Appendix C: Option 1D Supplemental Memo

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MEMORANDUM

Date: May 21, 2020 Project #: 20345

To: Anders Hauge
Town of Loomis
3665 Taylor Road
Loomis, CA 95650

From: Chris Brehmer

Project: Loomis Costco

Subject: Loomis Costco Site Plan Option 1D Supplemental TIA

In response to comments received during the Revised Draft Environmental Impact Report (RDEIR) review, Costco has prepared a fourth site plan, Option 1D, for consideration at the Loomis site. This option provides vehicular access via single signalized project access on Sierra College Boulevard and a single right-in/right-out only driveway on Brace Road (refer to Appendix 1). This memorandum documents supplemental study intersection operations analyses prepared for the Loomis Costco Transportation Impact Analysis (TIA) dated October 2019 based on the Option 1D site plan. As documented herein, no new significant impacts were identified as a result of the access arrangement presented in the Option 1D site plan.

SUPPLEMENTAL ANALYSIS BACKGROUND

The proposed Option 1D site plan is similar to the Option 1A site plan analyzed in the October 2019 Loomis Costco TIA with the following primary changes:

- Option 1D eliminates the full movement Brace Road driveway on the east portion of the Loomis Costco project site (shared with Sierra Meadows Apartments in lieu of Starlight Lane) proposed in Option 1A.
- Option 1D proposes to retain the existing Sierra Meadows Apartments access at Starlight Lane as-is. As such, no Costco-related vehicular trips will have access to Starlight Lane.
- Option 1D proposes a gated, emergency only access on the east portion of the Loomis Costco project site that would connect to Brace Road.

The revised access points proposed in Option 1D result in changes to Project traffic volumes at four of the study intersections. All other study intersections reported in the October 2019 TIA would have the

same Project traffic volumes and operations under Option 1D as Option 1A. The following four study intersections would have different Project traffic volumes under Option 1D:

- Intersection 7: Sierra College Boulevard & Brace Road
- Intersection 21: Sierra College Boulevard & Office Driveway South of Brace Road
- Intersection 24: Sierra College Boulevard & Project Driveway – Future West Access by Others
- Intersection 25: Brace Road & Project Driveway

The traffic impacts of the proposed Loomis Costco Project under Site Plan Option 1D were analyzed at the four study intersections affected by the access changes and compared to Site Plan Option 1A findings for the following analysis periods:

- Existing Plus Project
- Cumulative Conditions Short Term Plus Project
- Cumulative Conditions Long Term Plus Project

A summary of the analysis methodology and findings is presented in the remainder of this memorandum.

SUPPLEMENTAL PROJECT TRIP ASSIGNMENT

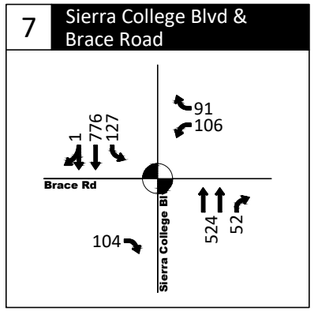
Project trips were assigned to the four affected study intersections using the same trip distribution pattern applied in the October 2019 Loomis Costco TIA. Comparing site plan Options 1A and 1D, the overall trip assignment changes are relatively small and include:

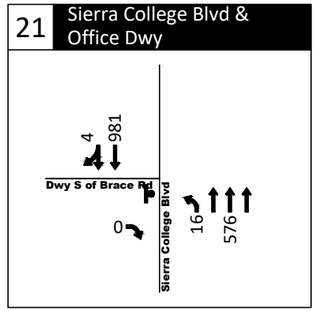
- *Site trips destined to the north via Sierra College Boulevard* – trips previously identified to exit the site via the eastern access on Brace Road were reassigned to the signalized Project access on Sierra College Boulevard under Option 1D. This results in a change of 2 weekday AM peak hour trips, 3 weekday PM peak hour trips and 6 weekend midday peak hour trips;
- *Site trips coming from the east via Brace Road* – trips previously identified to enter the site at the east Brace Road access would instead enter the site via the signalized Project access on Sierra College Boulevard. This results in a change of 2 weekday AM peak hour trips, 6 weekday PM peak hour trips and 12 weekend midday peak hour trips; and
- *Site trips destined to the east Brace Road* – trips previously exiting the site via the east Brace Road access would instead use the signalized Project access on Sierra College Boulevard. This results in a change of 2 weekday AM peak hour trips, 3 weekday PM peak hour trips and 6 weekend midday peak hour trips. This routing assumes the trips would occur via the signalized Project access on Sierra College Boulevard instead of the Brace Road west access because that is the more conservative assumption and would affect more intersections. Some additional Costco members could exit via the right-in/right-out Project driveway on Brace Road but none were assumed in this supplemental analysis.

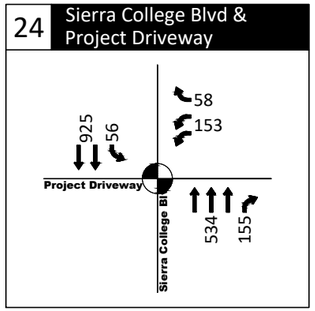
SUPPLEMENTAL INTERSECTION DELAY & LOS ANALYSIS

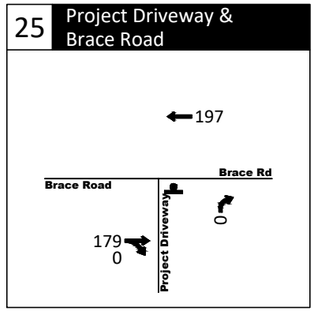
Analysis of peak hour study intersection operations was prepared for each of three future periods with Project site development. Figures S-18, S-24, and S-30 illustrate the projected weekday AM peak hour, PM peak hour and weekend midday peak hour volumes at the four study intersections that would experience changes to the previously identified turning movement volumes. These figures present Existing Plus Project Conditions, Cumulative Conditions – Short Term Plus Project and Cumulative Conditions – Long Term Plus Project analysis. Comparison of the delay and LOS projected at the four study intersections under site plan Options 1D and 1A are summarized in the sections that follow. The table numbering corresponds with the tables presented in the October 2019 TIA.

WEEKDAY AM PEAK HOUR

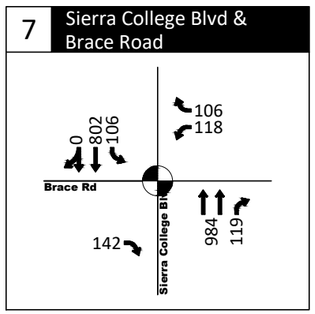


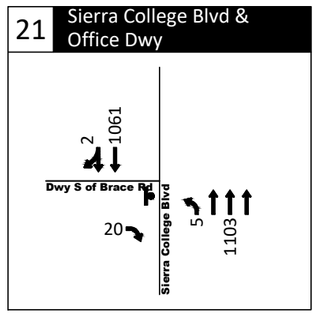


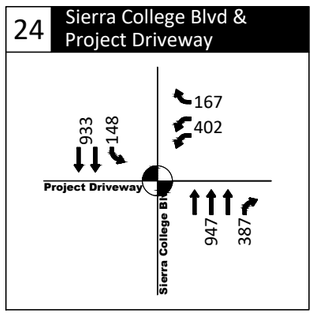


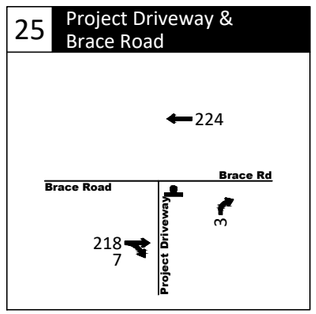


WEEKDAY PM PEAK HOUR

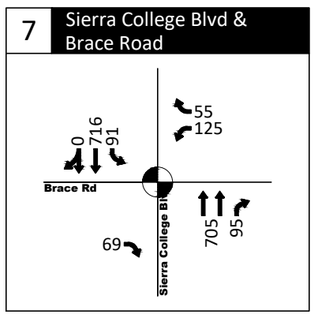


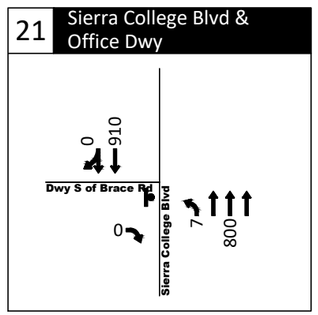


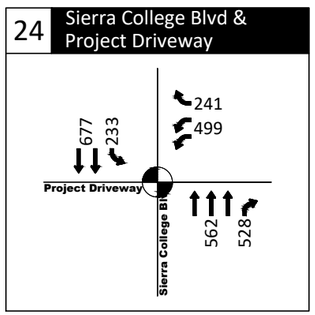


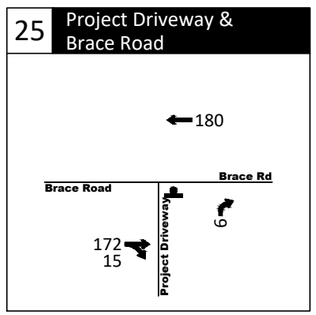


WEEKEND MIDDAY PEAK HOUR









AM(PM) - Weekday Traffic Volume

- Stop Sign

- Traffic Signal

Existing Plus Project Traffic Conditions
Project Driveway Option 1D
Loomis, California

Figure
S-18

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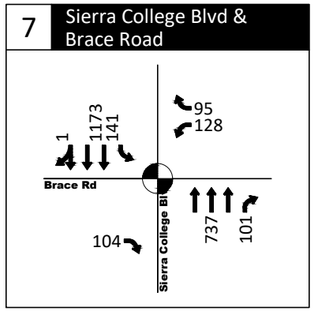
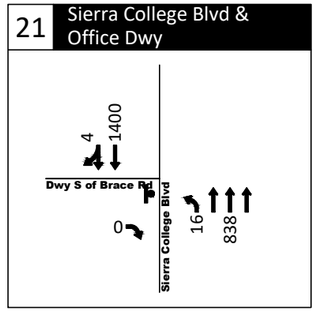
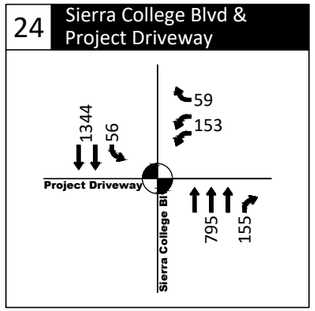
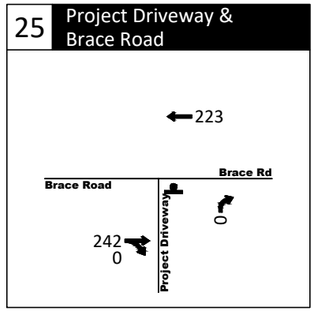
WEEKDAY AM PEAK HOUR

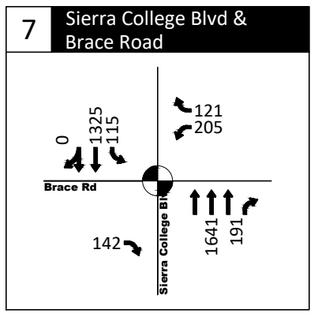


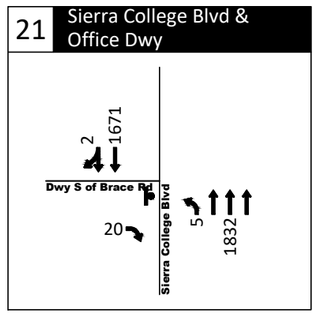


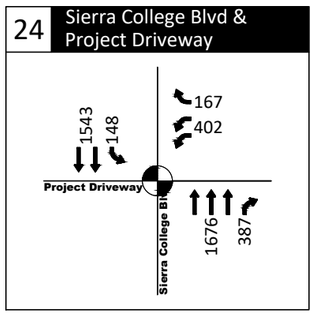


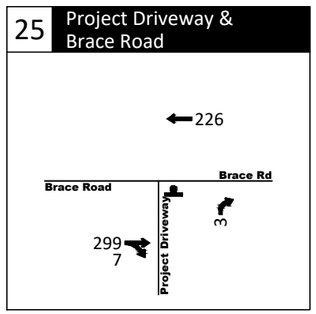


WEEKDAY PM PEAK HOUR

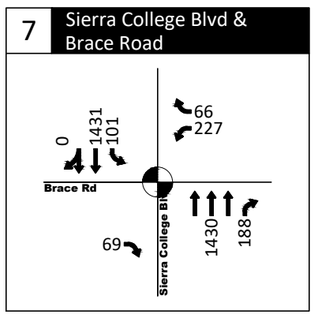


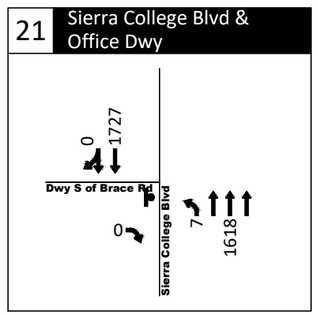


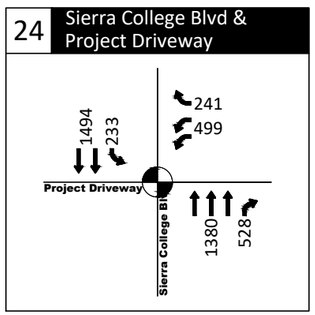


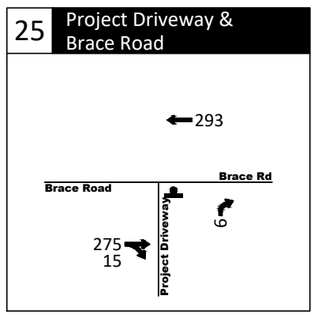


WEEKEND MIDDAY PEAK HOUR









AM(PM) - Weekday Traffic Volume

- Stop Sign

- Traffic Signal

Cumulative Short Term Plus Project Traffic Conditions
Project Driveway Option 1D
Loomis, California

Figure
S-24

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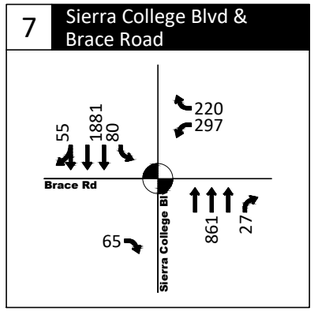
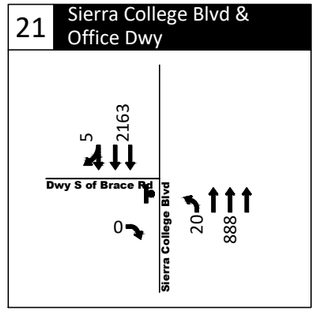
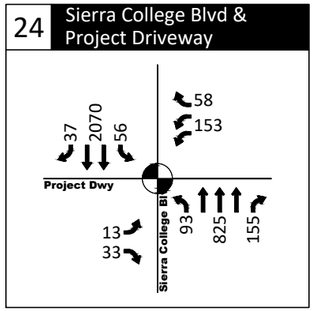
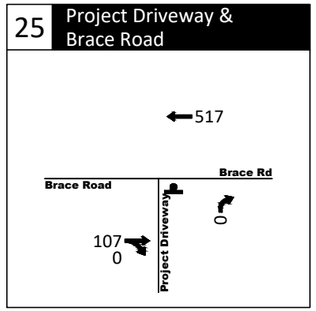
WEEKDAY AM PEAK HOUR

