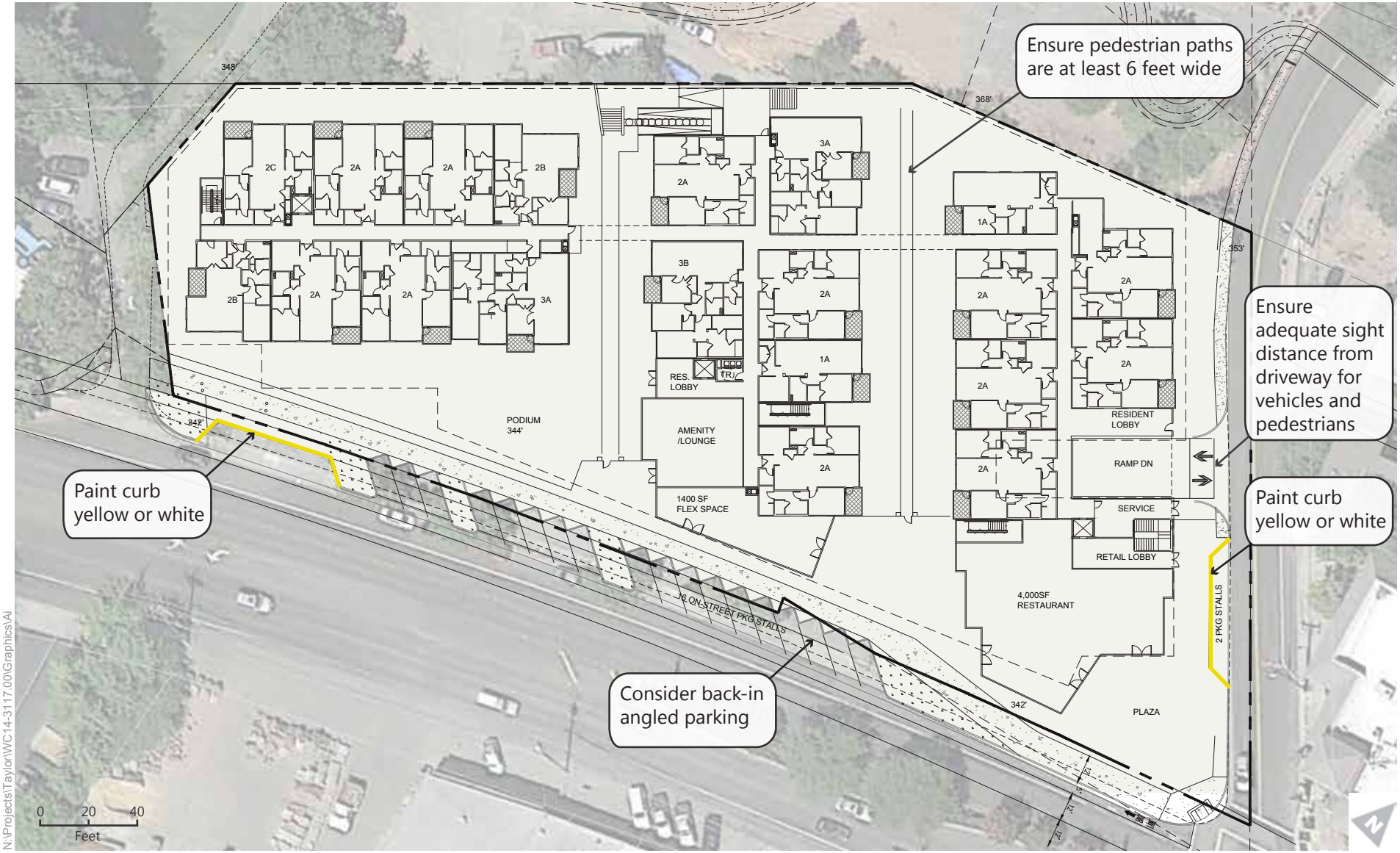


Figure 7a

Site Plan Recommendations
Dolores Drive Driveway Only Plan

SOURCE: StudioT SQ., Architecture Planning Urban Design. Lafayette, California

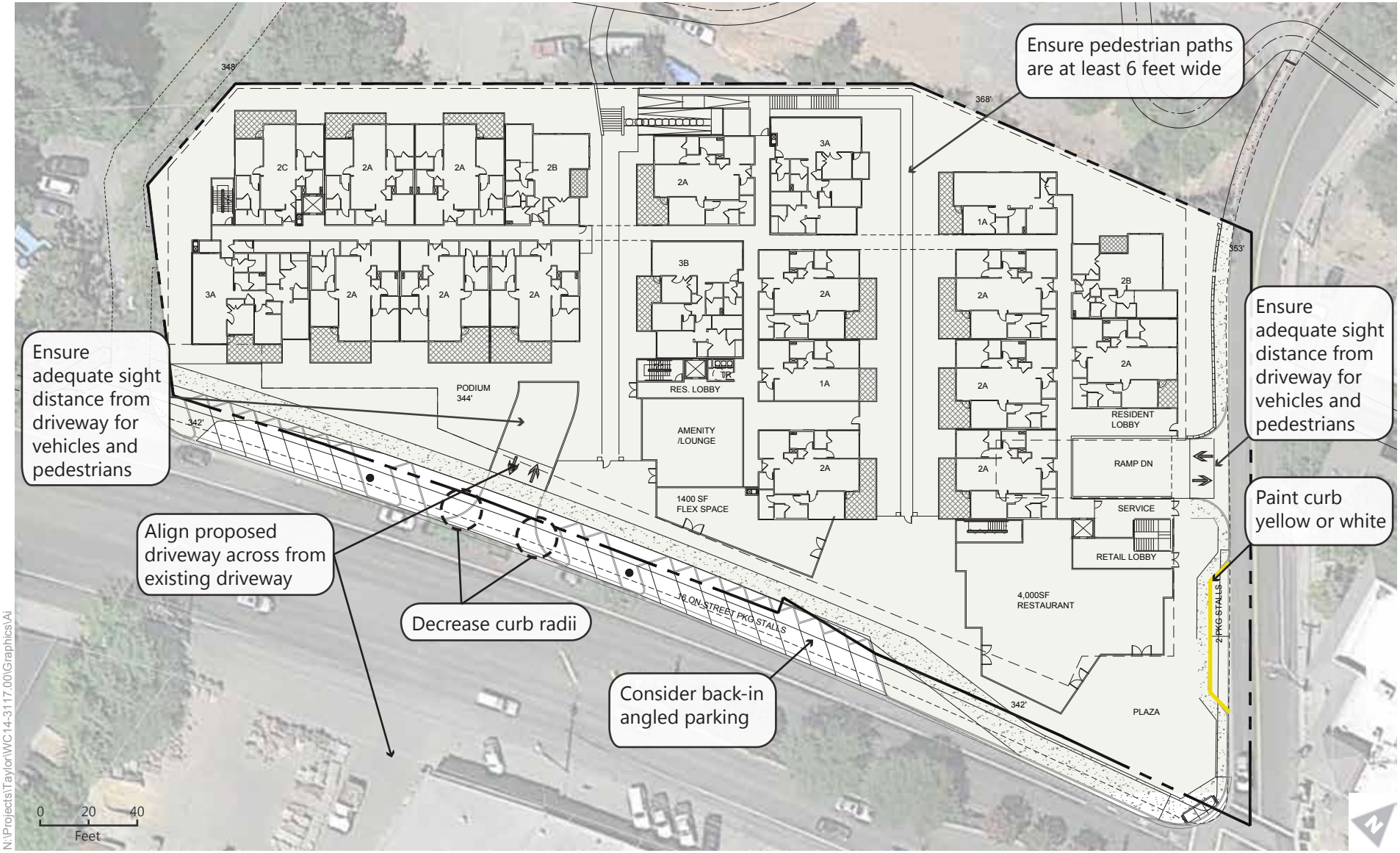


Figure 7b

Site Plan Recommendations
Mid-block Mount Diablo Driveway Plan

SOURCE: StudioT SQ., Architecture Planning Urban Design. Lafayette, California

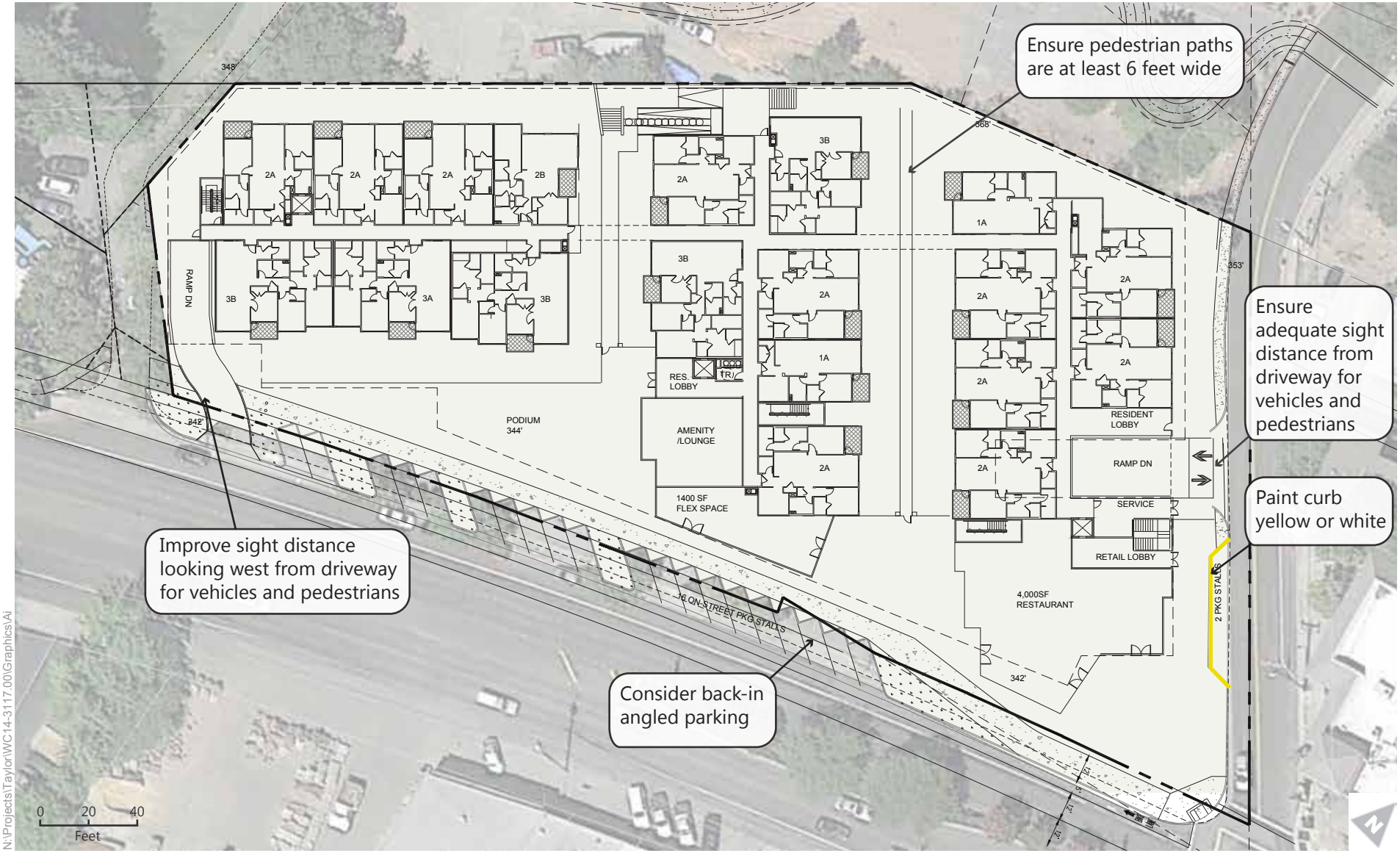


Figure 7c

Site Plan Recommendations
Western Mount Diablo Driveway Plan

SOURCE: StudioT SQ., Architecture Planning Urban Design. Lafayette, California

ALL TRAFFIC DATA

City of Lafayette
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7150-001 Risa Road-Mt. Diablo Boulevard.ppd
Date : 3/12/2014