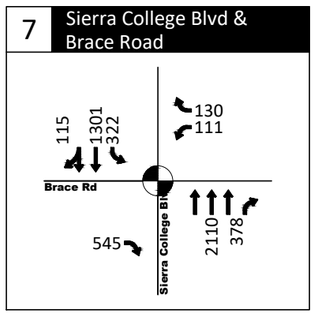


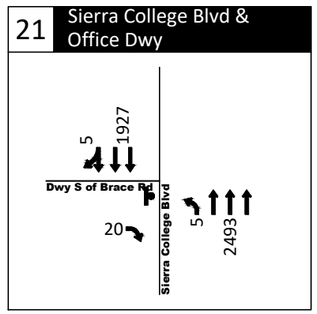


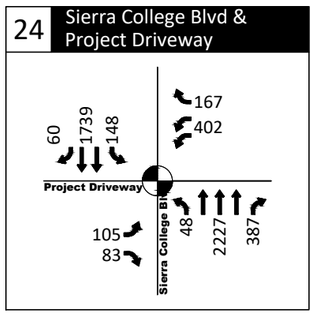


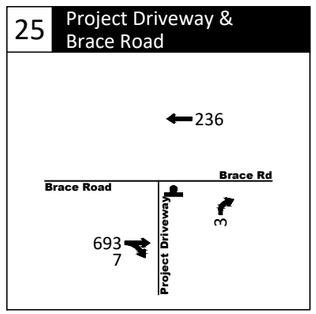


WEEKDAY PM PEAK HOUR

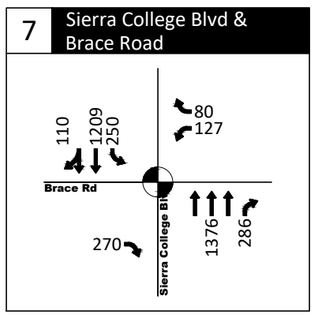


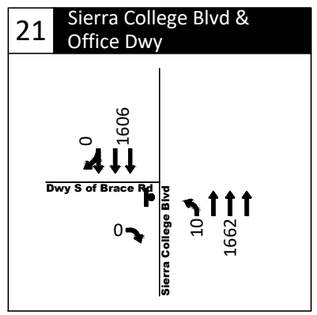


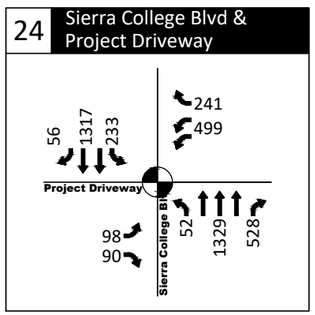


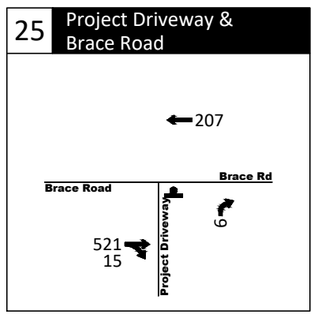


WEEKEND MIDDAY PEAK HOUR









AM(PM) - Weekday Traffic Volume

- Stop Sign

- Traffic Signal

Cumulative Long Term Plus Project Traffic Conditions
Project Driveway Option 1D
Loomis, California

Figure
S-30

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Existing Plus Project Conditions

The Existing Plus Project delay and LOS analysis results for the four study intersections are shown below in Supplemental Tables 17 and 18 for the weekday and weekend peak periods, respectively.

Supplemental Table 17: Existing Plus Project - Intersection LOS Analysis, Weekday AM and PM Peak Hours for Site Plan Option 1D Compared to Site Plan Option 1A

ID	Intersection	Traffic Control Type	Weekday AM					Weekday PM				
			Existing		Plus Project		Change in Delay (sec)	Existing		Plus Project		Change in Delay (sec)
			Delay (sec)	LOS	Delay (sec)	LOS		Delay (sec)	LOS	Delay (sec)	LOS	
Supplemental Loomis Costco TIA Site Plan Option 1D Findings												
7	Sierra College Blvd/ Brace Rd	Signal	9.7	A	13.2	B	3.5	10.7	B	14.3	B	3.6
21	Sierra College Blvd/ Dwy South of Brace Rd	TWSC	0.3	A	0.3	A	0.0	12.6	B	13.0	B	0.4
24	Sierra College Blvd/ Project Driveway	Signal[1]	DNE		6.6	A	-	DNE		11.5	B	-
25	Brace Road/ Project Driveway	TWSC	DNE		0.0	A	-	DNE		9.5	A	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings												
7	Sierra College Blvd/ Brace Rd	Signal	9.7	A	13.2	B	3.5	10.7	B	14.1	B	3.4
21	Sierra College Blvd/ Dwy South of Brace Rd	TWSC	0.3	A	0.3	A	0.0	12.6	B	12.9	B	0.3
24	Sierra College Blvd/ Project Driveway	Signal[1]	DNE		6.5	A	-	DNE		11.3	B	-
25	Brace Road/ Project Driveway	TWSC	DNE		0.0	A	-	DNE		9.5	A	-

Notes:

TWSC: Two-way stop control - delay reported reflects the critical movement.

DNE: Intersection does not exist under no Project conditions.

Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.

Shaded cell indicates Project impact

[1] Intersection assumed to be two-way stop controlled under Existing Conditions and signalized under Existing Conditions Plus Project

Source: Kittelson & Associates, Inc. 2020

Supplemental Table 18: Existing Plus Project - Intersection LOS Analysis, Weekend Midday Peak Hour for Site Plan Option 1D Compared to Site Plan Option 1A

ID	Intersection	Traffic Control Type	Existing		Plus Project		Change in Delay (sec)
			Delay (sec)	LOS	Delay (sec)	LOS	
Supplemental Loomis Costco TIA Site Plan Option 1D Findings							
7	Sierra College Blvd/Brace Rd	Signal	9.1	A	15.2	B	6.1
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway	Signal[1]	DNE		15.0	B	-
25	Brace Road/Project Driveway	TWSC	DNE		9.3	A	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings							
7	Sierra College Blvd/Brace Rd	Signal	9.1	A	15.0	B	5.9
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway	Signal[1]	DNE		14.5	B	-
25	Brace Road/Project Driveway	TWSC	DNE		9.2	A	-

Notes:

TWSC: Two-way stop control - The delay reported reflects the critical movement.

DNE: Intersection does not exist under no Project conditions.

Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.

Shaded cell indicates Project impact

[1] Intersection assumed to be two-way stop controlled under Existing Conditions and signalized under Existing Conditions Plus Project

Source: Kittelson & Associates, Inc. 2020

Findings

Comparison of the projected delay and LOS findings presented in Tables 17 and 18 for site plan Options 1D and 1A indicates incremental changes in the two intersection performance metrics. No new delay or LOS related significant impacts were identified. The Synchro worksheets for the Existing Plus Project analyses are presented in Appendix 2. Further, as documented in Appendix 1, no new queuing related significant impacts were identified either. As such, we conclude there are no changes to the Existing Plus Project findings identified in the October 2019 TIA associated with Option 1D.

Cumulative Conditions – Short Term Plus Project

The Cumulative Conditions – Short Term Plus Project delay and LOS analysis results for the four study intersections are shown below in Supplemental Tables 34 and 35 for the weekday and weekend peak periods, respectively.

Supplemental Table 34: Cumulative Short Term Plus Project - Intersection LOS Analysis, Weekday AM and PM Peak Hours for Site Plan Option 1D Compared to Site Plan Option 1A

ID	Intersection	Traffic Control Type	Weekday AM				Change in Delay (sec)	Weekday PM				Change in Delay (sec)
			Short Term		Plus Project			Short Term		Plus Project		
			Delay (Sec)	LOS	Delay (Sec)	LOS		Delay (Sec)	LOS	Delay (Sec)	LOS	
Supplemental Loomis Costco TIA Site Plan Option 1D Findings												
7	Sierra College Blvd/ Brace Rd	Signal	10.7	B	14.2	B	3.5	18.3	B	17.0	B	-1.3
21	Sierra College Blvd/ Dwy South of Brace Rd	TWSC	0.2	A	0.2	A	0.0	17.6	C	18.3	C	0.7
24	Sierra College Boulevard/ Project Driveway	Signal[1]	DNE		6.7	A	-	DNE		13.8	B	-
25	Brace Road/ Project Driveway	TWSC	DNE		0.0	A	-	DNE		10.1	B	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings												
7	Sierra College Blvd/ Brace Rd	Signal	10.7	B	14.1	B	3.4	18.3	B	16.9	B	-1.4
21	Sierra College Blvd/ Dwy South of Brace Rd	TWSC	0.2	A	0.2	A	0.0	17.6	C	18.2	C	0.6
24	Sierra College Boulevard/ Project Driveway	Signal[1]	DNE		6.6	A	-	DNE		13.5	B	-
25	Brace Road/ Project Driveway	TWSC	DNE		0.0	A	-	DNE		10.1	B	-

Notes:

TWSC: Two-way stop control - The delay reported reflects the critical movement.

DNE: Intersection does not exist under no Project conditions.

Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.

Shaded cell indicates Project impact

[1] Intersection assumed to be two-way stop controlled under Short Term Baseline Conditions and signalized under Short Term Plus Project Conditions

Source: Kittelson & Associates, Inc. 2020

Supplemental Table 35: Cumulative Short Term Plus Project - Intersection LOS Analysis, Weekend Midday Peak Hour for Site Plan Option 1D Compared to Site Plan Option 1A

ID	Intersection	Traffic Control Type	Short Term		Plus Project		Change in Delay (sec)
			Delay (sec)	LOS	Delay	LOS	
Supplemental Loomis Costco TIA Site Plan Option 1D Findings							
7	Sierra College Blvd/Brace Rd	Signal	15.1	B	17.7	B	2.6
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway[1]	Signal	DNE		16.7	B	-
25	Brace Road/Project Driveway	TWSC	DNE		10.0	B	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings							
7	Sierra College Blvd/Brace Rd	Signal	15.1	B	17.4	B	2.3
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway[1]	Signal	DNE		16.0	B	-
25	Brace Road/Project Driveway	TWSC	DNE		9.9	A	-

Notes:

TWSC: Two-way stop control - The delay reported reflects the critical movement.

DNE: Intersection does not exist under no Project conditions.

Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.

Shaded cell indicates significant Project impact

[1] Intersection assumed to be two-way stop controlled under Short Term Baseline Conditions and signalized under Short Term Plus Project Conditions

Source: Kittelson & Associates, Inc. 2020

Findings

Comparison of the projected delay and LOS findings presented in Tables 34 and 35 for site plan Options 1D and 1A indicates incremental changes in the two intersection performance metrics. No new delay or LOS related significant impacts were identified. Consistent with the October 2019 TIA, queuing mitigation is required for the southbound left-turn at the Sierra College Boulevard/Project Driveway intersection due to a significant project impact. The previously identified mitigation remains appropriate to accommodate the changes associated with Option 1D and includes:

- TR MM2: Provide signal coordination. Coordinate signal timing with Granite Drive and I-80 ramps (match cycle length in use on Sierra College Boulevard at Granite Drive and Brace Road)

One new queuing related significant impact was identified associated with the weekend midday hour analysis period under Option 1D relative to Option 1A:

  - The westbound left-turn queue on Brace Road at Sierra College Boulevard exceeds the available storage. With Option 1D, the queue is considered to be significantly impacted based on the finding that the Project contributes 5.3% of the total traffic for the left-turn movement

and the queue overflows the available storage under the Cumulative Conditions - Short Term Baseline prior to Project development.

- The westbound left-turn impact can be mitigated by restriping the westbound right-turn lane to a shared westbound left-right lane. Converting the right-turn lane to a shared right/left turn provides the additional storage needed to accommodate the left-turning volumes, mitigating the Project impact.

  Note that the significant queue impact on Brace Road at Sierra College Boulevard and the corresponding mitigation identified above were also identified for Option 1B in the October 2019 TIA.

Based on the findings above, mitigation is recommended as follows:

- TR MM4: Restripe intersection; Restripe the westbound right-turn lane to a shared westbound left-right lane
- TR MM1: Modify signal timing; optimize timing to reflect restriping

Appendix 1 documents the queuing analysis findings.

There are no other changes to the Cumulative Conditions Short-Term Plus Project findings identified in the October 2019 TIA associated with Option 1D.

Synchro worksheets for the Cumulative Conditions – Short Term Plus Project analyses are presented in Appendix 3.

Cumulative Conditions - Long Term Plus Project

The Cumulative Conditions - Long Term Plus Project analysis delay and LOS results for the four study intersections are shown below in Supplemental Tables 49 and Table 50 for the weekday and weekend peak periods, respectively.

Supplemental Table 49: Cumulative Conditions – Long Term Traffic Conditions - Intersection LOS Analysis, Weekday AM and PM Peak Hours for Site Plan Option 1D Compared to Site Plan Option 1A

ID	Intersection	Traffic Control Type	Weekday AM				Change in Delay (sec)	Weekday PM				Change in Delay (sec)
			Long Term		Plus Project			Long Term		Plus Project		
			Delay (Sec)	LOS	Delay (Sec)	LOS		Delay (Sec)	LOS	Delay (Sec)	LOS	
Supplemental Loomis Costco TIA Site Plan Option 1D Findings												
7	Sierra College Blvd/Brace Rd	Signal	12.9	B	17.1	B	4.2	**137.4**	**F**	**77.6**	**E**	-59.8
21	Sierra College Blvd/ Dwy South of Brace Rd	TWSC	1.2	A	1.2	A	0.0	23.5	C	24.6	C	1.1
24	Sierra College Boulevard/ Project Driveway	Signal[1]	**ERR[2]**	**F**	17.7	B	-	**6299.3**	**F**	31.7	C	-6267.6
25	Brace Road/Project Driveway	TWSC	DNE		0.0	A	-	DNE		14.0	B	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings												
7	Sierra College Blvd/Brace Rd	Signal	12.9	B	17.1	B	4.2	**137.4**	**F**	**76.5**	**E**	-60.9
21	Sierra College Blvd/ Dwy South of Brace Rd	TWSC	1.2	A	1.2	A	0.0	23.5	C	24.5	C	1.1
24	Sierra College Boulevard/ Project Driveway	Signal[1]	**ERR[2]**	**F**	17.7	B	-	**6299.3**	**F**	31.7	C	-6267.6
25	Brace Road/Project Driveway	TWSC	DNE		0.0	A	-	DNE		13.9	B	-

Notes:

TWSC: Two-way stop control - The delay reported reflects the critical movement.
DNE: Intersection does not exist.
Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.
Shaded cell indicate significant Project impact
[1] Intersection assumed to be two-way stop controlled under Long Term Baseline Conditions and signalized under Long Term Plus Project Conditions
[2] Due to the high volumes, HCM2010 was unable to report approach delay.
Source: Kittelson & Associates, Inc. 2020

Supplemental Table 50: Cumulative Conditions – Long Term Traffic Condition - Intersection LOS Analysis, Weekend Midday Peak Hours for Site Plan Option 1D Compared to Site Plan Option 1A

ID	Intersection	Traffic Control Type	Long Term		Plus Project		Change in Delay (sec)
			Delay (sec)	LOS	Delay (sec)	LOS	
Supplemental Loomis Costco TIA Site Plan Option 1D Findings							
7	Sierra College Blvd/Brace Rd	Signal	20.3	C	20.4	C	0.1
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway	Signal[1]	**898.5**	**F**	29.6	C	-868.9
25	Brace Road/Project Driveway	TWSC	DNE		12.1	B	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings							
7	Sierra College Blvd/Brace Rd	Signal	20.3	C	20.1	C	-0.2
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway	Signal[1]	**898.5**	**F**	29.8	C	-868.7
25	Brace Road/Project Driveway	TWSC	DNE		12.0	B	-

Notes:

TWSC: Two-way stop control - The delay reported reflects the critical movement.
N/A: Data not available at intersection.
DNE: Intersection does not exist.
Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.
Shaded cell indicates significant Project impact
[1] Intersection assumed to be two-way stop controlled under Long Term Baseline Conditions and signalized under Long Term Plus Project Conditions
Source: Kittelson & Associates, Inc. 2020

Findings

Comparison of the projected delay and LOS findings presented in Tables 49 and 50 for site plan Options 1D and 1A indicates incremental changes in the two intersection performance metrics. No new delay or LOS related significant impacts were identified.