Unshifted Count = All Vehicles

	Risa Road Southbound					Mt. Diablo Boulevard Westbound					Village Center Northbound					Mt. Diablo Boulevard Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	3	0	2	0	5	7	44	1	1	53	9	0	7	0	16	2	31	3	0	36	110	1
07:15	3	0	1	0	4	3	60	6	0	69	8	0	5	0	13	6	39	3	0	48	134	0
07:30	4	0	0	0	4	2	83	5	1	91	7	0	19	0	26	1	41	3	0	45	166	1
07:45	8	0	1	0	9	11	95	25	0	131	11	0	15	0	26	13	61	4	0	78	244	0
Total	18	0	4	0	22	23	282	37	2	344	35	0	46	0	81	22	172	13	0	207	654	2
08:00	25	0	2	0	27	6	80	44	2	132	5	0	23	0	28	14	71	6	0	91	278	2
08:15	20	0	7	0	27	18	74	15	0	107	7	0	24	0	31	8	92	4	0	104	269	0
08:30	8	0	2	0	10	15	96	41	1	153	7	0	20	0	27	12	96	6	0	114	304	1
08:45	9	0	8	0	17	19	109	40	3	171	6	1	14	0	21	10	87	10	0	107	316	3
Total	62	0	19	0	81	58	359	140	6	563	25	1	81	0	107	44	346	26	0	416	1167	6
16:00	33	0	22	0	55	17	100	30	2	149	8	0	5	0	13	13	125	6	0	144	361	2
16:15	22	0	13	0	35	17	110	15	3	145	2	0	11	0	13	4	173	6	0	183	376	3
16:30	31	1	7	0	39	8	100	12	3	123	3	0	19	0	22	1	135	6	0	142	326	3
16:45	23	0	11	0	34	7	131	17	0	155	4	0	21	0	25	5	137	7	0	149	363	0
Total	109	1	53	0	163	49	441	74	8	572	17	0	56	0	73	23	570	25	0	618	1426	8
17:00	31	0	20	0	51	19	117	17	1	154	6	0	13	0	19	8	130	8	1	147	371	2
17:15	29	0	10	0	39	19	105	15	3	142	6	0	13	0	19	4	136	9	0	149	349	3
17:30	29	0	14	0	43	15	117	22	1	155	5	1	14	0	20	12	143	5	0	160	378	1
17:45	14	0	7	0	21	21	112	36	3	172	4	0	11	0	15	14	129	7	0	150	358	3
Total	103	0	51	0	154	74	451	90	8	623	21	1	51	0	73	38	538	29	1	606	1456	9
Grand Total	292	1	127	0	420	204	1533	341	24	2102	98	2	234	0	334	127	1626	93	1	1847	4703	25
Apprch %	69.5%	0.2%	30.2%	0.0%		9.7%	72.9%	16.2%	1.1%		29.3%	0.6%	70.1%	0.0%		6.9%	88.0%	5.0%	0.1%			
Total %	6.2%	0.0%	2.7%	0.0%	8.9%	4.3%	32.6%	7.3%	0.5%	44.7%	2.1%	0.0%	5.0%	0.0%	7.1%	2.7%	34.6%	2.0%	0.0%	39.3%	100.0%	

ALL TRAFFIC DATA

City of Lafayette
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7150-001 Risa Road-Mt. Diablo Boulevard.ppd
Date : 3/12/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Risa Road Southbound					Mt. Diablo Boulevard Westbound					Village Center Northbound					Mt. Diablo Boulevard Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	25	0	2	0	27	6	80	44	2	132	5	0	23	0	28	14	71	6	0	91	278
08:15	20	0	7	0	27	18	74	15	0	107	7	0	24	0	31	8	92	4	0	104	269
08:30	8	0	2	0	10	15	96	41	1	153	7	0	20	0	27	12	96	6	0	114	304
08:45	9	0	8	0	17	19	109	40	3	171	6	1	14	0	21	10	87	10	0	107	316
Total Volume	62	0	19	0	81	58	359	140	6	563	25	1	81	0	107	44	346	26	0	416	1167
% App Total	76.5%	0.0%	23.5%	0.0%		10.3%	63.8%	24.9%	1.1%		23.4%	0.9%	75.7%	0.0%		10.6%	83.2%	6.3%	0.0%		
PHF	.620	.000	.594	.000	.750	.763	.823	.795	.500	.823	.893	.250	.844	.000	.863	.786	.901	.650	.000	.912	.923

PM PEAK HOUR	Risa Road Southbound					Mt. Diablo Boulevard Westbound					Village Center Northbound					Mt. Diablo Boulevard Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	23	0	11	0	34	7	131	17	0	155	4	0	21	0	25	5	137	7	0	149	363
17:00	31	0	20	0	51	19	117	17	1	154	6	0	13	0	19	8	130	8	1	147	371
17:15	29	0	10	0	39	19	105	15	3	142	6	0	13	0	19	4	136	9	0	149	349
17:30	29	0	14	0	43	15	117	22	1	155	5	1	14	0	20	12	143	5	0	160	378
Total Volume	112	0	55	0	167	60	470	71	5	606	21	1	61	0	83	29	546	29	1	605	1461
% App Total	67.1%	0.0%	32.9%	0.0%		9.9%	77.6%	11.7%	0.8%		25.3%	1.2%	73.5%	0.0%		4.8%	90.2%	4.8%	0.2%		
PHF	.903	.000	.688	.000	.819	.789	.897	.807	.417	.977	.875	.250	.726	.000	.830	.604	.955	.806	.250	.945	.966

ALL TRAFFIC DATA

City of Lafayette
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Outbound Driveway on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7150-002 Dolores Drive-Mt. Diablo Boulevard.ppd
Date : 3/12/2014

Unshifted Count = All Vehicles

	Dolores Drive Southbound					Mt. Diablo Boulevard Westbound					Mountain View Drive Northbound					Mt. Diablo Boulevard Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	7	1	4	0	12	4	68	6	0	78	4	0	5	0	9	3	34	3	1	41	140	1
07:15	15	0	3	0	18	7	82	7	0	96	10	1	3	0	14	4	37	1	2	44	172	2
07:30	21	0	7	0	28	4	117	8	0	129	12	1	10	0	23	4	59	7	2	72	252	2
07:45	14	1	2	0	17	6	174	8	0	188	11	0	7	0	18	5	57	11	0	73	296	0
Total	57	2	16	0	75	21	441	29	0	491	37	2	25	0	64	16	187	22	5	230	860	5
08:00	19	1	6	0	26	2	139	8	1	150	10	0	9	0	19	5	93	14	1	113	308	2
08:15	20	3	1	0	24	7	142	9	0	158	11	1	18	0	30	4	98	20	1	123	335	1
08:30	14	3	7	0	24	11	170	15	0	196	23	1	6	0	30	5	93	14	2	114	364	2
08:45	14	2	6	0	22	16	192	13	0	221	22	2	8	0	32	5	91	20	4	120	395	4
Total	67	9	20	0	96	36	643	45	1	725	66	4	41	0	111	19	375	68	8	470	1402	9
16:00	11	2	8	0	21	20	126	14	2	162	19	1	12	0	32	1	179	29	0	209	424	2
16:15	16	1	3	0	20	13	112	12	0	137	31	0	20	0	51	9	179	32	3	223	431	3
16:30	14	2	4	0	20	13	102	10	2	127	20	2	26	0	48	2	185	38	4	229	424	6
16:45	10	0	3	0	13	20	123	14	2	159	25	1	14	0	40	8	173	24	1	206	418	3
Total	51	5	18	0	74	66	463	50	6	585	95	4	72	0	171	20	716	123	8	867	1697	14
17:00	15	0	5	0	20	13	109	11	2	135	27	4	15	0	46	7	215	24	1	247	448	3
17:15	10	2	6	0	18	16	95	9	1	121	36	2	15	0	53	3	165	28	0	196	388	1
17:30	14	3	3	0	20	21	138	23	2	184	27	1	16	0	44	2	212	31	0	245	493	2
17:45	9	2	3	0	14	13	138	11	1	163	32	2	15	0	49	7	163	19	0	189	415	1
Total	48	7	17	0	72	63	480	54	6	603	122	9	61	0	192	19	755	102	1	877	1744	7
Grand Total	223	23	71	0	317	186	2027	178	13	2404	320	19	199	0	538	74	2033	315	22	2444	5703	35
Apprch %	70.3%	7.3%	22.4%	0.0%		7.7%	84.3%	7.4%	0.5%		59.5%	3.5%	37.0%	0.0%		3.0%	83.2%	12.9%	0.9%			
Total %	3.9%	0.4%	1.2%	0.0%	5.6%	3.3%	35.5%	3.1%	0.2%	42.2%	5.6%	0.3%	3.5%	0.0%	9.4%	1.3%	35.6%	5.5%	0.4%	42.9%	100.0%	

ALL TRAFFIC DATA

City of Lafayette
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Outbound Driveway on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7150-002 Dolores Drive-Mt. Diablo Boulevard.ppd
Date : 3/12/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Dolores Drive Southbound					Mt. Diablo Boulevard Westbound					Mountain View Drive Northbound					Mt. Diablo Boulevard Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	19	1	6	0	26	2	139	8	1	150	10	0	9	0	19	5	93	14	1	113	308
08:15	20	3	1	0	24	7	142	9	0	158	11	1	18	0	30	4	98	20	1	123	335
08:30	14	3	7	0	24	11	170	15	0	196	23	1	6	0	30	5	93	14	2	114	364
08:45	14	2	6	0	22	16	192	13	0	221	22	2	8	0	32	5	91	20	4	120	395
Total Volume	67	9	20	0	96	36	643	45	1	725	66	4	41	0	111	19	375	68	8	470	1402
% App Total	69.8%	9.4%	20.8%	0.0%		5.0%	88.7%	6.2%	0.1%		59.5%	3.6%	36.9%	0.0%		4.0%	79.8%	14.5%	1.7%		
PHF	.838	.750	.714	.000	.923	.563	.837	.750	.250	.820	.717	.500	.569	.000	.867	.950	.957	.850	.500	.955	.887

PM PEAK HOUR	Dolores Drive Southbound					Mt. Diablo Boulevard Westbound					Mountain View Drive Northbound					Mt. Diablo Boulevard Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	10	0	3	0	13	20	123	14	2	159	25	1	14	0	40	8	173	24	1	206	418
17:00	15	0	5	0	20	13	109	11	2	135	27	4	15	0	46	7	215	24	1	247	448
17:15	10	2	6	0	18	16	95	9	1	121	36	2	15	0	53	3	165	28	0	196	388
17:30	14	3	3	0	20	21	138	23	2	184	27	1	16	0	44	2	212	31	0	245	493
Total Volume	49	5	17	0	71	70	465	57	7	599	115	8	60	0	183	20	765	107	2	894	1747
% App Total	69.0%	7.0%	23.9%	0.0%		11.7%	77.6%	9.5%	1.2%		62.8%	4.4%	32.8%	0.0%		2.2%	85.6%	12.0%	0.2%		
PHF	.817	.417	.708	.000	.888	.833	.842	.620	.875	.814	.799	.500	.938	.000	.863	.625	.890	.863	.500	.905	.886

ALL TRAFFIC DATA

City of Lafayette
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7150-003 Happy Valley Road-Mt. Diablo Boulevard.ppd
Date : 3/12/2014

Unshifted Count = All Vehicles

	Happy Valley Road Southbound					Mt. Diablo Boulevard Westbound					Driveway Northbound					Mt. Diablo Boulevard Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	1	5	48	0	54	2	33	10	0	45	1	3	3	0	7	20	22	2	2	46	152	2
07:15	9	8	56	0	73	11	51	10	0	72	5	2	2	0	9	23	32	1	4	60	214	4
07:30	10	8	62	0	80	7	54	22	0	83	3	1	6	0	10	41	37	4	3	85	258	3
07:45	20	8	100	0	128	6	86	23	1	116	4	4	0	0	8	39	29	5	2	75	327	3
Total	40	29	266	0	335	26	224	65	1	316	13	10	11	0	34	123	120	12	11	266	951	12
08:00	13	5	98	0	116	9	74	23	0	106	3	7	2	0	12	67	55	5	1	128	362	1
08:15	19	14	98	0	131	8	64	16	0	88	6	7	3	0	16	68	44	6	9	127	362	9
08:30	23	21	129	0	173	15	79	16	1	111	12	10	5	0	27	44	65	4	6	119	430	7
08:45	18	13	131	0	162	16	101	11	1	129	11	10	5	0	26	49	60	3	2	114	431	3
Total	73	53	456	0	582	48	318	66	2	434	32	34	15	0	81	228	224	18	18	488	1585	20
16:00	27	13	78	0	118	35	100	15	3	153	11	14	5	0	30	102	127	4	4	237	538	7
16:15	24	13	72	0	109	33	81	14	3	131	17	10	9	0	36	96	119	9	5	229	505	8
16:30	23	20	63	0	106	33	82	19	3	137	9	12	6	0	27	114	134	4	8	260	530	11
16:45	20	18	61	0	99	16	81	23	1	121	15	13	9	0	37	96	132	8	5	241	498	6
Total	94	64	274	0	432	117	344	71	10	542	52	49	29	0	130	408	512	25	22	967	2071	32
17:00	33	17	57	0	107	19	94	26	2	141	10	13	6	0	29	115	148	4	9	276	553	11
17:15	49	19	64	0	132	20	79	23	4	126	18	14	5	0	37	78	116	6	8	208	503	12
17:30	32	14	75	0	121	25	104	20	6	155	17	13	4	0	34	106	164	8	7	285	595	13
17:45	31	12	83	0	126	16	85	18	6	125	13	19	5	0	37	94	109	6	1	210	498	7
Total	145	62	279	0	486	80	362	87	18	547	58	59	20	0	137	393	537	24	25	979	2149	43
Grand Total	352	208	1275	0	1835	271	1248	289	31	1839	155	152	75	0	382	1152	1393	79	76	2700	6756	107
Apprch %	19.2%	11.3%	69.5%	0.0%		14.7%	67.9%	15.7%	1.7%		40.6%	39.8%	19.6%	0.0%		42.7%	51.6%	2.9%	2.8%			
Total %	5.2%	3.1%	18.9%	0.0%	27.2%	4.0%	18.5%	4.3%	0.5%	27.2%	2.3%	2.2%	1.1%	0.0%	5.7%	17.1%	20.6%	1.2%	1.1%	40.0%	100.0%	