Queuing Analysis

The previously prepared Option 1A analysis identified the need for queuing related mitigation at the Sierra College Boulevard/Project Driveway through provision of traffic signal coordination along the arterial as well as lengthening of the southbound left-turn lane to provide 225 feet of storage. The queuing impact under Site Plan Option 1D results in one additional car length of southbound left-turn storage demand at the intersection. As such, the previously identified Sierra College Boulevard/Project Driveway intersection recommended mitigation measures would still be needed, modified as noted:

- TR MM2: Provide signal coordination. Coordinate signal timing with Granite Drive and I-80 ramps (match cycle length in use on Sierra College Boulevard at Granite Drive and Brace Road)
- TR MM7: Add storage to turn pockets. Modify median to provide additional storage (**250** feet total, as opposed to the previously recommended 225 feet) for southbound left turn lane.

Lengthening the southbound left-turn storage to 250 feet under TR MM7 would effectively eliminate the ability to maintain the existing unsignalized northbound left-turn lane on Sierra College Boulevard serving the private office driveway on the west side of the roadway (Study Intersection #21, Sierra College Boulevard & Office Driveway South of Brace Road). There are a few points to consider relative to Study Intersection #21 as follows:

- Study intersection #21 provides unsignalized left-in/right-in/right-out access to a private office building property that currently has no alternative access. Under Cumulative Conditions - Long Term, it is reasonable to assume that the private office building property would be afforded additional alternative access via adjacent properties that would likely be developed to the north, west, and south over the long term, regardless of the proposed Loomis Costco Project. The October 2019 TIA and the analysis presented in this letter conservatively assume that no such alternate access is available to the private office building property, while also assuming the property around the office is developed and generating trips per the City of Rocklin Travel Demand Model.
- The unsignalized northbound left-turn movement at Study Intersection #21 is opposed by two southbound through lanes and a southbound bike lane today. In Cumulative Conditions - Long Term, the unsignalized northbound left-turn movement will be opposed by three southbound through lanes and a southbound bike lane, which will potentially lead to degraded northbound left-turn operations. It is possible that the existing unsignalized northbound left-turn movement could be removed as a function of constructing the future third opposing southbound through lane (there are no other unsignalized left-turns allowed on the Sierra College Boulevard corridor today between Taylor Road and Bass Pro Drive south of Interstate 80) prior to the lengthening the southbound left-turn storage to 250 feet under TR MM7.
- Study intersection #21 could continue to provide unsignalized right-in/right-out access to the private office building property should the existing northbound left-turn movement be eliminated. This would require northbound traffic on Sierra College Boulevard to make a U-turn to access the office driveway. The Sierra College Boulevard/Brace Road signalized intersection directly to the north does not accommodate northbound to southbound U-turns today, however the Sierra College Boulevard/Taylor Road intersection does.

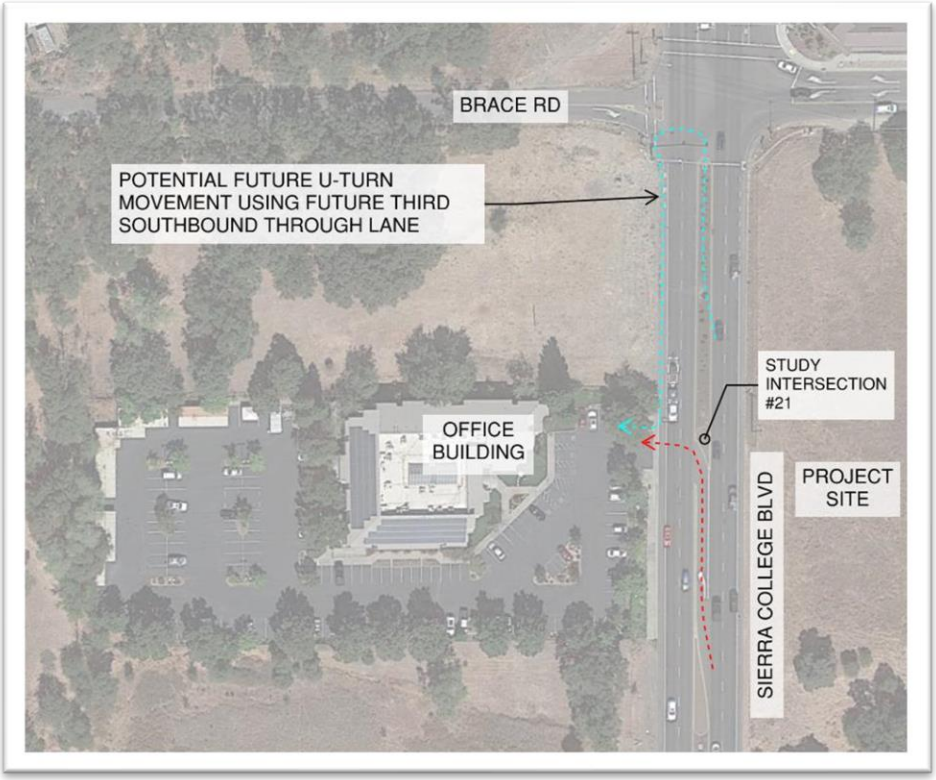
If the additional 25 feet of southbound left-turn storage is required at the signalized Sierra College Boulevard/Project Driveway in Cumulative Conditions - Long Term (a) at a time when the northbound left turn at the Sierra College Boulevard & Office Driveway South of Brace Road intersection (Study Intersection #21) is still operating ***and*** (b) no alternative access to the office building property has been provided, the northbound left turn into the office property could no longer be maintained. Specifically, the southbound left-turn queue length extension would require elimination of the northbound left-turn movement at Study Intersection #21. This would require employees of and visitors to the office building (i.e., the 20 weekday AM peak hour trips, 5 weekday PM peak hour trips, and 10 weekend midday peak hour trips that are projected to access the driveway) to access the site via a different route.

The resulting out-of-direction travel could result in incrementally increased travel times. However, this slight increase in travel times is an economic or social impact, and not impact on the physical environment under CEQA.

Nonetheless, to avoid possible inconvenience to office building visitors and workers, the Town will require a condition of approval that would facilitate northbound U-turns at the Sierra College Boulevard/Brace Road signalized intersection (refer to Exhibit 1) by constructing a northbound left-turn lane on Sierra College Boulevard approaching Brace Road (utilizing the existing center raised median area) and modifying the northbound left-turn signal to accommodate the U-turn movement. The existing northbound traffic signal arm on Sierra College Boulevard appears to be designed/configured in anticipation of the potential for adding a future left-turn and/or U-turn signal head.

Changes to Study Intersection #21 in conjunction with this condition of approval would only be required if the unsignalized northbound left-turn at Study Intersection #21 is still in operation at the time the additional southbound left-turn storage is needed at the Sierra College Boulevard/Project Driveway intersection. As noted, it is reasonably foreseeable that the unsignalized northbound left-turn at Study Intersection #21 will have previously been eliminated as a function of future land development activities on the west side of Sierra College Boulevard adjacent to the office building and/or as a function of the construction of a third southbound through lane on Sierra College Boulevard at Study Intersection #21.

Exhibit 1. Conceptual Illustration of Existing and Alternative Sierra College Left-turn Paths to Existing Office Building



Aerial Image Source: Google Earth

In addition to the Sierra College Boulevard/Project Driveway queuing considerations, one new queuing related significant impact was identified during the weekend PM and weekend midday hour analysis periods:

- The westbound left-turn queue on Brace Road at Sierra College Boulevard exceeds the available storage. With Option 1D, the queue is considered to be significantly impacted based on the finding that the Project contributes more than 5% of the total traffic for the left-turn movement and the queue overflows under the Cumulative Conditions - Long Term Baseline (the project impact is 5.4% during the weekday PM peak hour and 5.3% during the weekend midday peak hour).
    - The westbound left-turn impact can be mitigated by restriping the westbound right-turn lane to a shared westbound left-right lane. Converting the right-turn lane to a shared right/left turn provides the additional storage needed to accommodate the left-turning volumes, mitigating the Project impact.

      Note that the significant queue impact on Brace Road at Sierra College Boulevard and the corresponding mitigation identified above were also identified for Option 1B in the October 2019 TIA.

Based on the findings above, mitigation is recommended as follows:

- TR MM4: Restripe intersection; Restripe the westbound right-turn lane to a shared westbound left-right lane
- TR MM1: Modify signal timing; optimize timing to reflect restriping

Appendix 1 summarizes the projected 95th percentile queue lengths after implementation of the recommended mitigations.

Synchro worksheets for the Cumulative Conditions – Long Term Plus Project analyses are presented in Appendix 4.

SUMMARY FINDINGS

No new LOS or delay based Project mitigation needs or impacts were identified at the four study intersections based on the revised Project access arrangement Option 1D. Significant queuing impacts were identified at the Sierra College Boulevard/Brace Road intersection and Sierra College Boulevard/Project Driveway intersection. Based on the findings, mitigation is recommended as follows to achieve Less Than Significant Impacts.

Sierra College Boulevard/Brace Road Intersection

Cumulative Conditions - Short Term Plus Project & Cumulative Conditions - Long Term Plus Project

- TR MM4: Restripe intersection; Restripe the westbound right-turn lane to a shared westbound left-right lane
- TR MM1: Modify signal timing; optimize timing to reflect restriping

Sierra College Boulevard/Project Driveway Intersection

Cumulative Conditions - Short Term Plus Project

- TR MM2: Provide signal coordination. Coordinate signal timing with Granite Drive and I-80 ramps (match cycle length in use on Sierra College Boulevard at Granite Drive and Brace Road)

Cumulative Conditions - Long Term Plus Project

- TR MM2: Provide signal coordination. Coordinate signal timing with Granite Drive and I-80 ramps (match cycle length in use on Sierra College Boulevard at Granite Drive and Brace Road)
- TR MM7: Add storage to turn pockets. Modify median to provide additional storage (250 feet total) for southbound left turn lane (Project to implement 225 feet of storage with Sierra College Boulevard roadway widening along Project frontage).

Please contact us if you have questions or need additional information.

APPENDIX

Appendix 1. Queuing Analysis Summary

Appendix 2. Option 1 D Existing Plus Project Analysis Worksheets

Appendix 3. Option 1 D Cumulative Conditions - Short Term Plus Project Analysis Worksheets

Appendix 4. Option 1 D Cumulative Conditions - Long Term Plus Project Analysis Worksheets

Appendix 1 Queuing Analysis Summary

Site Plan Option D Queuing Analysis

Existing Plus Project AM Peak Hour

Intersection #	Street Name	95th Percentile Queues											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Supplemental Loomis Costco TIA Site Plan Option 1D Findings													
7	Sierra College Boulevard & Brace Road	-	117	5	#91	112	-	-	-	-	76	-	18
21	Sierra College Boulevard & Driveway South of Brace Road	3	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	-	58	10	41	101	-	-	-	-	38	-	21
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings													
7	Sierra College Boulevard & Brace Road	-	116	5	#91	112	-	-	-	3	**75**	-	19
21	Sierra College Boulevard & Driveway South of Brace Road	3	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	-	58	10	42	101	-	-	-	-	38	-	22
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-

Existing Plus Project PM Peak Hour

Intersection #	Street Name	95th Percentile Queues											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Supplemental Loomis Costco TIA Site Plan Option 1D Findings													
7	Sierra College Boulevard & Brace Road	-	218	14	#102	111	-	-	-	27	#99	-	29
21	Sierra College Boulevard & Driveway South of Brace Road	-	-	-	-	-	-	-	-	2	-	-	-
24	Sierra College Boulevard & Project Driveway	-	159	33	105	153	-	-	-	-	100	-	38
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings													
7	Sierra College Boulevard & Brace Road	-	217	14	#102	111	-	-	-	27	#93	-	30
21	Sierra College Boulevard & Driveway South of Brace Road	-	-	-	-	-	-	-	-	2	-	-	-
24	Sierra College Boulevard & Project Driveway	-	159	30	101	153	-	-	-	-	100	-	37
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-

Existing Plus Project Weekend Midday Peak Hour

Intersection #	Street Name	95th Percentile Queues											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Supplemental Loomis Costco TIA Site Plan Option 1D Findings													
7	Sierra College Boulevard & Brace Road	-	140	12	#77	96	-	-	-	-	#91	-	1
21	Sierra College Boulevard & Driveway South of Brace Road	-	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	-	91	105	#199	103	-	-	-	-	124	-	44
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings													
7	Sierra College Boulevard & Brace Road	-	140	11	#77	96	-	-	-	-	#76	-	3
21	Sierra College Boulevard & Driveway South of Brace Road	-	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	-	91	100	#185	103	-	-	-	-	124	-	43
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

m - Volume for 95th percentile queue is metered by upstream signal.

Bold indicates 95th percentile queue in excess of capacity. Shading indicates Project impact.

Site Plan Option D Queuing Analysis

Cumulative Conditions - Short Term Plus Project AM Peak Hour

Intersection #	Street Name	95th Percentile Queues										
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Supplemental Loomis Costco TIA Site Plan Option 1D Findings													
7	Sierra College Boulevard & Brace Road	-	101	15	#107	190	-	-	-	-	#98	-	16
21	Sierra College Boulevard & Driveway South of Brace Road	2	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	-	91	10	45	179	-	-	-	-	43	-	24
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings													
7	Sierra College Boulevard & Brace Road	-	101	15	#107	190	-	-	-	-	#97	-	17
21	Sierra College Boulevard & Driveway South of Brace Road	2	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	-	91	10	46	179	-	-	-	-	43	-	24
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-

Cumulative Conditions - Short Term Plus Project PM Peak Hour

Intersection #	Street Name	95th Percentile Queues										
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Supplemental Loomis Costco TIA Site Plan Option 1D Findings													
7	Sierra College Boulevard & Brace Road	-	253	16	#124	241	-	-	-	#29	**#167**	-	32
21	Sierra College Boulevard & Driveway South of Brace Road	-	-	-	-	-	-	-	-	5	-	-	-
24	Sierra College Boulevard & Project Driveway	-	#339	43	#154	338	-	-	-	-	111	-	40
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings													
7	Sierra College Boulevard & Brace Road	-	253	16	#124	241	-	-	-	#29	**#160**	-	33
21	Sierra College Boulevard & Driveway South of Brace Road	-	-	-	-	-	-	-	-	5	-	-	-
24	Sierra College Boulevard & Project Driveway	-	#339	41	#147	338	-	-	-	-	111	-	40
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-

Cumulative Conditions - Short Term Plus Project Weekend Peak Hour

Intersection #	Street Name	95th Percentile Queues										
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Supplemental Loomis Costco TIA Site Plan Option 1D Findings													
7	Sierra College Boulevard & Brace Road	-	196	15	#109	263	-	-	-	-	**#182**	-	8
7	*Sierra College Boulevard & Brace Road - Mitigated*	-	*196*	*7*	*#109*	*263*	-	-	-	-	*60*	-	*55*
21	Sierra College Boulevard & Driveway South of Brace Road	3	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	-	#270	109	**#209**	317	-	-	-	-	139	-	48
24	*Sierra College Boulevard & Project Driveway - Mitigated*	-	*#308*	*109*	*#186*	*317*	-	-	-	-	*139*	-	*48*
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings													
7	Sierra College Boulevard & Brace Road	-	195	15	#109	263	-	-	-	-	**#171**	-	10
21	Sierra College Boulevard & Driveway South of Brace Road	3	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	-	#270	104	**#195**	317	-	-	-	-	139	-	47
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

m - Volume for 95th percentile queue is metered by upstream signal.