ALL TRAFFIC DATA

City of Lafayette
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7150-003 Happy Valley Road-Mt. Diablo Boulevard.ppd
Date : 3/12/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Happy Valley Road Southbound					Mt. Diablo Boulevard Westbound					Driveway Northbound					Mt. Diablo Boulevard Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	13	5	98	0	116	9	74	23	0	106	3	7	2	0	12	67	55	5	1	128	362
08:15	19	14	98	0	131	8	64	16	0	88	6	7	3	0	16	68	44	6	9	127	362
08:30	23	21	129	0	173	15	79	16	1	111	12	10	5	0	27	44	65	4	6	119	430
08:45	18	13	131	0	162	16	101	11	1	129	11	10	5	0	26	49	60	3	2	114	431
Total Volume	73	53	456	0	582	48	318	66	2	434	32	34	15	0	81	228	224	18	18	488	1585
% App Total	12.5%	9.1%	78.4%	0.0%		11.1%	73.3%	15.2%	0.5%		39.5%	42.0%	18.5%	0.0%		46.7%	45.9%	3.7%	3.7%		
PHF	.793	.631	.870	.000	.841	.750	.787	.717	.500	.841	.667	.850	.750	.000	.750	.838	.862	.750	.500	.953	.919

PM PEAK HOUR	Happy Valley Road Southbound					Mt. Diablo Boulevard Westbound					Driveway Northbound					Mt. Diablo Boulevard Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	20	18	61	0	99	16	81	23	1	121	15	13	9	0	37	96	132	8	5	241	498
17:00	33	17	57	0	107	19	94	26	2	141	10	13	6	0	29	115	148	4	9	276	553
17:15	49	19	64	0	132	20	79	23	4	126	18	14	5	0	37	78	116	6	8	208	503
17:30	32	14	75	0	121	25	104	20	6	155	17	13	4	0	34	106	164	8	7	285	595
Total Volume	134	68	257	0	459	80	358	92	13	543	60	53	24	0	137	395	560	26	29	1010	2149
% App Total	29.2%	14.8%	56.0%	0.0%		14.7%	65.9%	16.9%	2.4%		43.8%	38.7%	17.5%	0.0%		39.1%	55.4%	2.6%	2.9%		
PHF	.684	.895	.857	.000	.869	.800	.861	.885	.542	.876	.833	.946	.667	.000	.926	.859	.854	.813	.806	.886	.903

14-7150 Driveway A

Celia's Driveway west of Dolores Drive

	Inbound	Outbound				
3/12/2014 7:00	7	1	8	13	13	
3/12/2014 7:15	4	0	4	7	10	
3/12/2014 7:30	0	1	1	8	12	
3/12/2014 7:45	0	0	0	14	14	
3/12/2014 8:00	1	1	2	14	16	30
3/12/2014 8:15	0	5	5			
3/12/2014 8:30	1	6	7			
3/12/2014 8:45	0	0	0			
3/12/2014 16:00	1	0	1	14	12	
3/12/2014 16:15	2	2	4	16	14	30
3/12/2014 16:30	5	2	7	15	14	
3/12/2014 16:45	1	1	2	13	13	
3/12/2014 17:00	2	1	3	16	11	
3/12/2014 17:15	3	0	3			
3/12/2014 17:30	4	1	5			
3/12/2014 17:45	5	0	5			

14-7150 Driveway B

Celia's Driveway north of Mt. Diablo Boulevard

	Inbound	Outbound		
3/12/2014 7:00	3	2	5	13
3/12/2014 7:15	1	1	2	10
3/12/2014 7:30	1	3	4	12
3/12/2014 7:45	1	1	2	14
3/12/2014 8:00	1	1	2	16
3/12/2014 8:15	1	3	4	
3/12/2014 8:30	2	4	6	
3/12/2014 8:45	0	4	4	
3/12/2014 16:00	0	1	1	12
3/12/2014 16:15	2	1	3	14
3/12/2014 16:30	2	1	3	14
3/12/2014 16:45	3	2	5	13
3/12/2014 17:00	1	2	3	11
3/12/2014 17:15	1	2	3	
3/12/2014 17:30	0	2	2	
3/12/2014 17:45	2	1	3	

14-7150 Driveway C

Retail Driveway directly west of Celia's

	Inbound	Outbound		
3/12/2014 7:00	4	0	4	10
3/12/2014 7:15	3	0	3	6
3/12/2014 7:30	2	0	2	4
3/12/2014 7:45	1	0	1	5
3/12/2014 8:00	0	0	0	6
3/12/2014 8:15	1	0	1	
3/12/2014 8:30	3	0	3	
3/12/2014 8:45	2	0	2	
3/12/2014 16:00	4	0	4	10
3/12/2014 16:15	4	1	5	7
3/12/2014 16:30	0	1	1	3
3/12/2014 16:45	0	0	0	2
3/12/2014 17:00	0	1	1	3
3/12/2014 17:15	0	1	1	
3/12/2014 17:30	0	0	0	
3/12/2014 17:45	1	0	1	

Volumes for: Wednesday, March 12, 2014 City: Lafayette Project #: 14-7151-001

Location: Mt. Diablo Boulevard west of Dolores Drive

Start	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	3	169			4	124				
12:15	2	154			2	143				
12:30	2	146			3	117				
12:45	2	158	9	627	3	129	12	513	21	1140
1:00	3	155			3	142				
1:15	3	138			5	129				
1:30	2	134			3	143				
1:45	7	141	15	568	3	141	14	555	29	1123
2:00	1	137			0	109				
2:15	1	135			3	131				
2:30	0	162			5	157				
2:45	1	134	3	568	0	164	8	561	11	1129
3:00	0	140			1	160				
3:15	1	156			0	165				
3:30	1	177			2	138				
3:45	2	196	4	669	3	185	6	648	10	1317
4:00	6	194			3	144				
4:15	3	216			1	157				
4:30	0	220			3	122				
4:45	0	219	9	849	18	159	25	582	34	1431
5:00	3	238			13	136				
5:15	5	218			19	140				
5:30	11	227			16	162				
5:45	7	190	26	873	18	170	66	608	92	1481
6:00	14	204			21	129				
6:15	15	156			28	125				
6:30	24	150			37	136				
6:45	29	137	82	647	59	110	145	500	227	1147
7:00	43	138			74	110				
7:15	42	100			93	86				
7:30	73	108			139	80				
7:45	68	61	226	407	180	67	486	343	712	750
8:00	109	41			163	66				
8:15	124	54			167	63				
8:30	119	82			207	56				
8:45	108	42	460	219	217	43	754	228	1214	447
9:00	101	34			190	47				
9:15	115	34			159	34				
9:30	90	25			146	37				
9:45	112	16	418	109	116	27	611	145	1029	254
10:00	137	17			133	14				
10:15	122	14			121	24				
10:30	134	14			122	9				
10:45	116	6	509	51	117	9	493	56	1002	107
11:00	150	11			136	10				
11:15	137	6			102	10				
11:30	145	9			102	5				
11:45	142	5	574	31	150	6	490	31	1064	62
Total	2335	5618	2335	5618	3110	4770	3110	4770	5445	10388
Combined Total	7953		7953		7880		7880		15833	
AM Peak	11:45 AM				8:15 AM					
Vol.	611				781					
P.H.F.	0.904				0.900					
PM Peak		4:45 PM				3:00 PM				
Vol.		902				648				
P.H.F.		0.947				0.876				
Percentage	29.4%	70.6%			39.5%	60.5%				

Volumes for: Wednesday, March 12, 2014 City: Lafayette Project #: 14-7151-002

Location: Dolores Drive north of Mt. Diablo Boulevard

Start	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	1	21			2	13				
12:15	3	9			0	10				
12:30	2	23			0	7				
12:45	1	11	7	64	0	16	2	46	9	110
1:00	0	11			0	9				
1:15	0	12			0	9				
1:30	0	9			0	9				
1:45	5	14	5	46	1	13	1	40	6	86
2:00	1	12			0	16				
2:15	2	14			0	22				
2:30	0	15			4	15				
2:45	1	18	4	59	1	20	5	73	9	132
3:00	0	16			0	18				
3:15	0	18			1	20				
3:30	0	18			0	9				
3:45	0	12	0	64	1	19	2	66	2	130
4:00	0	16			0	19				
4:15	0	18			0	16				
4:30	0	14			0	18				
4:45	0	23	0	71	0	12	0	65	0	136
5:00	0	22			1	15				
5:15	3	14			1	17				
5:30	0	25			2	18				
5:45	3	21	6	82	6	12	10	62	16	144
6:00	2	19			5	15				
6:15	2	22			5	16				
6:30	3	12			9	19				
6:45	5	16	12	69	12	11	31	61	43	130
7:00	8	19			13	12				
7:15	12	20			18	13				
7:30	11	13			26	9				
7:45	13	12	44	64	17	8	74	42	118	106
8:00	10	7			25	3				
8:15	11	10			23	6				
8:30	20	10			20	9				
8:45	13	10	54	37	19	8	87	26	141	63
9:00	7	6			22	5				
9:15	5	4			19	7				
9:30	14	8			14	0	0			
9:45	11	3	37	21	12	1	67	13	104	34
10:00	14	2			11	5				
10:15	15	4			13	3				
10:30	12	2			16	2				
10:45	15	3	56	11	15	0	55	10	111	21
11:00	14	3			21	3				
11:15	11	5			18	2				
11:30	11	1			17	1				
11:45	12	4	48	13	10	0	66	6	114	19
Total	273	601	273	601	400	510	400	510	673	1111
Combined Total	874		874		910		910		1784	
AM Peak	11:45 AM				7:30 AM					
Vol.	65				91					
P.H.F.	0.707				0.875					
PM Peak		5:30 PM				2:15 PM				
Vol.		87				75				
P.H.F.		0.840				0.852				
Percentage	31.2%	68.8%			44.0%	56.0%				

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	44	346	26	6	58	359	140	25	1	81	62	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Lane Util. Factor	1.00	0.95			1.00	0.95			1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.99			0.99			1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			1.00
Frt	1.00	0.99			1.00	0.96			0.90			0.97
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.96
Satd. Flow (prot)	1770	3494			1770	3367			1635			1736
Flt Permitted	0.95	1.00			0.95	1.00			0.89			0.87
Satd. Flow (perm)	1770	3494			1770	3367			1478			1567
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	376	28	7	63	390	152	27	1	88	67	0
RTOR Reduction (vph)	0	4	0	0	0	26	0	0	76	0	0	42
Lane Group Flow (vph)	48	400	0	0	70	516	0	0	40	0	0	46
Confl. Peds. (#/hr)			13				4			2	2	
Confl. Bikes (#/hr)			6				1			1		
Turn Type	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2		1	1	6			8			4
Permitted Phases								8			4	
Actuated Green, G (s)	1.9	16.7			3.3	18.1			5.1			5.1
Effective Green, g (s)	1.9	16.7			3.3	18.1			5.1			5.1
Actuated g/C Ratio	0.05	0.44			0.09	0.48			0.14			0.14
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Vehicle Extension (s)	1.0	4.0			1.0	4.0			2.0			2.0
Lane Grp Cap (vph)	89	1551			155	1620			200			212
v/s Ratio Prot	0.03	0.11			c0.04	c0.15						
v/s Ratio Perm									0.03			c0.03
v/c Ratio	0.54	0.26			0.45	0.32			0.20			0.22
Uniform Delay, d1	17.4	6.6			16.3	6.0			14.4			14.5
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	3.1	0.1			0.8	0.2			0.2			0.2
Delay (s)	20.5	6.7			17.1	6.1			14.6			14.7
Level of Service	C	A			B	A			B			B
Approach Delay (s)		8.2				7.4			14.6			14.7
Approach LOS		A				A			B			B

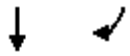
Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	37.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	19
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	21
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

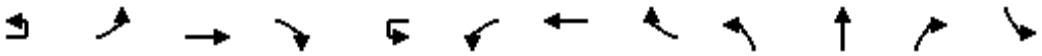
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	8	19	375	68	1	36	643	45	66	4	41	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	4.5			3.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	0.99			1.00	1.00			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.99			0.95		
Flt Protected		0.95	1.00			0.95	1.00			0.97		
Satd. Flow (prot)		1770	3414			1770	3493			1700		
Flt Permitted		0.95	1.00			0.95	1.00			0.76		
Satd. Flow (perm)		1770	3414			1770	3493			1323		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	9	21	421	76	1	40	722	51	74	4	46	75
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	14	0	0
Lane Group Flow (vph)	0	30	497	0	0	41	773	0	0	110	0	0
Confl. Peds. (#/hr)				26				12	4		7	7
Confl. Bikes (#/hr)				6								
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		3.4	28.9			3.8	29.3			14.0		
Effective Green, g (s)		3.4	28.9			3.8	29.3			14.0		
Actuated g/C Ratio		0.04	0.38			0.05	0.38			0.18		
Clearance Time (s)		3.0	4.5			3.0	4.5			5.0		
Vehicle Extension (s)		1.5	4.5			1.5	4.5			3.5		
Lane Grp Cap (vph)		78	1291			88	1339			242		
v/s Ratio Prot		0.02	0.15			c0.02	c0.22					
v/s Ratio Perm										c0.08		
v/c Ratio		0.38	0.38			0.47	0.58			0.46		
Uniform Delay, d1		35.5	17.3			35.3	18.6			27.8		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		1.1	0.3			1.4	0.8			1.6		
Delay (s)		36.6	17.6			36.7	19.5			29.4		
Level of Service		D	B			D	B			C		
Approach Delay (s)			18.7				20.4			29.4		
Approach LOS			B				C			C		

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	17.5
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



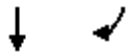
Movement	SBT	SBR
Lane Configurations		
Volume (vph)	9	20
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	0.97	
Satd. Flow (prot)	1737	
Flt Permitted	0.68	
Satd. Flow (perm)	1224	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	10	22
RTOR Reduction (vph)	6	0
Lane Group Flow (vph)	101	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	12.2	
Effective Green, g (s)	12.2	
Actuated g/C Ratio	0.16	
Clearance Time (s)	5.0	
Vehicle Extension (s)	1.5	
Lane Grp Cap (vph)	195	
v/s Ratio Prot		
v/s Ratio Perm	c0.08	
v/c Ratio	0.52	
Uniform Delay, d1	29.4	
Progression Factor	1.00	
Incremental Delay, d2	1.0	
Delay (s)	30.4	
Level of Service	C	
Approach Delay (s)	30.4	
Approach LOS	C	

Intersection Summary



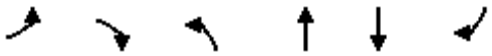
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	18	228	224	18	2	48	318	66	32	34	15	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.99			1.00	0.97			0.98		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	3487			1770	3431			1771		
Flt Permitted		0.95	1.00			0.95	1.00			0.85		
Satd. Flow (perm)		1770	3487			1770	3431			1527		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	248	243	20	2	52	346	72	35	37	16	79
RTOR Reduction (vph)	0	0	4	0	0	0	15	0	0	6	0	0
Lane Group Flow (vph)	0	268	259	0	0	54	403	0	0	82	0	0
Confl. Peds. (#/hr)				12				4	9		14	14
Confl. Bikes (#/hr)				6				1				
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		13.4	29.8			3.8	20.2			10.9		
Effective Green, g (s)		13.4	29.8			3.8	20.2			10.9		
Actuated g/C Ratio		0.24	0.53			0.07	0.36			0.19		
Clearance Time (s)		4.0	4.0			4.0	4.0			4.0		
Vehicle Extension (s)		1.5	6.5			1.5	6.5			1.5		
Lane Grp Cap (vph)		419	1839			119	1226			294		
v/s Ratio Prot		c0.15	0.07			0.03	c0.12					
v/s Ratio Perm										0.05		
v/c Ratio		0.64	0.14			0.45	0.33			0.28		
Uniform Delay, d1		19.4	6.8			25.4	13.2			19.4		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		2.4	0.1			1.0	0.5			0.2		
Delay (s)		21.7	6.9			26.4	13.7			19.6		
Level of Service		C	A			C	B			B		
Approach Delay (s)			14.4				15.2			19.6		
Approach LOS			B				B			B		

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	53	456
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	0.99	1.00
Frt	1.00	0.85
Flt Protected	0.97	1.00
Satd. Flow (prot)	1801	1552
Flt Permitted	0.83	1.00
Satd. Flow (perm)	1530	1552
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	58	496
RTOR Reduction (vph)	0	400
Lane Group Flow (vph)	137	96
Confl. Peds. (#/hr)		9
Confl. Bikes (#/hr)		1
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	10.9	10.9
Effective Green, g (s)	10.9	10.9
Actuated g/C Ratio	0.19	0.19
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	1.5	1.5
Lane Grp Cap (vph)	295	299
v/s Ratio Prot		
v/s Ratio Perm	c0.09	0.06
v/c Ratio	0.46	0.32
Uniform Delay, d1	20.2	19.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.4	0.2
Delay (s)	20.6	19.8
Level of Service	C	B
Approach Delay (s)	20.0	
Approach LOS	C	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	11	4	64	85	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	1	12	4	72	96	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				256		
pX, platoon unblocked						
vC, conflicting volume	176	96	96			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176	96	96			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	811	961	1498			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	13	76	96
Volume Left	1	4	0
Volume Right	12	0	0
cSH	946	1498	1700
Volume to Capacity	0.01	0.00	0.06
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.9	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.5	0.0
Approach LOS	A		

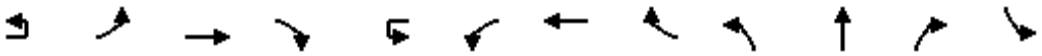
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	16.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	29	546	29	5	60	470	71	21	1	61	112	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Lane Util. Factor	1.00	0.95			1.00	0.95			1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00			0.99			1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			1.00
Frt	1.00	0.99			1.00	0.98			0.90			0.96
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.97
Satd. Flow (prot)	1770	3503			1770	3457			1637			1718
Flt Permitted	0.95	1.00			0.95	1.00			0.90			0.75
Satd. Flow (perm)	1770	3503			1770	3457			1493			1326
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	30	563	30	5	62	485	73	22	1	63	115	0
RTOR Reduction (vph)	0	3	0	0	0	8	0	0	49	0	0	38
Lane Group Flow (vph)	30	590	0	0	67	550	0	0	37	0	0	134
Confl. Peds. (#/hr)			25				3			7	7	
Confl. Bikes (#/hr)			6				7			1		
Turn Type	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2		1	1	6			8			4
Permitted Phases								8			4	
Actuated Green, G (s)	1.8	18.9			3.5	20.6			9.8			9.8
Effective Green, g (s)	1.8	18.9			3.5	20.6			9.8			9.8
Actuated g/C Ratio	0.04	0.42			0.08	0.46			0.22			0.22
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Vehicle Extension (s)	1.0	4.0			1.0	4.0			2.0			2.0
Lane Grp Cap (vph)	71	1481			138	1593			327			290
v/s Ratio Prot	0.02	c0.17			c0.04	0.16						
v/s Ratio Perm									0.02			c0.10
v/c Ratio	0.42	0.40			0.49	0.35			0.11			0.46
Uniform Delay, d1	20.9	9.0			19.7	7.7			14.0			15.2
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.5	0.2			1.0	0.2			0.1			0.4
Delay (s)	22.4	9.2			20.7	7.9			14.0			15.6
Level of Service	C	A			C	A			B			B
Approach Delay (s)		9.8				9.3			14.0			15.6
Approach LOS		A				A			B			B

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	44.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

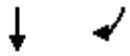
Movement	SBR
Lane Configurations	
Volume (vph)	55
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.97
Adj. Flow (vph)	57
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



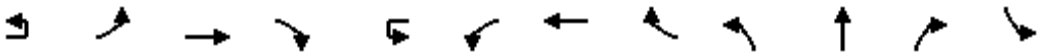
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	2	20	765	107	7	70	465	57	115	8	60	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	4.5			3.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	0.99			1.00	0.99			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.98			0.96		
Flt Protected		0.95	1.00			0.95	1.00			0.97		
Satd. Flow (prot)		1770	3441			1770	3461			1697		
Flt Permitted		0.95	1.00			0.95	1.00			0.76		
Satd. Flow (perm)		1770	3441			1770	3461			1333		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2	22	860	120	8	79	522	64	129	9	67	55
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	11	0	0
Lane Group Flow (vph)	0	24	980	0	0	87	586	0	0	194	0	0
Confl. Peds. (#/hr)				18				11	4		14	14
Confl. Bikes (#/hr)				5				2			2	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		3.4	45.0			9.8	51.4			22.3		
Effective Green, g (s)		3.4	45.0			9.8	51.4			22.3		
Actuated g/C Ratio		0.03	0.44			0.09	0.50			0.22		
Clearance Time (s)		3.0	4.5			3.0	4.5			5.0		
Vehicle Extension (s)		1.5	4.5			1.5	4.5			3.5		
Lane Grp Cap (vph)		58	1500			168	1723			288		
v/s Ratio Prot		0.01	c0.28			c0.05	0.17					
v/s Ratio Perm										c0.15		
v/c Ratio		0.41	0.65			0.52	0.34			0.67		
Uniform Delay, d1		48.9	22.9			44.5	15.7			37.1		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		1.7	1.3			1.1	0.2			6.3		
Delay (s)		50.7	24.2			45.6	15.9			43.4		
Level of Service		D	C			D	B			D		
Approach Delay (s)			24.8				19.7			43.4		
Approach LOS			C				B			D		

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	17.5
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	5	17
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	0.99	
Frt	0.97	
Flt Protected	0.97	
Satd. Flow (prot)	1718	
Flt Permitted	0.72	
Satd. Flow (perm)	1279	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	6	19
RTOR Reduction (vph)	8	0
Lane Group Flow (vph)	72	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	8.6	
Effective Green, g (s)	8.6	
Actuated g/C Ratio	0.08	
Clearance Time (s)	5.0	
Vehicle Extension (s)	1.5	
Lane Grp Cap (vph)	106	
v/s Ratio Prot		
v/s Ratio Perm	c0.06	
v/c Ratio	0.68	
Uniform Delay, d1	46.0	
Progression Factor	1.00	
Incremental Delay, d2	12.6	
Delay (s)	58.6	
Level of Service	E	
Approach Delay (s)	58.6	
Approach LOS	E	

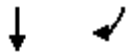
Intersection Summary



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	29	395	560	26	13	80	358	92	60	53	24	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	1.00			1.00	0.99			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		
Frt		1.00	0.99			1.00	0.97			0.98		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	3505			1770	3397			1754		
Flt Permitted		0.95	1.00			0.95	1.00			0.68		
Satd. Flow (perm)		1770	3505			1770	3397			1227		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	32	439	622	29	14	89	398	102	67	59	27	149
RTOR Reduction (vph)	0	0	2	0	0	0	23	0	0	6	0	0
Lane Group Flow (vph)	0	471	649	0	0	103	477	0	0	147	0	0
Confl. Peds. (#/hr)				17				10	23		22	22
Confl. Bikes (#/hr)				6				1			2	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		30.5	44.8			9.2	23.5			21.2		
Effective Green, g (s)		30.5	44.8			9.2	23.5			21.2		
Actuated g/C Ratio		0.35	0.51			0.11	0.27			0.24		
Clearance Time (s)		4.0	4.0			4.0	4.0			4.0		
Vehicle Extension (s)		1.5	6.5			1.5	6.5			1.5		
Lane Grp Cap (vph)		619	1800			186	915			298		
v/s Ratio Prot		c0.27	0.19			0.06	c0.14					
v/s Ratio Perm										0.12		
v/c Ratio		0.76	0.36			0.55	0.52			0.49		
Uniform Delay, d1		25.1	12.6			37.0	27.1			28.4		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		5.0	0.4			2.0	1.5			0.5		
Delay (s)		30.1	13.0			39.1	28.6			28.8		
Level of Service		C	B			D	C			C		
Approach Delay (s)			20.2				30.4			28.8		
Approach LOS			C				C			C		