Bold indicates 95th percentile queue in excess of capacity. Shading indicates Project impact.

Site Plan Option D Queuing Analysis

Cumulative Conditions - Long Term Plus Project AM Peak Hour

Intersection #	Street Name	95th Percentile Queues											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Supplemental Loomis Costco TIA Site Plan Option 1D Findings													
7	Sierra College Boulevard & Brace Road	-	139	-	#74	288	-	-	-	-	**#214**	-	38
21	Sierra College Boulevard & Driveway South of Brace Road	20	-		-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	#121	110	17	63	**385**	-	24	-	-	#80	-	-
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings													
7	Sierra College Boulevard & Brace Road	-	138	-	#74	288	-	-	-	-	**#212**	-	38
21	Sierra College Boulevard & Driveway South of Brace Road	20	-		-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	#121	110	17	63	**385**	-	24	-	-	#80	-	-
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-

Cumulative Conditions - Long Term Plus Project PM Peak Hour

Intersection #	Street Name	95th Percentile Queues											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Supplemental Loomis Costco TIA Site Plan Option 1D Findings													
7	Sierra College Boulevard & Brace Road	-	**#844**	78	**#525**	280	-	-	-	**#774**	**#234**	-	65
7	*Sierra College Boulevard & Brace Road - Mitigated*	-	***#844***	*78*	***#525***	*280*	-	-	-	***#774***	*#168**	-	*#185*
21	Sierra College Boulevard & Driveway South of Brace Road	3	-	-	-	-	-	-	-	8	-	-	-
24	Sierra College Boulevard & Project Driveway	79	**#699**	64	**#255**	**457**	-	139	23	-	**#264**	63	-
24	*Sierra College Boulevard & Project Driveway - Mitigated*	*m69*	*554*	*36*	***#247***	***538***	-	*176*	*35*	-	***#312***	*104*	-
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings													
7	Sierra College Boulevard & Brace Road	-	**#842**	140	**#525**	280	-	-	-	**#768**	**#224**	-	46
21	Sierra College Boulevard & Driveway South of Brace Road	3	-	-	-	-	-	-	-	8	-	-	-
24	Sierra College Boulevard & Project Driveway	78	**#678**	80	**#240**	**449**	-	138	23	-	**#261**	58	-
24	*Sierra College Boulevard & Project Driveway - Mitigated*	*m69*	*554*	*36*	*226*	***530***	-	*176*	*35*	-	***#312***	*96*	-
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-

Cumulative Conditions - Long Term Plus Project Weekend Peak Hour

Intersection #	Street Name	95th Percentile Queues											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Supplemental Loomis Costco TIA Site Plan Option 1D Findings													
7	Sierra College Boulevard & Brace Road	-	232	29	**#223**	123	-	-	-	#164	**#132**	-	21
7	*Sierra College Boulevard & Brace Road -Mitigated*	-	*232*	*16*	***#223***	*123*	-	-	-	*#163*	*48*	-	*50*
21	Sierra College Boulevard & Driveway South of Brace Road	5	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	#75	307	41	**#266**	272	-	98	1	-	**#226**	52	-
24	*Sierra College Boulevard & Project Driveway - Mitigated*	*m59*	*#434*	*149*	*#205*	*271*	-	*88*	-	-	***#210***	*19*	-
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-
October 2019 Loomis Costco TIA Site Plan Option 1A Findings													
7	Sierra College Boulevard & Brace Road	-	231	29	**#223**	123	-	-	-	#164	**#118**	-	23
21	Sierra College Boulevard & Driveway South of Brace Road	5	-	-	-	-	-	-	-	-	-	-	-
24	Sierra College Boulevard & Project Driveway	#73	302	46	**#246**	266	-	97	2	-	**#221**	45	-
25	Brace Road & Project Driveway	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

m - Volume for 95th percentile queue is metered by upstream signal.

Bold indicates 95th percentile queue in excess of capacity. Shading indicates Project impact.

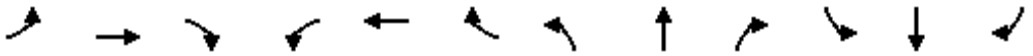
* Westbound left-turn queue storage increased under mitigation: With mitigation, existing westbound left-turn lane is 100 feet long and shared westbound left-turn/right-turn lane has over 225 feet of storage before impacting nearest driveway.

Appendix 2 Option 1 D Existing Plus Project Analysis Worksheets

Lane Group	EBR	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	111	113	97	557	55	135	827
v/c Ratio	0.34	0.43	0.21	0.37	0.05	0.61	0.38
Control Delay	3.0	27.2	3.4	14.8	0.7	34.4	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	27.2	3.4	14.8	0.7	34.4	7.8
Queue Length 50th (ft)	0	33	0	74	0	40	76
Queue Length 95th (ft)	3	76	18	117	5	#91	112
Internal Link Dist (ft)				219			582
Turn Bay Length (ft)		100				170	
Base Capacity (vph)	323	284	596	1589	1051	297	2234
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.40	0.16	0.35	0.05	0.45	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	104	106	0	91	0	524	52	127	776	1
Future Volume (vph)	0	0	104	106	0	91	0	524	52	127	776	1
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		5.5	4.5	4.0	5.5	
Lane Util. Factor			1.00	1.00		1.00		0.95	1.00	1.00	0.95	
Frpb, ped/bikes			0.98	1.00		1.00		1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Frt			0.86	1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1448	1770		1495		3406	1583	1736	3539	
Flt Permitted			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1448	1770		1495		3406	1583	1736	3539	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	111	113	0	97	0	557	55	135	826	1
RTOR Reduction (vph)	0	0	105	0	0	73	0	0	28	0	0	0
Lane Group Flow (vph)	0	0	6	113	0	24	0	557	27	135	827	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	11%	2%	0%	8%	0%	6%	2%	4%	2%	0%
Turn Type			Perm	Prot		Perm		NA	pm+ov	Prot	NA	
Protected Phases				3				6	3	5	2	
Permitted Phases			4			8			6			
Actuated Green, G (s)			3.0	5.5		13.0		19.9	25.4	5.2	29.1	
Effective Green, g (s)			3.0	5.5		13.0		19.9	25.4	5.2	29.1	
Actuated g/C Ratio			0.06	0.11		0.25		0.39	0.49	0.10	0.56	
Clearance Time (s)			4.0	4.5		4.0		5.5	4.5	4.0	5.5	
Vehicle Extension (s)			3.0	3.0		4.0		4.0	3.0	0.5	4.0	
Lane Grp Cap (vph)			84	188		376		1313	779	174	1995	
v/s Ratio Prot				c0.06				0.16	0.00	c0.08	c0.23	
v/s Ratio Perm			0.00			c0.02			0.01			
v/c Ratio			0.08	0.60		0.06		0.42	0.03	0.78	0.41	
Uniform Delay, d1			23.0	22.0		14.7		11.6	6.8	22.6	6.4	
Progression Factor			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2			0.4	5.3		0.1		0.3	0.0	17.7	0.2	
Delay (s)			23.4	27.3		14.8		11.9	6.8	40.3	6.6	
Level of Service			C	C		B		B	A	D	A	
Approach Delay (s)		23.4			21.5			11.5			11.3	
Approach LOS		C			C			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)	51.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	16	576	981	4
Future Vol, veh/h	0	0	16	576	981	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	7	3	0
Mvmt Flow	0	0	17	606	1033	4

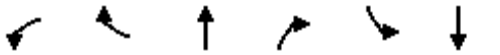
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	519	1037	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	507	678	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	507	678	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	678	-	-	-	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	10.4	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	166	63	580	168	61	1005
v/c Ratio	0.29	0.20	0.20	0.12	0.30	0.44
Control Delay	17.7	7.2	7.0	0.8	22.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	7.2	7.0	0.8	22.6	5.2
Queue Length 50th (ft)	19	0	17	0	14	54
Queue Length 95th (ft)	38	22	58	10	42	101
Internal Link Dist (ft)	551		598			344
Turn Bay Length (ft)	150	150		160	190	
Base Capacity (vph)	1308	642	2838	1513	206	2281
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.10	0.20	0.11	0.30	0.44

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	153	58	534	155	56	925
Future Volume (veh/h)	153	58	534	155	56	925
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	166	63	580	168	61	1005
Adj No. of Lanes	2	1	3	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	384	177	2560	974	108	2380
Arrive On Green	0.11	0.11	0.50	0.50	0.06	0.67
Sat Flow, veh/h	3442	1583	5253	1583	1774	3632
Grp Volume(v), veh/h	166	63	580	168	61	1005
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1583	1774	1770
Q Serve(g_s), s	1.9	1.5	2.7	1.9	1.4	5.4
Cycle Q Clear(g_c), s	1.9	1.5	2.7	1.9	1.4	5.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	384	177	2560	974	108	2380
V/C Ratio(X)	0.43	0.36	0.23	0.17	0.57	0.42
Avail Cap(c_a), veh/h	1488	684	2560	974	234	2380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.3	17.1	5.8	3.5	19.0	3.1
Incr Delay (d2), s/veh	0.8	1.2	0.2	0.4	4.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.7	1.3	1.2	0.8	2.7
LnGrp Delay(d),s/veh	18.0	18.3	6.0	3.8	23.6	3.7
LnGrp LOS	B	B	A	A	C	A
Approach Vol, veh/h	229		748			1066
Approach Delay, s/veh	18.1		5.5			4.8
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.0	25.5				32.5		9.1
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	18.0				28.0		18.0
Max Q Clear Time (g_c+I1), s	3.4	4.7				7.4		3.9
Green Ext Time (p_c), s	0.0	3.8				7.5		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	179	0	0	197	0	0
Future Vol, veh/h	179	0	0	197	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	195	0	0	214	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	195
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	846
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	846
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

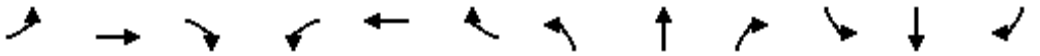
Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

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

Lane Group	EBR	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	148	123	110	1025	124	110	835
v/c Ratio	0.48	0.51	0.23	0.55	0.11	0.62	0.36
Control Delay	7.9	33.6	5.2	14.7	1.3	43.9	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	33.6	5.2	14.7	1.3	43.9	6.9
Queue Length 50th (ft)	0	43	0	155	0	39	77
Queue Length 95th (ft)	27	#99	29	218	14	#102	111
Internal Link Dist (ft)				216			582
Turn Bay Length (ft)		100				170	
Base Capacity (vph)	308	259	566	1868	1168	209	2341
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.47	0.19	0.55	0.11	0.53	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	142	118	0	106	0	984	119	106	802	0
Future Volume (vph)	0	0	142	118	0	106	0	984	119	106	802	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		5.5	4.5	4.0	5.5	
Lane Util. Factor			1.00	1.00		1.00		0.95	1.00	1.00	0.95	
Frpb, ped/bikes			0.98	1.00		1.00		1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Frt			0.86	1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1589	1770		1553		3539	1615	1787	3539	
Flt Permitted			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1589	1770		1553		3539	1615	1787	3539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	148	123	0	110	0	1025	124	110	835	0
RTOR Reduction (vph)	0	0	141	0	0	85	0	0	54	0	0	0
Lane Group Flow (vph)	0	0	7	123	0	25	0	1025	70	110	835	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	1%	2%	0%	4%	0%	2%	0%	1%	2%	0%
Turn Type			Perm	Prot		Perm		NA	pm+ov	Prot	NA	
Protected Phases				3				6	3	5	2	
Permitted Phases			4			8			6			
Actuated Green, G (s)			2.9	5.5		12.9		26.8	32.3	4.3	35.1	
Effective Green, g (s)			2.9	5.5		12.9		26.8	32.3	4.3	35.1	
Actuated g/C Ratio			0.05	0.10		0.22		0.47	0.56	0.07	0.61	
Clearance Time (s)			4.0	4.5		4.0		5.5	4.5	4.0	5.5	
Vehicle Extension (s)			3.0	3.0		4.0		4.0	3.0	0.5	4.0	
Lane Grp Cap (vph)			80	169		348		1649	907	133	2160	
v/s Ratio Prot				c0.07				c0.29	0.01	c0.06	0.24	
v/s Ratio Perm			0.00			c0.02			0.04			
v/c Ratio			0.09	0.73		0.07		0.62	0.08	0.83	0.39	
Uniform Delay, d1			26.0	25.3		17.6		11.5	5.8	26.2	5.7	
Progression Factor			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2			0.5	14.5		0.1		0.8	0.0	31.2	0.2	
Delay (s)			26.6	39.7		17.7		12.4	5.8	57.5	5.9	
Level of Service			C	D		B		B	A	E	A	
Approach Delay (s)		26.6			29.3			11.7			11.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	5	1103	1061	2
Future Vol, veh/h	0	20	5	1103	1061	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	5	0	2	2	50
Mvmt Flow	0	21	5	1137	1094	2

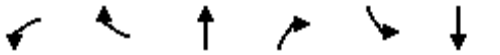
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	548	1096	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.35	2.2	-	-	-
Pot Cap-1 Maneuver	0	473	644	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	473	644	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	644	-	473	-	-
HCM Lane V/C Ratio	0.008	-	0.044	-	-
HCM Control Delay (s)	10.6	-	13	-	-
HCM Lane LOS	B	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	437	182	1029	421	161	1014
v/c Ratio	0.52	0.35	0.52	0.34	0.55	0.48
Control Delay	20.5	5.2	16.2	1.8	29.7	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.5	5.2	16.2	1.8	29.7	7.9
Queue Length 50th (ft)	64	0	103	9	49	87
Queue Length 95th (ft)	100	38	159	33	105	153
Internal Link Dist (ft)	597		598			348
Turn Bay Length (ft)	150	150		160	190	
Base Capacity (vph)	1114	636	1994	1305	335	2105
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.29	0.52	0.32	0.48	0.48