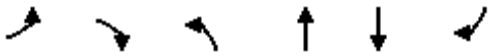
Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	87.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	68	257
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	0.96
Flpb, ped/bikes	0.99	1.00
Frt	1.00	0.85
Flt Protected	0.97	1.00
Satd. Flow (prot)	1782	1522
Flt Permitted	0.69	1.00
Satd. Flow (perm)	1267	1522
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	76	286
RTOR Reduction (vph)	0	204
Lane Group Flow (vph)	225	82
Confl. Peds. (#/hr)		23
Confl. Bikes (#/hr)		1
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	21.2	21.2
Effective Green, g (s)	21.2	21.2
Actuated g/C Ratio	0.24	0.24
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	1.5	1.5
Lane Grp Cap (vph)	308	370
v/s Ratio Prot		
v/s Ratio Perm	c0.18	0.05
v/c Ratio	0.73	0.22
Uniform Delay, d1	30.4	26.4
Progression Factor	1.00	1.00
Incremental Delay, d2	7.5	0.1
Delay (s)	37.8	26.5
Level of Service	D	C
Approach Delay (s)	31.5	
Approach LOS	C	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	6	7	78	65	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	1	7	8	88	73	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				256		
pX, platoon unblocked						
vC, conflicting volume	176	73	73			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176	73	73			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	809	989	1527			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	96	73
Volume Left	1	8	0
Volume Right	7	0	0
cSH	958	1527	1700
Volume to Capacity	0.01	0.01	0.04
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.8	0.6	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	44	349	26	6	59	367	142	25	1	81	63	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Lane Util. Factor	1.00	0.95			1.00	0.95			1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.99			0.99			1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			1.00
Frt	1.00	0.99			1.00	0.96			0.90			0.97
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.96
Satd. Flow (prot)	1770	3494			1770	3369			1635			1736
Flt Permitted	0.95	1.00			0.95	1.00			0.90			0.87
Satd. Flow (perm)	1770	3494			1770	3369			1481			1562
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	379	28	7	64	399	154	27	1	88	68	0
RTOR Reduction (vph)	0	4	0	0	0	25	0	0	76	0	0	42
Lane Group Flow (vph)	48	403	0	0	71	528	0	0	40	0	0	47
Confl. Peds. (#/hr)			13				4			2	2	
Confl. Bikes (#/hr)			6				1			1		
Turn Type	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2		1	1	6			8			4
Permitted Phases								8			4	
Actuated Green, G (s)	2.0	17.0			3.3	18.3			5.2			5.2
Effective Green, g (s)	2.0	17.0			3.3	18.3			5.2			5.2
Actuated g/C Ratio	0.05	0.45			0.09	0.48			0.14			0.14
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Vehicle Extension (s)	1.0	4.0			1.0	4.0			2.0			2.0
Lane Grp Cap (vph)	93	1563			153	1622			202			213
v/s Ratio Prot	0.03	0.12			c0.04	c0.16						
v/s Ratio Perm									0.03			c0.03
v/c Ratio	0.52	0.26			0.46	0.33			0.20			0.22
Uniform Delay, d1	17.5	6.6			16.5	6.1			14.6			14.6
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	2.0	0.1			0.8	0.2			0.2			0.2
Delay (s)	19.5	6.7			17.3	6.2			14.7			14.8
Level of Service	B	A			B	A			B			B
Approach Delay (s)		8.0				7.5			14.7			14.8
Approach LOS		A				A			B			B

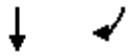
Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	38.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	19
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	21
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

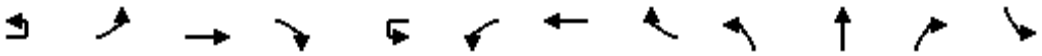
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	8	23	375	68	1	36	643	51	66	4	41	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	4.5			3.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	0.99			1.00	1.00			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.99			0.95		
Flt Protected		0.95	1.00			0.95	1.00			0.97		
Satd. Flow (prot)		1770	3413			1770	3488			1700		
Flt Permitted		0.95	1.00			0.95	1.00			0.74		
Satd. Flow (perm)		1770	3413			1770	3488			1293		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	9	26	421	76	1	40	722	57	74	4	46	91
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	14	0	0
Lane Group Flow (vph)	0	35	497	0	0	41	779	0	0	110	0	0
Confl. Peds. (#/hr)				26				12	4		7	7
Confl. Bikes (#/hr)				6								
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		3.6	29.7			3.9	30.0			14.7		
Effective Green, g (s)		3.6	29.7			3.9	30.0			14.7		
Actuated g/C Ratio		0.04	0.37			0.05	0.37			0.18		
Clearance Time (s)		3.0	4.5			3.0	4.5			5.0		
Vehicle Extension (s)		1.5	4.5			1.5	4.5			3.5		
Lane Grp Cap (vph)		79	1260			85	1301			236		
v/s Ratio Prot		0.02	0.15			c0.02	c0.22					
v/s Ratio Perm										c0.09		
v/c Ratio		0.44	0.39			0.48	0.60			0.47		
Uniform Delay, d1		37.4	18.7			37.3	20.3			29.3		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		1.4	0.4			1.6	1.0			1.7		
Delay (s)		38.9	19.1			38.8	21.3			31.1		
Level of Service		D	B			D	C			C		
Approach Delay (s)			20.4				22.2			31.1		
Approach LOS			C				C			C		

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	80.4	Sum of lost time (s)	17.5
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



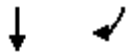
Movement	SBT	SBR
Lane Configurations		
Volume (vph)	11	31
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	0.97	
Satd. Flow (prot)	1728	
Flt Permitted	0.69	
Satd. Flow (perm)	1236	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	12	35
RTOR Reduction (vph)	8	0
Lane Group Flow (vph)	130	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	14.6	
Effective Green, g (s)	14.6	
Actuated g/C Ratio	0.18	
Clearance Time (s)	5.0	
Vehicle Extension (s)	1.5	
Lane Grp Cap (vph)	224	
v/s Ratio Prot		
v/s Ratio Perm	c0.11	
v/c Ratio	0.58	
Uniform Delay, d1	30.1	
Progression Factor	1.00	
Incremental Delay, d2	2.3	
Delay (s)	32.3	
Level of Service	C	
Approach Delay (s)	32.3	
Approach LOS	C	

Intersection Summary



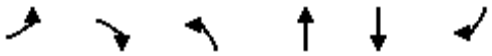
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	18	235	231	18	2	48	321	66	32	34	15	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.99			1.00	0.97			0.98		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	3488			1770	3432			1770		
Flt Permitted		0.95	1.00			0.95	1.00			0.85		
Satd. Flow (perm)		1770	3488			1770	3432			1527		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	255	251	20	2	52	349	72	35	37	16	79
RTOR Reduction (vph)	0	0	4	0	0	0	15	0	0	6	0	0
Lane Group Flow (vph)	0	275	267	0	0	54	406	0	0	82	0	0
Confl. Peds. (#/hr)				12				4	9		14	14
Confl. Bikes (#/hr)				6				1				
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		13.8	30.5			3.8	20.5			11.0		
Effective Green, g (s)		13.8	30.5			3.8	20.5			11.0		
Actuated g/C Ratio		0.24	0.53			0.07	0.36			0.19		
Clearance Time (s)		4.0	4.0			4.0	4.0			4.0		
Vehicle Extension (s)		1.5	6.5			1.5	6.5			1.5		
Lane Grp Cap (vph)		426	1856			117	1227			293		
v/s Ratio Prot		c0.16	0.08			0.03	c0.12					
v/s Ratio Perm										0.05		
v/c Ratio		0.65	0.14			0.46	0.33			0.28		
Uniform Delay, d1		19.6	6.8			25.8	13.4			19.8		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		2.5	0.1			1.1	0.5			0.2		
Delay (s)		22.1	6.9			26.8	13.9			20.0		
Level of Service		C	A			C	B			B		
Approach Delay (s)			14.5				15.4			20.0		
Approach LOS			B				B			B		

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	53	459
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	0.99	1.00
Frt	1.00	0.85
Flt Protected	0.97	1.00
Satd. Flow (prot)	1801	1552
Flt Permitted	0.83	1.00
Satd. Flow (perm)	1530	1552
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	58	499
RTOR Reduction (vph)	0	403
Lane Group Flow (vph)	137	96
Confl. Peds. (#/hr)		9
Confl. Bikes (#/hr)		1
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	11.0	11.0
Effective Green, g (s)	11.0	11.0
Actuated g/C Ratio	0.19	0.19
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	1.5	1.5
Lane Grp Cap (vph)	293	297
v/s Ratio Prot		
v/s Ratio Perm	c0.09	0.06
v/c Ratio	0.47	0.32
Uniform Delay, d1	20.6	19.9
Progression Factor	1.00	1.00
Incremental Delay, d2	0.4	0.2
Delay (s)	21.0	20.2
Level of Service	C	C
Approach Delay (s)	20.3	
Approach LOS	C	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	27	10	64	85	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	1	30	11	72	96	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				256		
pX, platoon unblocked						
vC, conflicting volume	190	96	97			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	190	96	97			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	99			
cM capacity (veh/h)	793	960	1497			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	31	83	97
Volume Left	1	11	0
Volume Right	30	0	1
cSH	953	1497	1700
Volume to Capacity	0.03	0.01	0.06
Queue Length 95th (ft)	3	1	0
Control Delay (s)	8.9	1.1	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	1.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	29	559	29	5	61	478	73	21	1	64	116	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Lane Util. Factor	1.00	0.95			1.00	0.95			1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00			0.99			1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			1.00
Frt	1.00	0.99			1.00	0.98			0.90			0.96
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.97
Satd. Flow (prot)	1770	3504			1770	3456			1635			1719
Flt Permitted	0.95	1.00			0.95	1.00			0.90			0.76
Satd. Flow (perm)	1770	3504			1770	3456			1493			1356
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	30	576	30	5	63	493	75	22	1	66	120	0
RTOR Reduction (vph)	0	3	0	0	0	8	0	0	51	0	0	38
Lane Group Flow (vph)	30	603	0	0	68	560	0	0	38	0	0	139
Confl. Peds. (#/hr)			25				3			7	7	
Confl. Bikes (#/hr)			6				7			1		
Turn Type	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2		1	1	6			8			4
Permitted Phases								8			4	
Actuated Green, G (s)	1.8	19.0			3.5	20.7			10.1			10.1
Effective Green, g (s)	1.8	19.0			3.5	20.7			10.1			10.1
Actuated g/C Ratio	0.04	0.42			0.08	0.46			0.22			0.22
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Vehicle Extension (s)	1.0	4.0			1.0	4.0			2.0			2.0
Lane Grp Cap (vph)	70	1476			137	1586			334			303
v/s Ratio Prot	0.02	c0.17			c0.04	0.16						
v/s Ratio Perm									0.03			c0.10
v/c Ratio	0.43	0.41			0.50	0.35			0.11			0.46
Uniform Delay, d1	21.1	9.1			20.0	7.9			13.9			15.1
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.5	0.3			1.0	0.2			0.1			0.4
Delay (s)	22.7	9.4			21.0	8.1			14.0			15.5
Level of Service	C	A			C	A			B			B
Approach Delay (s)		10.0				9.4			14.0			15.5
Approach LOS		B				A			B			B

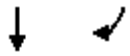
Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	45.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	55
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.97
Adj. Flow (vph)	57
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

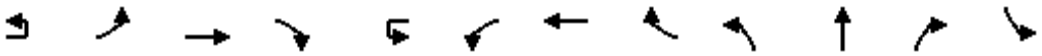
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	2	40	765	107	7	70	465	84	115	11	60	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	4.5			3.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	0.99			1.00	0.99			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.98			0.96		
Flt Protected		0.95	1.00			0.95	1.00			0.97		
Satd. Flow (prot)		1770	3440			1770	3429			1699		
Flt Permitted		0.95	1.00			0.95	1.00			0.75		
Satd. Flow (perm)		1770	3440			1770	3429			1308		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2	45	860	120	8	79	522	94	129	12	67	71
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	11	0	0
Lane Group Flow (vph)	0	47	980	0	0	87	616	0	0	197	0	0
Confl. Peds. (#/hr)				18				11	4		14	14
Confl. Bikes (#/hr)				5				2			2	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		6.0	44.5			9.9	48.4			23.4		
Effective Green, g (s)		6.0	44.5			9.9	48.4			23.4		
Actuated g/C Ratio		0.06	0.41			0.09	0.45			0.22		
Clearance Time (s)		3.0	4.5			3.0	4.5			5.0		
Vehicle Extension (s)		1.5	4.5			1.5	4.5			3.5		
Lane Grp Cap (vph)		97	1409			161	1528			281		
v/s Ratio Prot		0.03	c0.28			c0.05	0.18					
v/s Ratio Perm										c0.15		
v/c Ratio		0.48	0.70			0.54	0.40			0.70		
Uniform Delay, d1		49.8	26.5			47.2	20.3			39.4		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		1.4	1.8			2.0	0.3			7.9		
Delay (s)		51.2	28.2			49.2	20.6			47.3		
Level of Service		D	C			D	C			D		
Approach Delay (s)			29.3				24.2			47.3		
Approach LOS			C				C			D		