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	402	167	947	387	148	933
Future Volume (veh/h)	402	167	947	387	148	933
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	437	182	1029	421	161	1014
Adj No. of Lanes	2	1	3	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	652	300	2204	986	207	2254
Arrive On Green	0.19	0.19	0.43	0.43	0.12	0.64
Sat Flow, veh/h	3442	1583	5253	1583	1774	3632
Grp Volume(v), veh/h	437	182	1029	421	161	1014
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1583	1774	1770
Q Serve(g_s), s	6.1	5.5	7.4	7.1	4.6	7.6
Cycle Q Clear(g_c), s	6.1	5.5	7.4	7.1	4.6	7.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	652	300	2204	986	207	2254
V/C Ratio(X)	0.67	0.61	0.47	0.43	0.78	0.45
Avail Cap(c_a), veh/h	1196	550	2204	986	360	2254
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.5	19.2	10.4	5.0	22.2	4.8
Incr Delay (d2), s/veh	1.2	2.0	0.7	1.4	6.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	2.5	3.6	4.9	2.6	3.9
LnGrp Delay(d),s/veh	20.7	21.2	11.1	6.4	28.4	5.4
LnGrp LOS	C	C	B	A	C	A
Approach Vol, veh/h	619		1450			1175
Approach Delay, s/veh	20.9		9.8			8.6
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.5	27.0				37.5		14.3
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	10.5	18.0				33.0		18.0
Max Q Clear Time (g_c+I1), s	6.6	9.4				9.6		8.1
Green Ext Time (p_c), s	0.1	5.3				8.0		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	218	7	0	224	0	3
Future Vol, veh/h	218	7	0	224	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	237	8	0	243	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	241
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	798
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	798
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	798	-	-	-
HCM Lane V/C Ratio	0.004	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Lane Group	EBR	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	130	57	734	99	95	746
v/c Ratio	0.19	0.46	0.12	0.43	0.08	0.51	0.35
Control Delay	1.1	26.6	0.5	12.5	1.4	32.6	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.1	26.6	0.5	12.5	1.4	32.6	7.2
Queue Length 50th (ft)	0	36	0	93	0	27	64
Queue Length 95th (ft)	0	#91	1	140	12	#77	96
Internal Link Dist (ft)				217			582
Turn Bay Length (ft)		100				170	
Base Capacity (vph)	373	289	627	1770	1214	216	2376
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.45	0.09	0.41	0.08	0.44	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	69	125	0	55	0	705	95	91	716	0
Future Volume (vph)	0	0	69	125	0	55	0	705	95	91	716	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		5.5	4.5	4.0	5.5	
Lane Util. Factor			1.00	1.00		1.00		0.95	1.00	1.00	0.95	
Frpb, ped/bikes			0.97	1.00		1.00		1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Frt			0.86	1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1585	1805		1455		3505	1599	1752	3539	
Flt Permitted			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1585	1805		1455		3505	1599	1752	3539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	72	130	0	57	0	734	99	95	746	0
RTOR Reduction (vph)	0	0	69	0	0	43	0	0	47	0	0	0
Lane Group Flow (vph)	0	0	3	130	0	14	0	734	52	95	746	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	1%	0%	0%	11%	0%	3%	1%	3%	2%	0%
Turn Type			Perm	Prot		Perm		NA	pm+ov	Prot	NA	
Protected Phases				3				6	3	5	2	
Permitted Phases			4			8			6			
Actuated Green, G (s)			2.0	5.1		11.6		19.5	24.6	2.6	26.1	
Effective Green, g (s)			2.0	5.1		11.6		19.5	24.6	2.6	26.1	
Actuated g/C Ratio			0.04	0.11		0.25		0.41	0.52	0.06	0.55	
Clearance Time (s)			4.0	4.5		4.0		5.5	4.5	4.0	5.5	
Vehicle Extension (s)			3.0	3.0		4.0		4.0	3.0	0.5	4.0	
Lane Grp Cap (vph)			67	195		357		1448	833	96	1956	
v/s Ratio Prot				c0.07				c0.21	0.01	c0.05	0.21	
v/s Ratio Perm			0.00			c0.01			0.03			
v/c Ratio			0.05	0.67		0.04		0.51	0.06	0.99	0.38	
Uniform Delay, d1			21.7	20.2		13.6		10.3	5.6	22.3	6.0	
Progression Factor			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2			0.3	8.3		0.1		0.4	0.0	87.4	0.2	
Delay (s)			22.0	28.6		13.6		10.7	5.6	109.7	6.1	
Level of Service			C	C		B		B	A	F	A	
Approach Delay (s)		22.0			24.0			10.1			17.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	47.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	7	800	910	0
Future Vol, veh/h	0	0	7	800	910	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	0	0	7	825	938	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	469	938	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	546	739	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	546	739	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

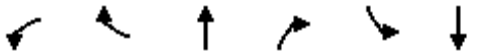
Approach	EB	NB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	739	-	-	-	-
HCM Lane V/C Ratio	0.01	-	-	-	-
HCM Control Delay (s)	9.9	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	542	262	611	574	253	736
v/c Ratio	0.59	0.42	0.38	0.52	0.80	0.36
Control Delay	21.0	5.0	16.6	5.3	45.5	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	5.0	16.6	5.3	45.5	7.6
Queue Length 50th (ft)	82	0	61	52	87	67
Queue Length 95th (ft)	124	44	91	105	#199	103
Internal Link Dist (ft)	574		597			347
Turn Bay Length (ft)	150	150		160	190	
Base Capacity (vph)	1075	676	1614	1170	323	2033
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.39	0.38	0.49	0.78	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	499	241	562	528	233	677
Future Volume (veh/h)	499	241	562	528	233	677
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	542	262	611	574	253	736
Adj No. of Lanes	2	1	3	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	781	359	1792	917	305	2150
Arrive On Green	0.23	0.23	0.35	0.35	0.17	0.61
Sat Flow, veh/h	3442	1583	5253	1583	1774	3632
Grp Volume(v), veh/h	542	262	611	574	253	736
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1583	1774	1770
Q Serve(g_s), s	7.9	8.3	4.8	13.0	7.5	5.6
Cycle Q Clear(g_c), s	7.9	8.3	4.8	13.0	7.5	5.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	781	359	1792	917	305	2150
V/C Ratio(X)	0.69	0.73	0.34	0.63	0.83	0.34
Avail Cap(c_a), veh/h	1140	525	1792	917	343	2150
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	19.5	12.9	7.5	21.7	5.3
Incr Delay (d2), s/veh	1.1	2.9	0.5	3.2	14.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	3.9	2.3	9.3	4.9	2.8
LnGrp Delay(d),s/veh	20.4	22.3	13.5	10.8	35.9	5.7
LnGrp LOS	C	C	B	B	D	A
Approach Vol, veh/h	804		1185			989
Approach Delay, s/veh	21.0		12.2			13.4
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.9	23.6				37.5		16.8
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	10.5	18.0				33.0		18.0
Max Q Clear Time (g_c+I1), s	9.5	15.0				7.6		10.3
Green Ext Time (p_c), s	0.1	1.8				5.5		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.1

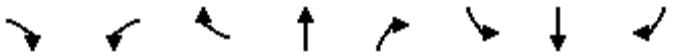
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	172	15	0	180	0	6
Future Vol, veh/h	172	15	0	180	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	187	16	0	196	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	195
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	846
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	846
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	846	-	-	-
HCM Lane V/C Ratio	0.008	-	-	-
HCM Control Delay (s)	9.3	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

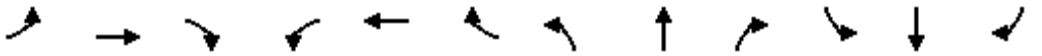
Appendix 3 Option 1 D Cumulative Conditions - Short Term Plus Project Analysis Worksheets



Lane Group	EBR	WBL	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	111	136	101	784	107	150	1248	1
v/c Ratio	0.32	0.56	0.21	0.37	0.10	0.67	0.58	0.00
Control Delay	2.5	31.9	2.8	14.0	1.9	38.0	9.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	31.9	2.8	14.0	1.9	38.0	9.7	0.0
Queue Length 50th (ft)	0	38	0	69	0	42	130	0
Queue Length 95th (ft)	0	#98	16	101	15	#107	190	0
Internal Link Dist (ft)				218			582	
Turn Bay Length (ft)		100			200	170		
Base Capacity (vph)	344	250	582	2133	1034	264	2151	1029
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.54	0.17	0.37	0.10	0.57	0.58	0.00

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	104	128	0	95	0	737	101	141	1173	1
Future Volume (vph)	0	0	104	128	0	95	0	737	101	141	1173	1
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		5.5	4.5	4.0	5.5	5.5
Lane Util. Factor			1.00	1.00		1.00		0.91	1.00	1.00	0.95	1.00
Frpb, ped/bikes			0.98	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes			1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Frt			0.86	1.00		0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00	0.95		1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			1448	1770		1495		4893	1583	1736	3539	1615
Flt Permitted			1.00	0.95		1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			1448	1770		1495		4893	1583	1736	3539	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	111	136	0	101	0	784	107	150	1248	1
RTOR Reduction (vph)	0	0	104	0	0	76	0	0	56	0	0	0
Lane Group Flow (vph)	0	0	7	136	0	25	0	784	51	150	1248	1
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	11%	2%	0%	8%	0%	6%	2%	4%	2%	0%
Turn Type			Perm	Prot		Perm		NA	pm+ov	Prot	NA	Perm
Protected Phases				3				6	3	5	2	
Permitted Phases			4			8			6			2
Actuated Green, G (s)			3.0	4.9		12.4		19.0	23.9	5.1	28.1	28.1
Effective Green, g (s)			3.0	4.9		12.4		19.0	23.9	5.1	28.1	28.1
Actuated g/C Ratio			0.06	0.10		0.25		0.38	0.48	0.10	0.56	0.56
Clearance Time (s)			4.0	4.5		4.0		5.5	4.5	4.0	5.5	5.5
Vehicle Extension (s)			3.0	3.0		4.0		4.0	3.0	0.5	4.0	4.0
Lane Grp Cap (vph)			86	173		370		1859	756	177	1988	907
v/s Ratio Prot				c0.08				0.16	0.01	c0.09	c0.35	
v/s Ratio Perm			0.00			c0.02			0.03			0.00
v/c Ratio			0.08	0.79		0.07		0.42	0.07	0.85	0.63	0.00
Uniform Delay, d1			22.2	22.0		14.4		11.4	7.0	22.1	7.4	4.8
Progression Factor			1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2			0.4	20.5		0.1		0.2	0.0	28.4	0.7	0.0
Delay (s)			22.6	42.6		14.5		11.7	7.1	50.5	8.1	4.8
Level of Service			C	D		B		B	A	D	A	A
Approach Delay (s)		22.6			30.6			11.1			12.7	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	16	838	1400	4
Future Vol, veh/h	0	0	16	838	1400	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	7	3	0
Mvmt Flow	0	0	17	882	1474	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	739	1478	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	364	462	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	364	462	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	462	-	-	-	-
HCM Lane V/C Ratio	0.036	-	-	-	-
HCM Control Delay (s)	13.1	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	166	64	864	168	61	1461
v/c Ratio	0.32	0.22	0.31	0.13	0.30	0.61
Control Delay	20.5	7.9	8.2	0.8	24.6	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.5	7.9	8.2	0.8	24.6	6.4
Queue Length 50th (ft)	22	0	57	0	16	97
Queue Length 95th (ft)	43	24	91	10	46	179
Internal Link Dist (ft)	356		593			350
Turn Bay Length (ft)	150	150		160	190	
Base Capacity (vph)	1176	584	2789	1479	212	2391
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.11	0.31	0.11	0.29	0.61

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	153	59	795	155	56	1344
Future Volume (veh/h)	153	59	795	155	56	1344
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	166	64	864	168	61	1461
Adj No. of Lanes	2	1	3	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	350	161	2803	1033	104	2498
Arrive On Green	0.10	0.10	0.55	0.55	0.06	0.71
Sat Flow, veh/h	3442	1583	5253	1583	1774	3632
Grp Volume(v), veh/h	166	64	864	168	61	1461
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1583	1774	1770
Q Serve(g_s), s	2.1	1.8	4.3	1.9	1.6	9.7
Cycle Q Clear(g_c), s	2.1	1.8	4.3	1.9	1.6	9.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	350	161	2803	1033	104	2498
V/C Ratio(X)	0.47	0.40	0.31	0.16	0.59	0.58
Avail Cap(c_a), veh/h	1325	610	2803	1033	239	2498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	19.7	5.7	3.2	21.5	3.4
Incr Delay (d2), s/veh	1.0	1.6	0.3	0.3	5.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.8	2.1	1.2	0.9	4.8
LnGrp Delay(d),s/veh	20.8	21.3	6.0	3.5	26.6	4.5
LnGrp LOS	C	C	A	A	C	A
Approach Vol, veh/h	230		1032			1522
Approach Delay, s/veh	20.9		5.6			5.3
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.2	30.3				37.5		9.2
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	6.3	22.2				33.0		18.0
Max Q Clear Time (g_c+I1), s	3.6	6.3				11.7		4.1
Green Ext Time (p_c), s	0.0	6.0				11.8		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	242	0	0	223	0	0
Future Vol, veh/h	242	0	0	223	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	263	0	0	242	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	263
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	776
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	776
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

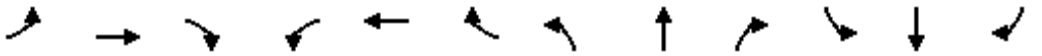
Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

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

Lane Group	EBR	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	148	214	126	1709	199	120	1380
v/c Ratio	0.54	0.74	0.26	0.81	0.17	0.80	0.68
Control Delay	10.3	41.9	5.3	19.4	1.1	67.6	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	41.9	5.3	19.4	1.1	67.6	11.6
Queue Length 50th (ft)	0	75	0	195	0	44	172
Queue Length 95th (ft)	#29	#167	32	253	16	#124	241
Internal Link Dist (ft)				222			582
Turn Bay Length (ft)		100			200	170	
Base Capacity (vph)	272	303	555	2120	1166	154	2026
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.71	0.23	0.81	0.17	0.78	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	142	205	0	121	0	1641	191	115	1325	0
Future Volume (vph)	0	0	142	205	0	121	0	1641	191	115	1325	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		5.5	4.5	4.0	5.5	
Lane Util. Factor			1.00	1.00		1.00		0.91	1.00	1.00	0.95	
Frpb, ped/bikes			0.97	1.00		1.00		1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Frt			0.86	1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1583	1770		1553		5085	1615	1787	3539	
Flt Permitted			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1583	1770		1553		5085	1615	1787	3539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	148	214	0	126	0	1709	199	120	1380	0
RTOR Reduction (vph)	0	0	142	0	0	91	0	0	85	0	0	0
Lane Group Flow (vph)	0	0	6	214	0	35	0	1709	114	120	1380	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	1%	2%	0%	4%	0%	2%	0%	1%	2%	0%
Turn Type			Perm	Prot		Perm		NA	pm+ov	Prot	NA	Perm
Protected Phases				3				6	3	5	2	
Permitted Phases			4			8			6			2
Actuated Green, G (s)			2.3	9.5		16.3		24.2	33.7	4.9	33.1	
Effective Green, g (s)			2.3	9.5		16.3		24.2	33.7	4.9	33.1	
Actuated g/C Ratio			0.04	0.16		0.28		0.41	0.57	0.08	0.56	
Clearance Time (s)			4.0	4.5		4.0		5.5	4.5	4.0	5.5	
Vehicle Extension (s)			3.0	3.0		4.0		4.0	3.0	0.5	4.0	
Lane Grp Cap (vph)			61	285		429		2089	924	148	1988	
v/s Ratio Prot				c0.12				c0.34	0.02	0.07	c0.39	
v/s Ratio Perm			0.00			c0.02			0.05			
v/c Ratio			0.09	0.75		0.08		0.82	0.12	0.81	0.69	
Uniform Delay, d1			27.3	23.6		15.8		15.4	5.8	26.5	9.3	
Progression Factor			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2			0.7	10.6		0.1		2.8	0.1	26.2	1.2	
Delay (s)			28.0	34.2		15.9		18.1	5.9	52.8	10.4	
Level of Service			C	C		B		B	A	D	B	
Approach Delay (s)		28.0			27.4			16.9			13.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	5	1832	1671	2
Future Vol, veh/h	0	20	5	1832	1671	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	5	0	2	2	50
Mvmt Flow	0	21	5	1889	1723	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	863	1725	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.35	2.2	-	-	-
Pot Cap-1 Maneuver	0	292	371	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	292	371	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

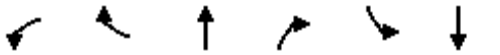
Approach	EB	NB	SB
HCM Control Delay, s	18.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	371	-	292	-	-
HCM Lane V/C Ratio	0.014	-	0.071	-	-
HCM Control Delay (s)	14.8	-	18.3	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	437	182	1822	421	161	1677
v/c Ratio	0.55	0.36	0.84	0.35	0.74	0.76
Control Delay	23.4	5.7	21.4	2.4	50.7	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	5.7	21.4	2.4	50.7	12.0
Queue Length 50th (ft)	73	0	214	22	59	206
Queue Length 95th (ft)	111	40	#339	43	#154	338
Internal Link Dist (ft)	464		593			346
Turn Bay Length (ft)	150	150		160	190	
Base Capacity (vph)	1011	594	2164	1292	217	2201
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.31	0.84	0.33	0.74	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	402	167	1676	387	148	1543
Future Volume (veh/h)	402	167	1676	387	148	1543
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	437	182	1822	421	161	1677
Adj No. of Lanes	2	1	3	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	627	289	2384	1031	202	2340
Arrive On Green	0.18	0.18	0.47	0.47	0.11	0.66
Sat Flow, veh/h	3442	1583	5253	1583	1774	3632
Grp Volume(v), veh/h	437	182	1822	421	161	1677
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1583	1774	1770
Q Serve(g_s), s	6.8	6.1	17.0	7.3	5.1	17.5
Cycle Q Clear(g_c), s	6.8	6.1	17.0	7.3	5.1	17.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	627	289	2384	1031	202	2340
V/C Ratio(X)	0.70	0.63	0.76	0.41	0.80	0.72
Avail Cap(c_a), veh/h	1078	496	2384	1031	231	2340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.0	21.7	12.6	4.8	24.8	6.3
Incr Delay (d2), s/veh	1.4	2.3	2.4	1.2	15.5	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	2.8	8.5	5.1	3.3	9.0
LnGrp Delay(d),s/veh	23.4	24.0	15.0	6.0	40.3	8.2
LnGrp LOS	C	C	B	A	D	A
Approach Vol, veh/h	619		2243			1838
Approach Delay, s/veh	23.6		13.3			11.0
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.1	31.4				42.5		15.0
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	7.5	26.0				38.0		18.0
Max Q Clear Time (g_c+I1), s	7.1	19.0				19.5		8.8
Green Ext Time (p_c), s	0.0	6.0				12.4		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	299	7	0	226	0	3
Future Vol, veh/h	299	7	0	226	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	325	8	0	246	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	329
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	712
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	712
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

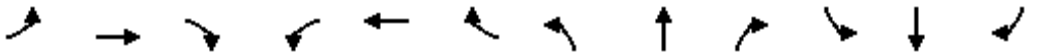
Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	712	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Lane Group	EBR	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	236	69	1490	196	105	1491
v/c Ratio	0.25	0.75	0.16	0.67	0.17	0.77	0.75
Control Delay	2.1	40.1	0.8	14.5	0.9	66.0	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	40.1	0.8	14.5	0.9	66.0	12.1
Queue Length 50th (ft)	0	76	0	147	0	35	183
Queue Length 95th (ft)	0	#176	0	196	7	#109	263
Internal Link Dist (ft)				222			582
Turn Bay Length (ft)		100			200	170	
Base Capacity (vph)	289	315	425	2236	1177	136	2026
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.75	0.16	0.67	0.17	0.77	0.74

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	69	227	0	66	0	1430	188	101	1431	0
Future Volume (vph)	0	0	69	227	0	66	0	1430	188	101	1431	0
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		5.5	4.0	4.0	5.5	
Lane Util. Factor			1.00	1.00		1.00		0.91	1.00	1.00	0.95	
Frpb, ped/bikes			0.99	1.00		1.00		1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Frt			0.86	1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1604	1805		1455		5036	1599	1752	3539	
Flt Permitted			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1604	1805		1455		5036	1599	1752	3539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	72	236	0	69	0	1490	196	105	1491	0
RTOR Reduction (vph)	0	0	70	0	0	57	0	0	80	0	0	0
Lane Group Flow (vph)	0	0	2	236	0	12	0	1490	116	105	1491	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	1%	0%	0%	11%	0%	3%	1%	3%	2%	0%
Turn Type			Perm	Prot		Perm		NA	pm+ov	Prot	NA	Perm
Protected Phases				8				6	8	5	2	
Permitted Phases			4			8			6			2
Actuated Green, G (s)			1.7	9.1		9.1		23.0	32.1	3.1	30.1	
Effective Green, g (s)			1.7	9.1		9.1		23.0	32.1	3.1	30.1	
Actuated g/C Ratio			0.03	0.17		0.17		0.42	0.59	0.06	0.55	
Clearance Time (s)			4.0	4.0		4.0		5.5	4.0	4.0	5.5	
Vehicle Extension (s)			3.0	4.0		4.0		4.0	4.0	0.5	4.0	
Lane Grp Cap (vph)			50	301		243		2129	943	99	1958	
v/s Ratio Prot				c0.13				0.30	0.02	0.06	c0.42	
v/s Ratio Perm			c0.00			0.01			0.05			
v/c Ratio			0.04	0.78		0.05		0.70	0.12	1.06	0.76	
Uniform Delay, d1			25.6	21.7		19.0		12.9	4.9	25.6	9.4	
Progression Factor			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2			0.4	13.2		0.1		1.1	0.1	107.8	1.9	
Delay (s)			25.9	34.9		19.1		14.0	5.0	133.4	11.3	
Level of Service			C	C		B		B	A	F	B	
Approach Delay (s)		25.9			31.4			12.9			19.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	17.5
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	7	1618	1727	0
Future Vol, veh/h	0	0	7	1618	1727	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	0	0	7	1668	1780	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	890	1780	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	290	354	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	290	354	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

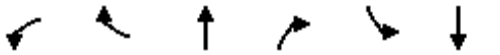
Approach	EB	NB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	354	-	-	-	-
HCM Lane V/C Ratio	0.02	-	-	-	-
HCM Control Delay (s)	15.4	-	0	-	-
HCM Lane LOS	C	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	542	262	1500	574	253	1624
v/c Ratio	0.62	0.44	0.83	0.51	0.81	0.76
Control Delay	24.3	5.5	24.5	5.1	47.8	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	5.5	24.5	5.1	47.8	12.6
Queue Length 50th (ft)	94	0	198	55	97	227
Queue Length 95th (ft)	139	48	#270	109	#209	317
Internal Link Dist (ft)	372		592			347
Turn Bay Length (ft)	150	150		160	190	
Base Capacity (vph)	982	639	1808	1176	323	2137
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.41	0.83	0.49	0.78	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	499	241	1380	528	233	1494
Future Volume (veh/h)	499	241	1380	528	233	1494
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	542	262	1500	574	253	1624
Adj No. of Lanes	2	1	3	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	753	346	1966	958	302	2236
Arrive On Green	0.22	0.22	0.39	0.39	0.17	0.63
Sat Flow, veh/h	3442	1583	5253	1583	1774	3632
Grp Volume(v), veh/h	542	262	1500	574	253	1624
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1583	1774	1770
Q Serve(g_s), s	8.8	9.3	15.4	13.5	8.3	18.8
Cycle Q Clear(g_c), s	8.8	9.3	15.4	13.5	8.3	18.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	753	346	1966	958	302	2236
V/C Ratio(X)	0.72	0.76	0.76	0.60	0.84	0.73
Avail Cap(c_a), veh/h	1030	474	1966	958	339	2236
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	22.0	16.1	7.4	24.1	7.5
Incr Delay (d2), s/veh	1.6	4.6	2.9	2.8	15.3	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	4.5	7.7	9.8	5.4	9.7
LnGrp Delay(d),s/veh	23.4	26.6	18.9	10.1	39.4	9.6
LnGrp LOS	C	C	B	B	D	A
Approach Vol, veh/h	804		2074			1877
Approach Delay, s/veh	24.4		16.5			13.7
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.7	27.8				42.5		17.7
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	11.5	22.0				38.0		18.0
Max Q Clear Time (g_c+I1), s	10.3	17.4				20.8		11.3
Green Ext Time (p_c), s	0.1	3.9				11.4		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	275	15	0	293	0	6
Future Vol, veh/h	275	15	0	293	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	299	16	0	318	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	307
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	733
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	733
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	733	-	-	-
HCM Lane V/C Ratio	0.009	-	-	-
HCM Control Delay (s)	10	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Queues

7: Sierra College Blvd & Brace Rd

04/10/2020

Lane Group	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	83	222	1490	196	105	1491
v/c Ratio	0.25	0.30	0.51	0.65	0.17	0.76	0.73
Control Delay	2.0	23.3	9.4	14.1	0.9	63.3	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	23.3	9.4	14.1	0.9	63.3	11.6
Queue Length 50th (ft)	0	25	4	147	0	35	183
Queue Length 95th (ft)	0	60	55	196	7	#109	263
Internal Link Dist (ft)			229	222			582
Turn Bay Length (ft)		100			200	170	
Base Capacity (vph)	291	306	458	2280	1174	139	2071
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.27	0.48	0.65	0.17	0.76	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
7: Sierra College Blvd & Brace Rd

04/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	69	227	0	66	0	1430	188	101	1431	0
Future Volume (vph)	0	0	69	227	0	66	0	1430	188	101	1431	0
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			5.5	4.0	4.0	5.5	
Lane Util. Factor			1.00	0.95	0.95			0.91	1.00	1.00	0.95	
Frpb, ped/bikes			0.99	1.00	1.00			1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frt			0.86	1.00	0.95			1.00	0.85	1.00	1.00	
Flt Protected			1.00	0.95	0.97			1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1604	1715	1609			5036	1599	1752	3539	
Flt Permitted			1.00	0.95	0.97			1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1604	1715	1609			5036	1599	1752	3539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	72	236	0	69	0	1490	196	105	1491	0
RTOR Reduction (vph)	0	0	70	0	176	0	0	0	82	0	0	0
Lane Group Flow (vph)	0	0	2	83	46	0	0	1490	114	105	1491	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	1%	0%	0%	11%	0%	3%	1%	3%	2%	0%
Turn Type			Perm	Split	NA			NA	pm+ov	Prot	NA	Perm
Protected Phases				8	8			6	8	5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)			1.7	8.2	8.2			23.1	31.3	3.1	30.2	
Effective Green, g (s)			1.7	8.2	8.2			23.1	31.3	3.1	30.2	
Actuated g/C Ratio			0.03	0.15	0.15			0.43	0.58	0.06	0.56	
Clearance Time (s)			4.0	4.0	4.0			5.5	4.0	4.0	5.5	
Vehicle Extension (s)			3.0	4.0	4.0			4.0	4.0	0.5	4.0	
Lane Grp Cap (vph)			50	262	246			2170	933	101	1993	
v/s Ratio Prot				c0.05	0.03			0.30	0.02	0.06	c0.42	
v/s Ratio Perm			c0.00						0.05			
v/c Ratio			0.05	0.32	0.19			0.69	0.12	1.04	0.75	
Uniform Delay, d1			25.2	20.2	19.8			12.3	5.0	25.2	8.8	
Progression Factor			1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2			0.4	1.0	0.5			1.0	0.1	100.7	1.7	
Delay (s)			25.5	21.2	20.3			13.3	5.1	125.9	10.5	
Level of Service			C	C	C			B	A	F	B	
Approach Delay (s)		25.5			20.5			12.4			18.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	17.5
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

24: Sierra College Blvd & Project Driveway

04/10/2020

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	542	262	1500	574	253	1624
v/c Ratio	0.62	0.44	0.87	0.51	0.74	0.76
Control Delay	24.3	5.5	28.6	5.1	38.4	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	5.5	28.6	5.1	38.4	12.6
Queue Length 50th (ft)	94	0	209	52	93	227
Queue Length 95th (ft)	139	48	#308	109	#186	317
Internal Link Dist (ft)	372		592			347
Turn Bay Length (ft)	150	150		160	190	
Base Capacity (vph)	982	639	1717	1168	379	2137
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.41	0.87	0.49	0.67	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Summary
24: Sierra College Blvd & Project Driveway

04/10/2020

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	499	241	1380	528	233	1494
Future Volume (veh/h)	499	241	1380	528	233	1494
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	542	262	1500	574	253	1624
Adj No. of Lanes	2	1	3	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	753	346	1956	955	306	2236
Arrive On Green	0.22	0.22	0.38	0.38	0.17	0.63
Sat Flow, veh/h	3442	1583	5253	1583	1774	3632
Grp Volume(v), veh/h	542	262	1500	574	253	1624
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1583	1774	1770
Q Serve(g_s), s	8.8	9.3	15.5	13.6	8.3	18.8
Cycle Q Clear(g_c), s	8.8	9.3	15.5	13.6	8.3	18.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	753	346	1956	955	306	2236
V/C Ratio(X)	0.72	0.76	0.77	0.60	0.83	0.73
Avail Cap(c_a), veh/h	1030	474	1956	955	398	2236
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	22.0	16.2	7.4	24.0	7.5
Incr Delay (d2), s/veh	1.6	4.6	2.9	2.8	10.7	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	4.5	7.8	9.8	4.9	9.7
LnGrp Delay(d),s/veh	23.4	26.6	19.1	10.2	34.7	9.6
LnGrp LOS	C	C	B	B	C	A
Approach Vol, veh/h	804		2074			1877
Approach Delay, s/veh	24.4		16.6			13.0
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.9	27.6				42.5		17.7
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	13.5	20.0				38.0		18.0
Max Q Clear Time (g_c+I1), s	10.3	17.5				20.8		11.3
Green Ext Time (p_c), s	0.2	2.2				11.4		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

Appendix 4 Option 1 D Cumulative Conditions - Long Term Plus Project Analysis Worksheets

Lane Group	EBR	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	69	316	234	916	29	85	2060
v/c Ratio	0.26	0.76	0.37	0.45	0.02	0.55	0.79
Control Delay	2.3	34.8	4.2	15.2	0.0	39.6	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.3	34.8	4.2	15.2	0.0	39.6	15.1
Queue Length 50th (ft)	0	105	0	101	0	30	223
Queue Length 95th (ft)	0	#214	38	139	0	#74	288
Internal Link Dist (ft)				219			582
Turn Bay Length (ft)		100			200	170	
Base Capacity (vph)	267	463	735	2031	1247	188	2613
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.68	0.32	0.45	0.02	0.45	0.79

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	65	297	0	220	0	861	27	80	1881	55
Future Volume (vph)	0	0	65	297	0	220	0	861	27	80	1881	55
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		5.5	4.5	4.0	5.5	
Lane Util. Factor			1.00	1.00		1.00		0.91	1.00	1.00	0.91	
Frpb, ped/bikes			0.97	1.00		1.00		1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Frt			0.86	1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1432	1770		1495		4893	1583	1736	5066	
Flt Permitted			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1432	1770		1495		4893	1583	1736	5066	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	69	316	0	234	0	916	29	85	2001	59
RTOR Reduction (vph)	0	0	67	0	0	158	0	0	11	0	5	0
Lane Group Flow (vph)	0	0	2	316	0	76	0	916	18	85	2055	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	11%	2%	0%	8%	0%	6%	2%	4%	2%	0%
Turn Type			Perm	Prot		Perm		NA	pm+ov	Prot	NA	
Protected Phases				3				6	3	5	2	
Permitted Phases			4			8			6			
Actuated Green, G (s)			1.7	13.1		19.3		23.2	36.3	3.3	30.5	
Effective Green, g (s)			1.7	13.1		19.3		23.2	36.3	3.3	30.5	
Actuated g/C Ratio			0.03	0.22		0.33		0.39	0.61	0.06	0.51	
Clearance Time (s)			4.0	4.5		4.0		5.5	4.5	4.0	5.5	
Vehicle Extension (s)			3.0	3.0		4.0		4.0	3.0	0.5	4.0	
Lane Grp Cap (vph)			41	391		486		1914	969	96	2605	
v/s Ratio Prot				c0.18				0.19	0.00	0.05	c0.41	
v/s Ratio Perm			0.00			c0.05			0.01			
v/c Ratio			0.05	0.81		0.16		0.48	0.02	0.89	0.79	
Uniform Delay, d1			28.0	21.9		14.2		13.5	4.5	27.8	11.8	
Progression Factor			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2			0.5	11.6		0.2		0.3	0.0	55.0	1.8	
Delay (s)			28.5	33.5		14.4		13.8	4.5	82.8	13.5	
Level of Service			C	C		B		B	A	F	B	
Approach Delay (s)		28.5			25.4			13.5			16.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	20	888	2163	5
Future Vol, veh/h	0	0	20	888	2163	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	7	3	0
Mvmt Flow	0	0	21	935	2277	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1141	2282	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	5.3	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	3.1	-	-	-
Pot Cap-1 Maneuver	0	169	92	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	169	92	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	92	-	-	-	-
HCM Lane V/C Ratio	0.229	-	-	-	-
HCM Control Delay (s)	55.4	-	0	-	-
HCM Lane LOS	F	-	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-	-	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	14	36	166	63	101	897	168	61	2290
v/c Ratio	0.12	0.15	0.62	0.14	0.64	0.28	0.13	0.37	0.79
Control Delay	36.5	1.2	45.5	0.7	54.9	8.2	1.1	39.6	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.5	1.2	45.5	0.7	54.9	8.2	1.1	39.6	15.7
Queue Length 50th (ft)	7	0	41	0	48	84	0	28	315
Queue Length 95th (ft)	24	0	#80	0	#121	110	17	65	385
Internal Link Dist (ft)		586		351		599			343
Turn Bay Length (ft)			150				160	190	
Base Capacity (vph)	121	494	267	607	157	3205	1294	176	2898
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.07	0.62	0.10	0.64	0.28	0.13	0.35	0.79