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	108.6	Sum of lost time (s)	17.5
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



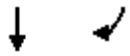
Movement	SBT	SBR
Lane Configurations		
Volume (vph)	7	28
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	0.99	
Frt	0.96	
Flt Protected	0.97	
Satd. Flow (prot)	1713	
Flt Permitted	0.72	
Satd. Flow (perm)	1269	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	8	31
RTOR Reduction (vph)	10	0
Lane Group Flow (vph)	100	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	13.3	
Effective Green, g (s)	13.3	
Actuated g/C Ratio	0.12	
Clearance Time (s)	5.0	
Vehicle Extension (s)	1.5	
Lane Grp Cap (vph)	155	
v/s Ratio Prot		
v/s Ratio Perm	c0.08	
v/c Ratio	0.65	
Uniform Delay, d1	45.4	
Progression Factor	1.00	
Incremental Delay, d2	6.8	
Delay (s)	52.2	
Level of Service	D	
Approach Delay (s)	52.2	
Approach LOS	D	

Intersection Summary



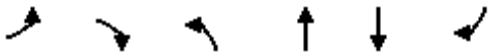
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	29	402	567	26	13	80	372	92	60	53	24	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	1.00			1.00	0.99			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		
Frt		1.00	0.99			1.00	0.97			0.98		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	3505			1770	3401			1754		
Flt Permitted		0.95	1.00			0.95	1.00			0.68		
Satd. Flow (perm)		1770	3505			1770	3401			1224		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	32	447	630	29	14	89	413	102	67	59	27	149
RTOR Reduction (vph)	0	0	2	0	0	0	22	0	0	6	0	0
Lane Group Flow (vph)	0	479	657	0	0	103	493	0	0	147	0	0
Confl. Peds. (#/hr)				17				10	23		22	22
Confl. Bikes (#/hr)				6				1			2	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		30.5	45.2			9.2	23.9			21.3		
Effective Green, g (s)		30.5	45.2			9.2	23.9			21.3		
Actuated g/C Ratio		0.35	0.52			0.10	0.27			0.24		
Clearance Time (s)		4.0	4.0			4.0	4.0			4.0		
Vehicle Extension (s)		1.5	6.5			1.5	6.5			1.5		
Lane Grp Cap (vph)		615	1806			185	926			297		
v/s Ratio Prot		c0.27	0.19			0.06	c0.14					
v/s Ratio Perm										0.12		
v/c Ratio		0.78	0.36			0.56	0.53			0.49		
Uniform Delay, d1		25.6	12.7			37.3	27.1			28.6		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		5.7	0.4			2.1	1.6			0.5		
Delay (s)		31.2	13.1			39.4	28.7			29.0		
Level of Service		C	B			D	C			C		
Approach Delay (s)			20.7				30.5			29.0		
Approach LOS			C				C			C		

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	87.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	68	270
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	0.96
Flpb, ped/bikes	0.99	1.00
Frt	1.00	0.85
Flt Protected	0.97	1.00
Satd. Flow (prot)	1782	1522
Flt Permitted	0.69	1.00
Satd. Flow (perm)	1266	1522
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	76	300
RTOR Reduction (vph)	0	214
Lane Group Flow (vph)	225	86
Confl. Peds. (#/hr)		23
Confl. Bikes (#/hr)		1
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	21.3	21.3
Effective Green, g (s)	21.3	21.3
Actuated g/C Ratio	0.24	0.24
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	1.5	1.5
Lane Grp Cap (vph)	307	369
v/s Ratio Prot		
v/s Ratio Perm	c0.18	0.06
v/c Ratio	0.73	0.23
Uniform Delay, d1	30.6	26.7
Progression Factor	1.00	1.00
Incremental Delay, d2	7.6	0.1
Delay (s)	38.1	26.8
Level of Service	D	C
Approach Delay (s)	31.6	
Approach LOS	C	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	27	50	78	65	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	1	30	56	88	73	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				256		
pX, platoon unblocked						
vC, conflicting volume	274	74	75			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	274	74	75			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	96			
cM capacity (veh/h)	689	988	1524			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	31	144	75
Volume Left	1	56	0
Volume Right	30	0	2
cSH	972	1524	1700
Volume to Capacity	0.03	0.04	0.04
Queue Length 95th (ft)	3	3	0
Control Delay (s)	8.8	3.1	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	3.1	0.0
Approach LOS	A		

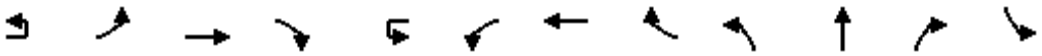
Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	50	410	30	10	60	520	150	40	10	90	90	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Lane Util. Factor	1.00	0.95			1.00	0.95			1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.99			0.99			1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			1.00
Frt	1.00	0.99			1.00	0.97			0.91			0.96
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.97
Satd. Flow (prot)	1770	3493			1770	3401			1661			1735
Flt Permitted	0.95	1.00			0.95	1.00			0.90			0.75
Satd. Flow (perm)	1770	3493			1770	3401			1515			1345
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	446	33	11	65	565	163	43	11	98	98	11
RTOR Reduction (vph)	0	4	0	0	0	16	0	0	64	0	0	14
Lane Group Flow (vph)	54	475	0	0	76	712	0	0	88	0	0	138
Confl. Peds. (#/hr)			13				4			2	2	
Confl. Bikes (#/hr)			6				1			1		
Turn Type	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2		1	1	6			8			4
Permitted Phases								8			4	
Actuated Green, G (s)	3.3	21.7			5.0	23.4			8.9			8.9
Effective Green, g (s)	3.3	21.7			5.0	23.4			8.9			8.9
Actuated g/C Ratio	0.07	0.45			0.10	0.49			0.19			0.19
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Vehicle Extension (s)	1.0	4.0			1.0	4.0			2.0			2.0
Lane Grp Cap (vph)	121	1575			183	1654			280			248
v/s Ratio Prot	0.03	0.14			c0.04	c0.21						
v/s Ratio Perm									0.06			c0.10
v/c Ratio	0.45	0.30			0.42	0.43			0.31			0.56
Uniform Delay, d1	21.5	8.4			20.2	8.0			17.0			17.8
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.0	0.1			0.6	0.2			0.2			1.5
Delay (s)	22.5	8.5			20.7	8.3			17.2			19.3
Level of Service	C	A			C	A			B			B
Approach Delay (s)		9.9				9.4			17.2			19.3
Approach LOS		A				A			B			B

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	48.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

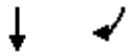
Movement	SBR
Lane Configurations	
Volume (vph)	40
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	43
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



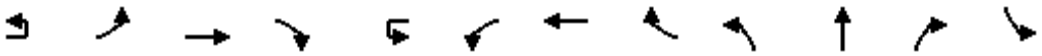
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	10	20	540	80	10	40	700	80	70	10	50	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	4.5			3.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	0.99			1.00	0.99			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.98			0.95		
Flt Protected		0.95	1.00			0.95	1.00			0.97		
Satd. Flow (prot)		1770	3429			1770	3467			1700		
Flt Permitted		0.95	1.00			0.95	1.00			0.76		
Satd. Flow (perm)		1770	3429			1770	3467			1325		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	11	22	607	90	11	45	787	90	79	11	56	90
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	15	0	0
Lane Group Flow (vph)	0	33	697	0	0	56	877	0	0	131	0	0
Confl. Peds. (#/hr)				26				12	4		7	7
Confl. Bikes (#/hr)				6								
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		3.7	33.2			6.2	35.7			16.7		
Effective Green, g (s)		3.7	33.2			6.2	35.7			16.7		
Actuated g/C Ratio		0.04	0.37			0.07	0.40			0.19		
Clearance Time (s)		3.0	4.5			3.0	4.5			5.0		
Vehicle Extension (s)		1.5	4.5			1.5	4.5			3.5		
Lane Grp Cap (vph)		73	1271			122	1382			247		
v/s Ratio Prot		0.02	0.20			c0.03	c0.25					
v/s Ratio Perm										c0.10		
v/c Ratio		0.45	0.55			0.46	0.63			0.53		
Uniform Delay, d1		41.9	22.2			40.0	21.7			32.9		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		1.6	0.7			1.0	1.2			2.5		
Delay (s)		43.5	23.0			41.0	22.9			35.3		
Level of Service		D	C			D	C			D		
Approach Delay (s)			23.9				23.9			35.3		
Approach LOS			C				C			D		

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	17.5
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



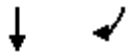
Movement	SBT	SBR
Lane Configurations		
Volume (vph)	10	30
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	0.97	
Satd. Flow (prot)	1728	
Flt Permitted	0.64	
Satd. Flow (perm)	1142	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	11	34
RTOR Reduction (vph)	8	0
Lane Group Flow (vph)	127	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	15.9	
Effective Green, g (s)	15.9	
Actuated g/C Ratio	0.18	
Clearance Time (s)	5.0	
Vehicle Extension (s)	1.5	
Lane Grp Cap (vph)	202	
v/s Ratio Prot		
v/s Ratio Perm	c0.11	
v/c Ratio	0.63	
Uniform Delay, d1	34.1	
Progression Factor	1.00	
Incremental Delay, d2	4.3	
Delay (s)	38.4	
Level of Service	D	
Approach Delay (s)	38.4	
Approach LOS	D	

Intersection Summary



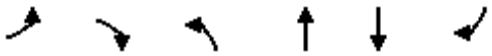
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	20	240	440	20	10	70	540	180	40	40	20	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	1.00			1.00	0.99			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.99			1.00	0.96			0.97		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	3507			1770	3379			1761		
Flt Permitted		0.95	1.00			0.95	1.00			0.78		
Satd. Flow (perm)		1770	3507			1770	3379			1395		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	261	478	22	11	76	587	196	43	43	22	185
RTOR Reduction (vph)	0	0	2	0	0	0	27	0	0	7	0	0
Lane Group Flow (vph)	0	283	498	0	0	87	756	0	0	101	0	0
Confl. Peds. (#/hr)				12				4	9		14	14
Confl. Bikes (#/hr)				6				1				
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		19.6	49.9			7.5	37.8			24.9		
Effective Green, g (s)		19.6	49.9			7.5	37.8			24.9		
Actuated g/C Ratio		0.21	0.53			0.08	0.40			0.26		
Clearance Time (s)		4.0	4.0			4.0	4.0			4.0		
Vehicle Extension (s)		1.5	6.5			1.5	6.5			1.5		
Lane Grp Cap (vph)		367	1855			140	1354			368		
v/s Ratio Prot		c0.16	0.14			0.05	c0.22					
v/s Ratio Perm										0.07		
v/c Ratio		0.77	0.27			0.62	0.56			0.28		
Uniform Delay, d1		35.2	12.2			42.0	21.8			27.5		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		8.8	0.2			6.0	1.2			0.1		
Delay (s)		44.1	12.4			48.1	23.0			27.7		
Level of Service		D	B			D	C			C		
Approach Delay (s)			23.9				25.5			27.7		
Approach LOS			C				C			C		

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	94.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	60	500
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	0.99	1.00
Frt	1.00	0.85
Flt Protected	0.96	1.00
Satd. Flow (prot)	1778	1546
Flt Permitted	0.71	1.00
Satd. Flow (perm)	1312	1546
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	65	543
RTOR Reduction (vph)	0	333
Lane Group Flow (vph)	250	210
Confl. Peds. (#/hr)		9
Confl. Bikes (#/hr)		1
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	24.9	24.9
Effective Green, g (s)	24.9	24.9
Actuated g/C Ratio	0.26	0.26
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	1.5	1.5
Lane Grp Cap (vph)	346	408
v/s Ratio Prot		
v/s Ratio Perm	c0.19	0.14
v/c Ratio	0.72	0.52
Uniform Delay, d1	31.6	29.6
Progression Factor	1.00	1.00
Incremental Delay, d2	6.2	0.5
Delay (s)	37.8	30.0
Level of Service	D	C
Approach Delay (s)	32.5	
Approach LOS	C	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	20	10	100	100	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	22	11	112	112	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				256		
pX, platoon unblocked						
vC, conflicting volume	247	112	112			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	247	112	112			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	98	99			
cM capacity (veh/h)	736	941	1477			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	34	124	112
Volume Left	11	11	0
Volume Right	22	0	0
cSH	861	1477	1700
Volume to Capacity	0.04	0.01	0.07
Queue Length 95th (ft)	3	1	0
Control Delay (s)	9.4	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	0.7	0.0
Approach LOS	A		

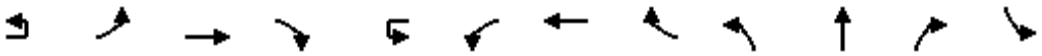
Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	40	690	40	10	80	600	80	30	10	70	120	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Lane Util. Factor	1.00	0.95			1.00	0.95			1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00			0.99			1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			1.00
Frt	1.00	0.99			1.00	0.98			0.91			0.96
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.97
Satd. Flow (prot)	1770	3500			1770	3465			1661			1724
Flt Permitted	0.95	1.00			0.95	1.00			0.90			0.79
Satd. Flow (perm)	1770	3500			1770	3465			1514			1400
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	711	41	10	82	619	82	31	10	72	124	10
RTOR Reduction (vph)	0	3	0	0	0	6	0	0	54	0	0	15
Lane Group Flow (vph)	41	749	0	0	92	695	0	0	59	0	0	181
Confl. Peds. (#/hr)			25				3			7	7	
Confl. Bikes (#/hr)			6				7			1		
Turn Type	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2		1	1	6			8			4
Permitted Phases								8			4	
Actuated Green, G (s)	3.1	22.9			5.9	25.7			13.7			13.7
Effective Green, g (s)	3.1	22.9			5.9	25.7			13.7			13.7
Actuated g/C Ratio	0.06	0.42			0.11	0.47			0.25			0.25
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Vehicle Extension (s)	1.0	4.0			1.0	4.0			2.0			2.0
Lane Grp Cap (vph)	99	1457			189	1619			377			348
v/s Ratio Prot	0.02	c0.21			c0.05	c0.20						
v/s Ratio Perm									0.04			c0.13
v/c Ratio	0.41	0.51			0.49	0.43			0.16			0.52
Uniform Delay, d1	25.1	11.9			23.1	9.8			16.1			17.8
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.0	0.4			0.7	0.3			0.1			0.6
Delay (s)	26.1	12.3			23.8	10.0			16.2			18.5
Level of Service	C	B			C	B			B			B
Approach Delay (s)		13.0				11.6			16.2			18.5
Approach LOS		B				B			B			B

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

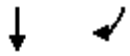
Movement	SBR
Lane Configurations	
Volume (vph)	60
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.97
Adj. Flow (vph)	62
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



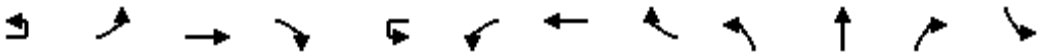
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	10	30	860	120	10	80	900	90	120	10	80	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	4.5			3.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	0.99			1.00	0.99			0.98		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.99			0.95		
Flt Protected		0.95	1.00			0.95	1.00			0.97		
Satd. Flow (prot)		1770	3435			1770	3471			1681		
Flt Permitted		0.95	1.00			0.95	1.00			0.72		
Satd. Flow (perm)		1770	3435			1770	3471			1253		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	11	34	966	135	11	90	1011	101	135	11	90	90
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	14	0	0
Lane Group Flow (vph)	0	45	1101	0	0	101	1112	0	0	222	0	0
Confl. Peds. (#/hr)				18				11	4		14	14
Confl. Bikes (#/hr)				5				2			2	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		6.4	52.1			11.4	57.1			28.4		
Effective Green, g (s)		6.4	52.1			11.4	57.1			28.4		
Actuated g/C Ratio		0.05	0.40			0.09	0.44			0.22		
Clearance Time (s)		3.0	4.5			3.0	4.5			5.0		
Vehicle Extension (s)		1.5	4.5			1.5	4.5			3.5		
Lane Grp Cap (vph)		86	1368			154	1515			272		
v/s Ratio Prot		0.03	c0.32			c0.06	0.32					
v/s Ratio Perm										c0.18		
v/c Ratio		0.52	0.80			0.66	0.73			0.82		
Uniform Delay, d1		60.7	34.8			57.8	30.6			48.7		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		2.6	3.9			7.4	2.1			17.4		
Delay (s)		63.3	38.8			65.2	32.7			66.1		
Level of Service		E	D			E	C			E		
Approach Delay (s)			39.8				35.4			66.1		
Approach LOS			D				D			E		

Intersection Summary			
HCM 2000 Control Delay	42.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	130.8	Sum of lost time (s)	17.5
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



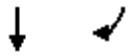
Movement	SBT	SBR
Lane Configurations		
Volume (vph)	30	50
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	0.98	
Satd. Flow (prot)	1730	
Flt Permitted	0.73	
Satd. Flow (perm)	1290	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	34	56
RTOR Reduction (vph)	11	0
Lane Group Flow (vph)	169	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	21.4	
Effective Green, g (s)	21.4	
Actuated g/C Ratio	0.16	
Clearance Time (s)	5.0	
Vehicle Extension (s)	1.5	
Lane Grp Cap (vph)	211	
v/s Ratio Prot		
v/s Ratio Perm	c0.13	
v/c Ratio	0.80	
Uniform Delay, d1	52.7	
Progression Factor	1.00	
Incremental Delay, d2	18.3	
Delay (s)	71.0	
Level of Service	E	
Approach Delay (s)	71.0	
Approach LOS	E	

Intersection Summary



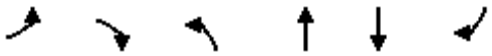
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	30	420	780	30	20	170	500	210	70	60	30	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	1.00			1.00	0.98			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		
Frt		1.00	0.99			1.00	0.96			0.97		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	3509			1770	3327			1752		
Flt Permitted		0.95	1.00			0.95	1.00			0.44		
Satd. Flow (perm)		1770	3509			1770	3327			786		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	467	867	33	22	189	556	233	78	67	33	222
RTOR Reduction (vph)	0	0	2	0	0	0	42	0	0	6	0	0
Lane Group Flow (vph)	0	500	898	0	0	211	747	0	0	172	0	0
Confl. Peds. (#/hr)				17				10	23		22	22
Confl. Bikes (#/hr)				6				1			2	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		30.2	52.4			17.0	39.2			30.2		
Effective Green, g (s)		30.2	52.4			17.0	39.2			30.2		
Actuated g/C Ratio		0.27	0.47			0.15	0.35			0.27		
Clearance Time (s)		4.0	4.0			4.0	4.0			4.0		
Vehicle Extension (s)		1.5	6.5			1.5	6.5			1.5		
Lane Grp Cap (vph)		478	1647			269	1168			212		
v/s Ratio Prot		c0.28	0.26			0.12	c0.22					
v/s Ratio Perm										0.22		
v/c Ratio		1.05	0.55			0.78	0.64			0.81		
Uniform Delay, d1		40.7	21.1			45.5	30.3			38.0		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		53.7	0.9			12.9	2.1			19.6		
Delay (s)		94.4	22.0			58.4	32.4			57.6		
Level of Service		F	C			E	C			E		
Approach Delay (s)			47.9				37.9			57.6		
Approach LOS			D				D			E		

Intersection Summary			
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	111.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	110	310
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	0.95
Flpb, ped/bikes	0.99	1.00
Frt	1.00	0.85
Flt Protected	0.97	1.00
Satd. Flow (prot)	1781	1511
Flt Permitted	0.67	1.00
Satd. Flow (perm)	1224	1511
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	122	344
RTOR Reduction (vph)	0	155
Lane Group Flow (vph)	344	189
Confl. Peds. (#/hr)		23
Confl. Bikes (#/hr)		1
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	30.2	30.2
Effective Green, g (s)	30.2	30.2
Actuated g/C Ratio	0.27	0.27
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	1.5	1.5
Lane Grp Cap (vph)	331	408
v/s Ratio Prot		
v/s Ratio Perm	c0.28	0.13
v/c Ratio	1.04	0.46
Uniform Delay, d1	40.7	34.0
Progression Factor	1.00	1.00
Incremental Delay, d2	60.0	0.3
Delay (s)	100.7	34.3
Level of Service	F	C
Approach Delay (s)	67.5	
Approach LOS	E	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	10	10	120	150	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	11	11	135	169	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				256		
pX, platoon unblocked						
vC, conflicting volume	331	174	180			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	331	174	180			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	99			
cM capacity (veh/h)	658	869	1396			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	22	146	180
Volume Left	11	11	0
Volume Right	11	0	11
cSH	749	1396	1700
Volume to Capacity	0.03	0.01	0.11
Queue Length 95th (ft)	2	1	0
Control Delay (s)	10.0	0.6	0.0
Lane LOS	A	A	
Approach Delay (s)	10.0	0.6	0.0
Approach LOS	A		

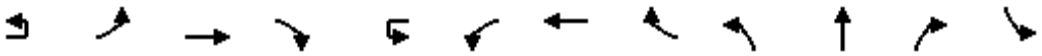
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	50	413	30	10	61	528	152	40	10	90	91	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Lane Util. Factor	1.00	0.95			1.00	0.95			1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.99			0.99			1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			1.00
Frt	1.00	0.99			1.00	0.97			0.91			0.96
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.97
Satd. Flow (prot)	1770	3493			1770	3401			1662			1735
Flt Permitted	0.95	1.00			0.95	1.00			0.89			0.75
Satd. Flow (perm)	1770	3493			1770	3401			1505			1351
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	449	33	11	66	574	165	43	11	98	99	11
RTOR Reduction (vph)	0	4	0	0	0	18	0	0	61	0	0	13
Lane Group Flow (vph)	54	478	0	0	77	721	0	0	91	0	0	140
Confl. Peds. (#/hr)			13				4			2	2	
Confl. Bikes (#/hr)			6				1			1		
Turn Type	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2		1	1	6			8			4
Permitted Phases								8			4	
Actuated Green, G (s)	3.3	19.5			5.2	21.4			11.2			11.2
Effective Green, g (s)	3.3	19.5			5.2	21.4			11.2			11.2
Actuated g/C Ratio	0.07	0.40			0.11	0.44			0.23			0.23
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Vehicle Extension (s)	1.0	4.0			1.0	4.0			2.0			2.0
Lane Grp Cap (vph)	120	1407			190	1503			348			312
v/s Ratio Prot	0.03	0.14			c0.04	c0.21						
v/s Ratio Perm									0.06			c0.10
v/c Ratio	0.45	0.34			0.41	0.48			0.26			0.45
Uniform Delay, d1	21.7	10.0			20.2	9.6			15.2			16.0
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.0	0.2			0.5	0.3			0.1			0.4
Delay (s)	22.7	10.2			20.7	9.9			15.4			16.3
Level of Service	C	B			C	A			B			B
Approach Delay (s)		11.5				10.9			15.4			16.3
Approach LOS		B				B			B			B

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

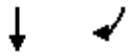
Movement	SBR
Lane Configurations	
Volume (vph)	40
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	43
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



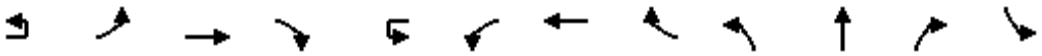
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	10	24	540	80	10	40	700	86	70	10	50	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	4.5			3.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	0.99			1.00	0.99			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.98			0.95		
Flt Protected		0.95	1.00			0.95	1.00			0.97		
Satd. Flow (prot)		1770	3427			1770	3461			1699		
Flt Permitted		0.95	1.00			0.95	1.00			0.74		
Satd. Flow (perm)		1770	3427			1770	3461			1298		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	11	27	607	90	11	45	787	97	79	11	56	106
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	15	0	0
Lane Group Flow (vph)	0	38	697	0	0	56	884	0	0	131	0	0
Confl. Peds. (#/hr)				26				12	4		7	7
Confl. Bikes (#/hr)				6								
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		3.9	35.1			6.3	37.5			17.5		
Effective Green, g (s)		3.9	35.1			6.3	37.5			17.5		
Actuated g/C Ratio		0.04	0.37			0.07	0.39			0.18		
Clearance Time (s)		3.0	4.5			3.0	4.5			5.0		
Vehicle Extension (s)		1.5	4.5			1.5	4.5			3.5		
Lane Grp Cap (vph)		72	1258			116	1357			237		
v/s Ratio Prot		0.02	0.20			c0.03	c0.26					
v/s Ratio Perm										c0.10		
v/c Ratio		0.53	0.55			0.48	0.65			0.55		
Uniform Delay, d1		44.9	24.0			43.1	23.7			35.5		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		3.2	0.8			1.2	1.4			3.1		
Delay (s)		48.1	24.8			44.2	25.1			38.6		
Level of Service		D	C			D	C			D		
Approach Delay (s)			26.0				26.2			38.6		
Approach LOS			C				C			D		