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	33	153	0	58	93	825	155	56	2070	37
Future Volume (veh/h)	13	0	33	153	0	58	93	825	155	56	2070	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	14	0	36	166	0	63	101	897	168	61	2250	40
Adj No. of Lanes	1	1	0	2	1	0	1	3	1	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	30	0	95	246	0	182	129	2954	1033	85	2862	51
Arrive On Green	0.02	0.00	0.06	0.07	0.00	0.11	0.07	0.58	0.58	0.05	0.56	0.56
Sat Flow, veh/h	1774	0	1583	3442	0	1583	1774	5085	1583	1774	5146	91
Grp Volume(v), veh/h	14	0	36	166	0	63	101	897	168	61	1481	809
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1721	0	1583	1774	1695	1583	1774	1695	1847
Q Serve(g_s), s	0.6	0.0	1.6	3.5	0.0	2.8	4.2	6.7	3.1	2.5	25.9	26.0
Cycle Q Clear(g_c), s	0.6	0.0	1.6	3.5	0.0	2.8	4.2	6.7	3.1	2.5	25.9	26.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	30	0	95	246	0	182	129	2954	1033	85	1885	1027
V/C Ratio(X)	0.47	0.00	0.38	0.67	0.00	0.35	0.78	0.30	0.16	0.72	0.79	0.79
Avail Cap(c_a), veh/h	118	0	379	261	0	394	153	2954	1033	172	1885	1027
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	34.0	34.0	0.0	30.7	34.3	8.0	5.1	35.3	13.1	13.2
Incr Delay (d2), s/veh	10.9	0.0	2.5	6.3	0.0	1.1	19.6	0.3	0.3	10.7	3.4	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.8	1.9	0.0	1.3	2.7	3.2	1.4	1.5	12.8	14.8
LnGrp Delay(d),s/veh	47.6	0.0	36.4	40.3	0.0	31.8	53.8	8.3	5.4	46.0	16.5	19.3
LnGrp LOS	D		D	D		C	D	A	A	D	B	B
Approach Vol, veh/h		50			229			1166			2351	
Approach Delay, s/veh		39.5			38.0			11.8			18.2	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	48.2	9.9	9.0	10.0	46.3	5.8	13.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.3	41.0	5.7	18.0	6.5	41.8	5.0	18.7
Max Q Clear Time (g_c+I1), s	4.5	8.7	5.5	3.6	6.2	28.0	2.6	4.8
Green Ext Time (p_c), s	0.0	8.2	0.0	0.1	0.0	11.7	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	107	0	0	517	0	0
Future Vol, veh/h	107	0	0	517	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	0	0	562	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	116
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	936
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	936
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

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

Lane Group	EBR	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	568	116	135	2198	394	335	1475
v/c Ratio	1.27	1.07	0.61	1.07	0.44	1.16	0.49
Control Delay	171.9	164.2	21.6	79.3	6.4	152.1	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	171.9	164.2	21.6	79.3	6.4	152.1	15.4
Queue Length 50th (ft)	~545	~108	0	~750	41	~334	242
Queue Length 95th (ft)	#774	#234	65	#844	78	#525	280
Internal Link Dist (ft)				226			582
Turn Bay Length (ft)		100			200	170	
Base Capacity (vph)	448	108	222	2053	892	288	3007
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.27	1.07	0.61	1.07	0.44	1.16	0.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	545	111	0	130	0	2110	378	322	1301	115
Future Volume (vph)	0	0	545	111	0	130	0	2110	378	322	1301	115
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		5.5	4.0	4.0	5.5	
Lane Util. Factor			1.00	1.00		1.00		0.91	1.00	1.00	0.91	
Frpb, ped/bikes			0.98	1.00		1.00		1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Frt			0.86	1.00		0.85		1.00	0.85	1.00	0.99	
Flt Protected			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1599	1770		1553		5085	1615	1787	5031	
Flt Permitted			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1599	1770		1553		5085	1615	1787	5031	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	568	116	0	135	0	2198	394	335	1355	120
RTOR Reduction (vph)	0	0	67	0	0	127	0	0	125	0	8	0
Lane Group Flow (vph)	0	0	501	116	0	8	0	2198	269	335	1467	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	1%	2%	0%	4%	0%	2%	0%	1%	2%	0%
Turn Type			Perm	Prot		Perm		NA	pm+ov	Prot	NA	
Protected Phases				8				6	8	5	2	
Permitted Phases			4			8			6			
Actuated Green, G (s)			31.0	8.0		8.0		52.5	60.5	21.0	77.5	
Effective Green, g (s)			31.0	8.0		8.0		52.5	60.5	21.0	77.5	
Actuated g/C Ratio			0.24	0.06		0.06		0.40	0.47	0.16	0.60	
Clearance Time (s)			4.0	4.0		4.0		5.5	4.0	4.0	5.5	
Vehicle Extension (s)			3.0	4.0		4.0		4.0	4.0	0.5	4.0	
Lane Grp Cap (vph)			381	108		95		2053	751	288	2999	
v/s Ratio Prot				c0.07				c0.43	0.02	c0.19	0.29	
v/s Ratio Perm			c0.31			0.01			0.14			
v/c Ratio			1.31	1.07		0.09		1.07	0.36	1.16	0.49	
Uniform Delay, d1			49.5	61.0		57.6		38.8	22.3	54.5	15.0	
Progression Factor			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2			159.3	108.0		0.5		41.9	0.4	104.7	0.2	
Delay (s)			208.8	169.0		58.1		80.6	22.7	159.2	15.1	
Level of Service			F	F		E		F	C	F	B	
Approach Delay (s)		208.8			109.3			71.8			41.8	
Approach LOS		F			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	78.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	5	2493	1927	5
Future Vol, veh/h	0	20	5	2493	1927	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	5	0	2	2	50
Mvmt Flow	0	21	5	2570	1987	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	996	1992	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.2	5.3	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.95	3.1	-	-	-
Pot Cap-1 Maneuver	0	204	129	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	204	129	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.6	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	129	-	204	-	-
HCM Lane V/C Ratio	0.04	-	0.101	-	-
HCM Control Delay (s)	34.1	-	24.6	-	-
HCM Lane LOS	D	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	114	90	437	182	52	2421	421	161	1955
v/c Ratio	0.59	0.41	0.86	0.60	0.40	0.89	0.34	0.90	0.66
Control Delay	58.7	8.6	62.9	15.5	58.2	27.9	2.6	94.6	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.1
Total Delay	58.7	8.6	62.9	15.5	58.2	30.5	2.6	94.6	18.1
Queue Length 50th (ft)	76	0	154	0	35	516	22	111	335
Queue Length 95th (ft)	139	23	#264	63	79	#699	64	#255	457
Internal Link Dist (ft)		536		371		594			341
Turn Bay Length (ft)			150				160	190	
Base Capacity (vph)	250	370	509	423	149	2728	1232	179	2962
Starvation Cap Reductn	0	0	0	0	0	204	0	0	176
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.24	0.86	0.43	0.35	0.96	0.34	0.90	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	0	83	402	0	167	48	2227	387	148	1739	60
Future Volume (veh/h)	105	0	83	402	0	167	48	2227	387	148	1739	60
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	114	0	90	437	0	182	52	2421	421	161	1890	65
Adj No. of Lanes	1	1	0	2	1	0	1	3	1	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	0	121	483	0	216	67	2653	1048	175	2942	101
Arrive On Green	0.08	0.00	0.08	0.14	0.00	0.14	0.04	0.52	0.52	0.10	0.58	0.58
Sat Flow, veh/h	1774	0	1583	3442	0	1583	1774	5085	1583	1774	5049	173
Grp Volume(v), veh/h	114	0	90	437	0	182	52	2421	421	161	1268	687
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1721	0	1583	1774	1695	1583	1774	1695	1832
Q Serve(g_s), s	7.0	0.0	6.1	13.8	0.0	12.4	3.2	48.0	13.5	9.9	27.5	27.6
Cycle Q Clear(g_c), s	7.0	0.0	6.1	13.8	0.0	12.4	3.2	48.0	13.5	9.9	27.5	27.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	142	0	121	483	0	216	67	2653	1048	175	1975	1068
V/C Ratio(X)	0.80	0.00	0.75	0.90	0.00	0.84	0.78	0.91	0.40	0.92	0.64	0.64
Avail Cap(c_a), veh/h	244	0	258	483	0	262	146	2653	1048	175	1975	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	0.0	50.0	46.7	0.0	46.5	52.7	24.1	8.6	49.3	15.4	15.4
Incr Delay (d2), s/veh	10.1	0.0	8.8	20.3	0.0	18.3	17.2	6.1	1.1	45.4	1.6	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	3.0	7.9	0.0	6.5	1.9	23.9	6.2	7.1	13.3	14.8
LnGrp Delay(d),s/veh	60.0	0.0	58.8	67.1	0.0	64.8	69.8	30.2	9.7	94.7	17.0	18.4
LnGrp LOS	E		E	E		E	E	C	A	F	B	B
Approach Vol, veh/h		204			619			2894			2116	
Approach Delay, s/veh		59.5			66.4			28.0			23.3	
Approach LOS		E			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.4	62.1	20.0	12.9	8.7	68.8	13.3	19.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.9	57.6	15.5	18.0	9.1	59.4	15.2	18.3
Max Q Clear Time (g_c+I1), s	11.9	50.0	15.8	8.1	5.2	29.6	9.0	14.4
Green Ext Time (p_c), s	0.0	7.2	0.0	0.3	0.0	18.5	0.1	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	693	7	0	236	0	3
Future Vol, veh/h	693	7	0	236	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	753	8	0	257	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	757
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	408
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	408
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

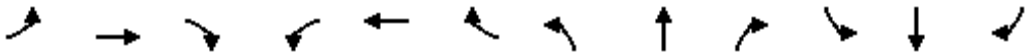
Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	408	-	-	-
HCM Lane V/C Ratio	0.008	-	-	-
HCM Control Delay (s)	13.9	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Lane Group	EBR	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	281	132	83	1433	298	260	1374
v/c Ratio	0.85	0.79	0.28	0.78	0.32	0.91	0.46
Control Delay	37.8	63.6	2.4	22.0	1.7	64.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	63.6	2.4	22.0	1.7	64.7	7.8
Queue Length 50th (ft)	41	52	0	180	0	102	94
Queue Length 95th (ft)	#163	#138	0	232	16	#223	123
Internal Link Dist (ft)				224			582
Turn Bay Length (ft)		100			200	170	
Base Capacity (vph)	330	167	295	1833	923	298	3015
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.79	0.28	0.78	0.32	0.87	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	270	127	0	80	0	1376	286	250	1209	110
Future Volume (vph)	0	0	270	127	0	80	0	1376	286	250	1209	110
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		5.5	4.0	4.0	5.5	
Lane Util. Factor			1.00	1.00		1.00		0.91	1.00	1.00	0.91	
Frpb, ped/bikes			0.99	1.00		1.00		1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Frt			0.86	1.00		0.85		1.00	0.85	1.00	0.99	
Flt Protected			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1604	1805		1455		5036	1599	1752	5030	
Flt Permitted			1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1604	1805		1455		5036	1599	1752	5030	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	281	132	0	83	0	1433	298	260	1259	115
RTOR Reduction (vph)	0	0	157	0	0	75	0	0	162	0	16	0
Lane Group Flow (vph)	0	0	124	132	0	8	0	1433	136	260	1358	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	1%	0%	0%	11%	0%	3%	1%	3%	2%	0%
Turn Type			Perm	Prot		Perm		NA	pm+ov	Prot	NA	
Protected Phases				8				6	8	5	2	
Permitted Phases			4			8			6			
Actuated Green, G (s)			7.0	6.0		6.0		23.5	29.5	10.5	38.0	
Effective Green, g (s)			7.0	6.0		6.0		23.5	29.5	10.5	38.0	
Actuated g/C Ratio			0.11	0.09		0.09		0.36	0.46	0.16	0.59	
Clearance Time (s)			4.0	4.0		4.0		5.5	4.0	4.0	5.5	
Vehicle Extension (s)			3.0	4.0		4.0		4.0	4.0	0.5	4.0	
Lane Grp Cap (vph)			174	167		135		1834	731	285	2963	
v/s Ratio Prot				c0.07				c0.28	0.02	c0.15	0.27	
v/s Ratio Perm			c0.08			0.01			0.07			
v/c Ratio			0.71	0.79		0.06		0.78	0.19	0.91	0.46	
Uniform Delay, d1			27.8	28.6		26.7		18.2	10.4	26.5	7.5	
Progression Factor			1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2			13.0	23.1		0.2		2.4	0.2	30.9	0.2	
Delay (s)			40.7	51.7		26.9		20.6	10.6	57.4	7.6	
Level of Service			D	D		C		C	B	E	A	
Approach Delay (s)		40.7			42.1			18.9			15.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	64.5	Sum of lost time (s)	17.5
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	10	1662	1606	0
Future Vol, veh/h	0	0	10	1662	1606	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	0	0	10	1713	1656	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	828	1656	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	5.3	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	3.1	-	-	-
Pot Cap-1 Maneuver	0	273	190	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	273	190	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	190	-	-	-	-
HCM Lane V/C Ratio	0.054	-	-	-	-
HCM Control Delay (s)	25	-	0	-	-
HCM Lane LOS	D	-	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	107	98	542	262	57	1445	574	253	1493
v/c Ratio	0.48	0.33	0.82	0.54	0.47	0.80	0.48	0.87	0.62
Control Delay	39.3	3.0	42.6	8.0	49.6	27.3	2.3	62.9	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.3	3.0	42.6	8.0	49.6	27.3	2.3	62.9	17.5
Queue Length 50th (ft)	49	0	130	0	27	228	0	121	200
Queue Length 95th (ft)	98	1	#226	52	#75	307	41	#266	272
Internal Link Dist (ft)		477		344		593			344
Turn Bay Length (ft)			150				160	190	
Base Capacity (vph)	279	514	659	637	121	1800	1184	291	2425
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.19	0.82	0.41	0.47	0.80	0.48	0.87	0.62