Intersection Summary			
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	17.5
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



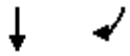
Movement	SBT	SBR
Lane Configurations		
Volume (vph)	12	41
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	0.97	
Satd. Flow (prot)	1728	
Flt Permitted	0.65	
Satd. Flow (perm)	1155	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	13	46
RTOR Reduction (vph)	9	0
Lane Group Flow (vph)	156	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	19.2	
Effective Green, g (s)	19.2	
Actuated g/C Ratio	0.20	
Clearance Time (s)	5.0	
Vehicle Extension (s)	1.5	
Lane Grp Cap (vph)	231	
v/s Ratio Prot		
v/s Ratio Perm	c0.14	
v/c Ratio	0.68	
Uniform Delay, d1	35.3	
Progression Factor	1.00	
Incremental Delay, d2	6.0	
Delay (s)	41.4	
Level of Service	D	
Approach Delay (s)	41.4	
Approach LOS	D	

Intersection Summary



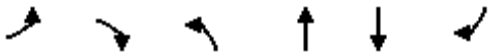
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	20	247	447	20	10	70	543	180	40	40	20	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	1.00			1.00	0.99			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.99			1.00	0.96			0.97		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	3507			1770	3379			1761		
Flt Permitted		0.95	1.00			0.95	1.00			0.77		
Satd. Flow (perm)		1770	3507			1770	3379			1387		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	268	486	22	11	76	590	196	43	43	22	185
RTOR Reduction (vph)	0	0	2	0	0	0	27	0	0	7	0	0
Lane Group Flow (vph)	0	290	506	0	0	87	759	0	0	101	0	0
Confl. Peds. (#/hr)				12				4	9		14	14
Confl. Bikes (#/hr)				6				1				
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		20.0	50.5			7.5	38.0			24.9		
Effective Green, g (s)		20.0	50.5			7.5	38.0			24.9		
Actuated g/C Ratio		0.21	0.53			0.08	0.40			0.26		
Clearance Time (s)		4.0	4.0			4.0	4.0			4.0		
Vehicle Extension (s)		1.5	6.5			1.5	6.5			1.5		
Lane Grp Cap (vph)		373	1866			139	1353			363		
v/s Ratio Prot		c0.16	0.14			0.05	c0.22					
v/s Ratio Perm										0.07		
v/c Ratio		0.78	0.27			0.63	0.56			0.28		
Uniform Delay, d1		35.3	12.1			42.3	22.0			27.9		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		9.0	0.3			6.2	1.2			0.2		
Delay (s)		44.3	12.4			48.5	23.2			28.0		
Level of Service		D	B			D	C			C		
Approach Delay (s)			24.0				25.7			28.0		
Approach LOS			C				C			C		

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	60	503
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	0.99	1.00
Frt	1.00	0.85
Flt Protected	0.96	1.00
Satd. Flow (prot)	1778	1546
Flt Permitted	0.71	1.00
Satd. Flow (perm)	1311	1546
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	65	547
RTOR Reduction (vph)	0	333
Lane Group Flow (vph)	250	214
Confl. Peds. (#/hr)		9
Confl. Bikes (#/hr)		1
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	24.9	24.9
Effective Green, g (s)	24.9	24.9
Actuated g/C Ratio	0.26	0.26
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	1.5	1.5
Lane Grp Cap (vph)	343	405
v/s Ratio Prot		
v/s Ratio Perm	c0.19	0.14
v/c Ratio	0.73	0.53
Uniform Delay, d1	31.9	30.0
Progression Factor	1.00	1.00
Incremental Delay, d2	6.4	0.6
Delay (s)	38.4	30.6
Level of Service	D	C
Approach Delay (s)	33.0	
Approach LOS	C	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	27	10	100	100	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	1	30	11	112	112	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				256		
pX, platoon unblocked						
vC, conflicting volume	248	113	113			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	248	113	113			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	99			
cM capacity (veh/h)	735	940	1476			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	31	124	113
Volume Left	1	11	0
Volume Right	30	0	1
cSH	931	1476	1700
Volume to Capacity	0.03	0.01	0.07
Queue Length 95th (ft)	3	1	0
Control Delay (s)	9.0	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

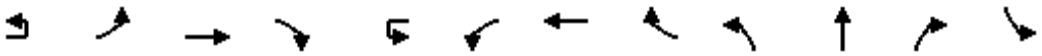
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	40	703	40	10	81	608	82	30	10	73	124	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Lane Util. Factor	1.00	0.95			1.00	0.95			1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00			0.99			1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			1.00
Frt	1.00	0.99			1.00	0.98			0.91			0.96
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.97
Satd. Flow (prot)	1770	3500			1770	3464			1659			1725
Flt Permitted	0.95	1.00			0.95	1.00			0.90			0.78
Satd. Flow (perm)	1770	3500			1770	3464			1516			1386
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	725	41	10	84	627	85	31	10	75	128	10
RTOR Reduction (vph)	0	3	0	0	0	7	0	0	56	0	0	15
Lane Group Flow (vph)	41	763	0	0	94	705	0	0	60	0	0	185
Confl. Peds. (#/hr)			25				3			7	7	
Confl. Bikes (#/hr)			6				7			1		
Turn Type	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2		1	1	6			8			4
Permitted Phases								8			4	
Actuated Green, G (s)	3.2	24.0			6.0	26.8			14.3			14.3
Effective Green, g (s)	3.2	24.0			6.0	26.8			14.3			14.3
Actuated g/C Ratio	0.06	0.42			0.11	0.47			0.25			0.25
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0			4.0
Vehicle Extension (s)	1.0	4.0			1.0	4.0			2.0			2.0
Lane Grp Cap (vph)	99	1478			186	1634			381			348
v/s Ratio Prot	0.02	c0.22			c0.05	c0.20						
v/s Ratio Perm									0.04			c0.13
v/c Ratio	0.41	0.52			0.51	0.43			0.16			0.53
Uniform Delay, d1	25.9	12.1			24.0	9.9			16.6			18.4
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.0	0.4			0.8	0.3			0.1			0.8
Delay (s)	26.9	12.5			24.8	10.2			16.6			19.1
Level of Service	C	B			C	B			B			B
Approach Delay (s)		13.3				11.9			16.6			19.1
Approach LOS		B				B			B			B

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

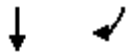
Movement	SBR
Lane Configurations	
Volume (vph)	60
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.97
Adj. Flow (vph)	62
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



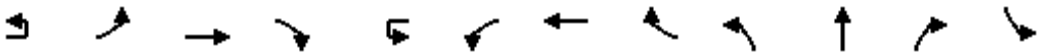
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	10	50	860	120	10	80	900	117	120	13	80	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	4.5			3.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	0.99			1.00	0.99			0.98		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.98			0.95		
Flt Protected		0.95	1.00			0.95	1.00			0.97		
Satd. Flow (prot)		1770	3437			1770	3454			1686		
Flt Permitted		0.95	1.00			0.95	1.00			0.71		
Satd. Flow (perm)		1770	3437			1770	3454			1235		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	11	56	966	135	11	90	1011	131	135	15	90	106
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	15	0	0
Lane Group Flow (vph)	0	67	1101	0	0	101	1142	0	0	225	0	0
Confl. Peds. (#/hr)				18				11	4		14	14
Confl. Bikes (#/hr)				5				2			2	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		7.5	42.2			11.0	45.7			27.4		
Effective Green, g (s)		7.5	42.2			11.0	45.7			27.4		
Actuated g/C Ratio		0.06	0.35			0.09	0.38			0.23		
Clearance Time (s)		3.0	4.5			3.0	4.5			5.0		
Vehicle Extension (s)		1.5	4.5			1.5	4.5			3.5		
Lane Grp Cap (vph)		109	1193			160	1299			278		
v/s Ratio Prot		0.04	0.32			c0.06	c0.33					
v/s Ratio Perm										c0.18		
v/c Ratio		0.61	0.92			0.63	0.88			0.81		
Uniform Delay, d1		55.6	38.1			53.3	35.3			44.6		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		7.0	12.1			5.8	7.5			16.6		
Delay (s)		62.6	50.2			59.1	42.8			61.2		
Level of Service		E	D			E	D			E		
Approach Delay (s)			50.9				44.1			61.2		
Approach LOS			D				D			E		

Intersection Summary			
HCM 2000 Control Delay	49.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	121.5	Sum of lost time (s)	17.5
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



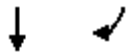
Movement	SBT	SBR
Lane Configurations		
Volume (vph)	32	61
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	0.98	
Satd. Flow (prot)	1725	
Flt Permitted	0.72	
Satd. Flow (perm)	1272	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	36	69
RTOR Reduction (vph)	12	0
Lane Group Flow (vph)	199	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	23.4	
Effective Green, g (s)	23.4	
Actuated g/C Ratio	0.19	
Clearance Time (s)	5.0	
Vehicle Extension (s)	1.5	
Lane Grp Cap (vph)	244	
v/s Ratio Prot		
v/s Ratio Perm	c0.16	
v/c Ratio	0.82	
Uniform Delay, d1	47.0	
Progression Factor	1.00	
Incremental Delay, d2	17.7	
Delay (s)	64.6	
Level of Service	E	
Approach Delay (s)	64.6	
Approach LOS	E	

Intersection Summary



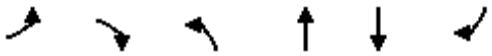
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	30	427	787	30	20	170	514	210	70	60	30	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0			4.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			1.00		
Frpb, ped/bikes		1.00	1.00			1.00	0.98			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		
Frt		1.00	0.99			1.00	0.96			0.97		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	3509			1770	3331			1752		
Flt Permitted		0.95	1.00			0.95	1.00			0.43		
Satd. Flow (perm)		1770	3509			1770	3331			769		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	474	874	33	22	189	571	233	78	67	33	222
RTOR Reduction (vph)	0	0	2	0	0	0	39	0	0	6	0	0
Lane Group Flow (vph)	0	507	905	0	0	211	765	0	0	172	0	0
Confl. Peds. (#/hr)				17				10	23		22	22
Confl. Bikes (#/hr)				6				1			2	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		30.2	53.5			17.2	40.5			30.2		
Effective Green, g (s)		30.2	53.5			17.2	40.5			30.2		
Actuated g/C Ratio		0.27	0.47			0.15	0.36			0.27		
Clearance Time (s)		4.0	4.0			4.0	4.0			4.0		
Vehicle Extension (s)		1.5	6.5			1.5	6.5			1.5		
Lane Grp Cap (vph)		473	1662			269	1194			205		
v/s Ratio Prot		c0.29	0.26			0.12	c0.23					
v/s Ratio Perm										0.22		
v/c Ratio		1.07	0.54			0.78	0.64			0.84		
Uniform Delay, d1		41.4	21.1			46.1	30.1			39.1		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		62.0	0.9			12.9	2.1			24.0		
Delay (s)		103.3	22.0			59.0	32.2			63.0		
Level of Service		F	C			E	C			E		
Approach Delay (s)			51.1				37.8			63.0		
Approach LOS			D				D			E		

Intersection Summary			
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	112.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	110	323
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	0.95
Flpb, ped/bikes	0.99	1.00
Frt	1.00	0.85
Flt Protected	0.97	1.00
Satd. Flow (prot)	1781	1511
Flt Permitted	0.66	1.00
Satd. Flow (perm)	1222	1511
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	122	359
RTOR Reduction (vph)	0	162
Lane Group Flow (vph)	344	197
Confl. Peds. (#/hr)		23
Confl. Bikes (#/hr)		1
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	30.2	30.2
Effective Green, g (s)	30.2	30.2
Actuated g/C Ratio	0.27	0.27
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	1.5	1.5
Lane Grp Cap (vph)	326	404
v/s Ratio Prot		
v/s Ratio Perm	c0.28	0.13
v/c Ratio	1.06	0.49
Uniform Delay, d1	41.4	34.8
Progression Factor	1.00	1.00
Incremental Delay, d2	65.1	0.3
Delay (s)	106.5	35.2
Level of Service	F	D
Approach Delay (s)	70.1	
Approach LOS	E	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	27	50	120	150	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	1	30	56	135	169	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				256		
pX, platoon unblocked						
vC, conflicting volume	417	170	171			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	417	170	171			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	96			
cM capacity (veh/h)	569	874	1406			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	31	191	171
Volume Left	1	56	0
Volume Right	30	0	2
cSH	858	1406	1700
Volume to Capacity	0.04	0.04	0.10
Queue Length 95th (ft)	3	3	0
Control Delay (s)	9.4	2.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	2.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		