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	0	90	499	0	241	52	1329	528	233	1317	56
Future Volume (veh/h)	98	0	90	499	0	241	52	1329	528	233	1317	56
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	107	0	98	542	0	262	57	1445	574	253	1432	61
Adj No. of Lanes	1	1	0	2	1	0	1	3	1	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	0	146	620	0	309	80	1734	825	281	2272	97
Arrive On Green	0.08	0.00	0.09	0.18	0.00	0.19	0.05	0.34	0.34	0.16	0.45	0.45
Sat Flow, veh/h	1774	0	1583	3442	0	1583	1774	5085	1583	1774	5002	213
Grp Volume(v), veh/h	107	0	98	542	0	262	57	1445	574	253	971	522
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1721	0	1583	1774	1695	1583	1774	1695	1825
Q Serve(g_s), s	4.7	0.0	4.7	12.1	0.0	12.6	2.5	20.6	21.5	11.0	17.3	17.3
Cycle Q Clear(g_c), s	4.7	0.0	4.7	12.1	0.0	12.6	2.5	20.6	21.5	11.0	17.3	17.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	138	0	146	620	0	309	80	1734	825	281	1540	829
V/C Ratio(X)	0.78	0.00	0.67	0.87	0.00	0.85	0.71	0.83	0.70	0.90	0.63	0.63
Avail Cap(c_a), veh/h	270	0	361	637	0	413	117	1734	825	281	1540	829
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.7	0.0	34.7	31.5	0.0	30.6	37.2	23.9	14.2	32.6	16.5	16.5
Incr Delay (d2), s/veh	9.1	0.0	5.2	12.6	0.0	11.9	11.0	4.9	4.8	29.4	2.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	2.3	6.8	0.0	6.5	1.5	10.4	10.3	7.7	8.4	9.4
LnGrp Delay(d),s/veh	44.8	0.0	39.9	44.1	0.0	42.5	48.2	28.8	19.0	62.0	18.4	20.1
LnGrp LOS	D		D	D		D	D	C	B	E	B	C
Approach Vol, veh/h		205			804			2076			1746	
Approach Delay, s/veh		42.4			43.6			26.6			25.3	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	31.4	18.7	11.8	8.1	40.3	10.6	19.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.5	26.9	14.6	18.0	5.2	34.2	12.0	20.6
Max Q Clear Time (g_c+I1), s	13.0	23.5	14.1	6.7	4.5	19.3	6.7	14.6
Green Ext Time (p_c), s	0.0	2.9	0.1	0.3	0.0	8.9	0.1	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	521	15	0	207	0	6
Future Vol, veh/h	521	15	0	207	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	566	16	0	225	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	574
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	518
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	518
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	518	-	-	-
HCM Lane V/C Ratio	0.013	-	-	-
HCM Control Delay (s)	12	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Queues

7: Sierra College Blvd & Brace Rd

05/15/2020

Lane Group	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	568	81	170	2198	394	335	1475
v/c Ratio	1.27	0.79	0.85	1.07	0.44	1.16	0.49
Control Delay	171.9	104.4	56.1	79.3	6.4	152.1	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	171.9	104.4	56.1	79.3	6.4	152.1	15.4
Queue Length 50th (ft)	~545	72	49	~750	41	~334	242
Queue Length 95th (ft)	#774	#168	#185	#844	78	#525	280
Internal Link Dist (ft)			199	226			582
Turn Bay Length (ft)		100			200	170	
Base Capacity (vph)	448	103	200	2053	892	288	3007
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.27	0.79	0.85	1.07	0.44	1.16	0.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

7: Sierra College Blvd & Brace Rd

05/15/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	545	111	0	130	0	2110	378	322	1301	115
Future Volume (vph)	0	0	545	111	0	130	0	2110	378	322	1301	115
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			5.5	4.0	4.0	5.5	
Lane Util. Factor			1.00	0.95	0.95			0.91	1.00	1.00	0.91	
Frpb, ped/bikes			0.98	1.00	1.00			1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frt			0.86	1.00	0.88			1.00	0.85	1.00	0.99	
Flt Protected			1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1599	1681	1519			5085	1615	1787	5031	
Flt Permitted			1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1599	1681	1519			5085	1615	1787	5031	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	568	116	0	135	0	2198	394	335	1355	120
RTOR Reduction (vph)	0	0	67	0	107	0	0	0	125	0	8	0
Lane Group Flow (vph)	0	0	501	81	63	0	0	2198	269	335	1467	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	1%	2%	0%	4%	0%	2%	0%	1%	2%	0%
Turn Type			Perm	Split	NA			NA	pm+ov	Prot	NA	
Protected Phases				8	8			6	8	5	2	
Permitted Phases			4						6			
Actuated Green, G (s)			31.0	8.0	8.0			52.5	60.5	21.0	77.5	
Effective Green, g (s)			31.0	8.0	8.0			52.5	60.5	21.0	77.5	
Actuated g/C Ratio			0.24	0.06	0.06			0.40	0.47	0.16	0.60	
Clearance Time (s)			4.0	4.0	4.0			5.5	4.0	4.0	5.5	
Vehicle Extension (s)			3.0	4.0	4.0			4.0	4.0	0.5	4.0	
Lane Grp Cap (vph)			381	103	93			2053	751	288	2999	
v/s Ratio Prot				c0.05	0.04			c0.43	0.02	c0.19	0.29	
v/s Ratio Perm			c0.31						0.14			
v/c Ratio			1.31	0.79	0.68			1.07	0.36	1.16	0.49	
Uniform Delay, d1			49.5	60.2	59.7			38.8	22.3	54.5	15.0	
Progression Factor			1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2			159.3	33.1	19.3			41.9	0.4	104.7	0.2	
Delay (s)			208.8	93.3	79.0			80.6	22.7	159.2	15.1	
Level of Service			F	F	E			F	C	F	B	
Approach Delay (s)		208.8			83.6			71.8			41.8	
Approach LOS		F			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	76.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

24: Sierra College Blvd & Project Driveway

05/18/2020

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	114	90	437	182	52	2421	421	161	1955
v/c Ratio	0.67	0.49	0.90	0.63	0.45	0.85	0.34	0.69	0.60
Control Delay	84.8	14.8	86.0	23.9	77.6	23.8	1.6	77.6	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.9	0.3	0.0	0.6
Total Delay	84.8	14.8	86.0	23.9	77.6	24.7	1.9	77.6	18.7
Queue Length 50th (ft)	109	0	219	24	52	552	27	151	394
Queue Length 95th (ft)	176	35	#312	104	m69	554	36	#247	538
Internal Link Dist (ft)		536		371		594			341
Turn Bay Length (ft)			150				160	190	
Base Capacity (vph)	207	288	492	364	128	2835	1227	234	3233
Starvation Cap Reductn	0	0	0	0	0	178	325	0	769
Spillback Cap Reductn	0	1	0	0	0	0	0	0	86
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.31	0.89	0.50	0.41	0.91	0.47	0.69	0.79

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 2010 Signalized Intersection Summary
24: Sierra College Blvd & Project Driveway

05/18/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	0	83	402	0	167	48	2227	387	148	1739	60
Future Volume (veh/h)	105	0	83	402	0	167	48	2227	387	148	1739	60
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	114	0	90	437	0	182	52	2421	421	161	1890	65
Adj No. of Lanes	1	1	0	2	1	0	1	3	1	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	0	112	480	0	211	67	2915	1128	171	3192	110
Arrive On Green	0.08	0.00	0.07	0.14	0.00	0.13	0.04	0.57	0.57	0.10	0.63	0.63
Sat Flow, veh/h	1774	0	1583	3442	0	1583	1774	5085	1583	1774	5049	173
Grp Volume(v), veh/h	114	0	90	437	0	182	52	2421	421	161	1268	687
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1721	0	1583	1774	1695	1583	1774	1695	1832
Q Serve(g_s), s	9.5	0.0	8.4	18.8	0.0	16.9	4.4	58.2	15.6	13.5	33.0	33.1
Cycle Q Clear(g_c), s	9.5	0.0	8.4	18.8	0.0	16.9	4.4	58.2	15.6	13.5	33.0	33.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	136	0	112	480	0	211	67	2915	1128	171	2143	1158
V/C Ratio(X)	0.84	0.00	0.80	0.91	0.00	0.86	0.78	0.83	0.37	0.94	0.59	0.59
Avail Cap(c_a), veh/h	208	0	190	493	0	231	117	2915	1128	171	2143	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.58	0.58	0.58	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.3	0.0	68.7	63.6	0.0	63.6	71.6	26.1	8.4	67.3	16.2	16.2
Incr Delay (d2), s/veh	16.1	0.0	12.4	20.7	0.0	25.3	10.7	1.7	0.6	51.0	1.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	4.1	10.3	0.0	8.9	2.3	27.6	7.0	9.0	15.7	17.3
LnGrp Delay(d),s/veh	84.4	0.0	81.1	84.3	0.0	88.9	82.3	27.8	9.0	118.3	17.4	18.5
LnGrp LOS	F		F	F		F	F	C	A	F	B	B
Approach Vol, veh/h		204			619			2894			2116	
Approach Delay, s/veh		82.9			85.7			26.0			25.4	
Approach LOS		F			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	90.5	25.4	15.1	10.1	99.3	16.0	24.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	14.5	78.0	21.5	18.0	9.9	82.6	17.6	21.9
Max Q Clear Time (g_c+I1), s	15.5	60.2	20.8	10.4	6.4	35.1	11.5	18.9
Green Ext Time (p_c), s	0.0	16.0	0.1	0.2	0.0	23.9	0.1	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C

Queues

7: Sierra College Blvd & Brace Rd

04/10/2020

Lane Group	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	281	46	169	1433	298	260	1374
v/c Ratio	0.85	0.29	0.56	0.78	0.32	0.91	0.46
Control Delay	37.8	32.6	12.7	22.0	1.7	64.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	32.6	12.7	22.0	1.7	64.7	7.8
Queue Length 50th (ft)	41	17	0	180	0	102	94
Queue Length 95th (ft)	#163	48	50	232	16	#223	123
Internal Link Dist (ft)			199	224			582
Turn Bay Length (ft)		100			200	170	
Base Capacity (vph)	330	159	303	1833	923	298	3015
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.29	0.56	0.78	0.32	0.87	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
7: Sierra College Blvd & Brace Rd

04/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	270	127	0	80	0	1376	286	250	1209	110
Future Volume (vph)	0	0	270	127	0	80	0	1376	286	250	1209	110
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			5.5	4.0	4.0	5.5	
Lane Util. Factor			1.00	0.95	0.95			0.91	1.00	1.00	0.91	
Frpb, ped/bikes			0.99	1.00	1.00			1.00	1.00	1.00	1.00	
Flpb, ped/bikes			1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frt			0.86	1.00	0.93			1.00	0.85	1.00	0.99	
Flt Protected			1.00	0.95	0.98			1.00	1.00	0.95	1.00	
Satd. Flow (prot)			1604	1715	1547			5036	1599	1752	5030	
Flt Permitted			1.00	0.95	0.98			1.00	1.00	0.95	1.00	
Satd. Flow (perm)			1604	1715	1547			5036	1599	1752	5030	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	281	132	0	83	0	1433	298	260	1259	115
RTOR Reduction (vph)	0	0	157	0	153	0	0	0	162	0	16	0
Lane Group Flow (vph)	0	0	124	46	16	0	0	1433	136	260	1358	0
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	1%	0%	0%	11%	0%	3%	1%	3%	2%	0%
Turn Type			Perm	Split	NA			NA	pm+ov	Prot	NA	
Protected Phases				8	8			6	8	5	2	
Permitted Phases			4						6			
Actuated Green, G (s)			7.0	6.0	6.0			23.5	29.5	10.5	38.0	
Effective Green, g (s)			7.0	6.0	6.0			23.5	29.5	10.5	38.0	
Actuated g/C Ratio			0.11	0.09	0.09			0.36	0.46	0.16	0.59	
Clearance Time (s)			4.0	4.0	4.0			5.5	4.0	4.0	5.5	
Vehicle Extension (s)			3.0	4.0	4.0			4.0	4.0	0.5	4.0	
Lane Grp Cap (vph)			174	159	143			1834	731	285	2963	
v/s Ratio Prot				c0.03	0.01			c0.28	0.02	c0.15	0.27	
v/s Ratio Perm			c0.08						0.07			
v/c Ratio			0.71	0.29	0.11			0.78	0.19	0.91	0.46	
Uniform Delay, d1			27.8	27.3	26.8			18.2	10.4	26.5	7.5	
Progression Factor			1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2			13.0	1.4	0.5			2.4	0.2	30.9	0.2	
Delay (s)			40.7	28.6	27.3			20.6	10.6	57.4	7.6	
Level of Service			D	C	C			C	B	E	A	
Approach Delay (s)		40.7			27.6			18.9			15.5	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	64.5	Sum of lost time (s)	17.5
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

24: Sierra College Blvd & Project Driveway

04/09/2020

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	107	98	542	262	57	1445	574	253	1493
v/c Ratio	0.36	0.30	0.81	0.57	0.38	0.88	0.53	0.76	0.61
Control Delay	30.7	2.3	40.5	6.3	38.0	34.8	5.6	44.6	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	2.3	40.5	6.3	38.0	34.8	5.6	44.6	17.2
Queue Length 50th (ft)	44	0	127	0	40	258	44	110	201
Queue Length 95th (ft)	88	0	#210	19	m59	#434	149	#205	271
Internal Link Dist (ft)		477		344		593			344
Turn Bay Length (ft)			150				160	190	
Base Capacity (vph)	299	370	673	627	155	1636	1078	365	2437
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.26	0.81	0.42	0.37	0.88	0.53	0.69	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 2010 Signalized Intersection Summary
24: Sierra College Blvd & Project Driveway

04/09/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	0	90	499	0	241	52	1329	528	233	1317	56
Future Volume (veh/h)	98	0	90	499	0	241	52	1329	528	233	1317	56
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	107	0	98	542	0	262	57	1445	574	253	1432	61
Adj No. of Lanes	1	1	0	2	1	0	1	3	1	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	0	139	620	0	304	201	1322	697	411	1894	81
Arrive On Green	0.08	0.00	0.09	0.18	0.00	0.19	0.08	0.17	0.17	0.23	0.38	0.38
Sat Flow, veh/h	1774	0	1583	3442	0	1583	1774	5085	1583	1774	5002	213
Grp Volume(v), veh/h	107	0	98	542	0	262	57	1445	574	253	971	522
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1721	0	1583	1774	1695	1583	1774	1695	1825
Q Serve(g_s), s	4.4	0.0	4.5	11.5	0.0	12.0	2.3	19.5	7.0	9.6	18.7	18.7
Cycle Q Clear(g_c), s	4.4	0.0	4.5	11.5	0.0	12.0	2.3	19.5	7.0	9.6	18.7	18.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	135	0	139	620	0	304	201	1322	697	411	1284	691
V/C Ratio(X)	0.79	0.00	0.71	0.87	0.00	0.86	0.28	1.09	0.82	0.61	0.76	0.76
Avail Cap(c_a), veh/h	135	0	177	624	0	348	201	1322	697	411	1284	691
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.77	0.77	0.77	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	0.0	33.3	29.9	0.0	29.3	31.8	31.0	7.9	25.8	20.3	20.3
Incr Delay (d2), s/veh	26.6	0.0	8.7	13.0	0.0	17.7	0.6	51.8	8.4	2.7	4.2	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	2.3	6.5	0.0	6.7	1.1	15.4	11.2	5.0	9.4	10.7
LnGrp Delay(d),s/veh	60.7	0.0	41.9	42.9	0.0	47.0	32.4	82.7	16.3	28.5	24.5	27.8
LnGrp LOS	E		D	D		D	C	F	B	C	C	C
Approach Vol, veh/h		205			804			2076			1746	
Approach Delay, s/veh		51.7			44.2			63.0			26.1	
Approach LOS		D			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.9	24.0	18.0	11.1	13.0	32.9	10.2	18.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	15.5	19.5	13.6	8.4	6.6	28.4	5.5	16.5
Max Q Clear Time (g_c+I1), s	11.6	21.5	13.5	6.5	4.3	20.7	6.4	14.0
Green Ext Time (p_c), s	0.3	0.0	0.0	0.1	0.0	5.4	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	46.0
HCM 2010 LOS	D

Notes