KITTELSON & ASSOCIATES

Preliminary Traffic Report

NH 16-1(57)2
Airport Rd & Main St – Billings

UPN 8718001

Work Type 130 - Reconstruction – With Added Capacity

Billings, Montana

October 2018

PREPARED FOR:
Montana Department of Transportation
2701 Prospect Ave
Helena, MT 59601

PREPARED BY:
Kittelson & Associates, Inc.
101 S Capitol Boulevard, Suite 301
Boise, ID 83702
208.338.2683

NH 16-1(57)2, Airport Rd & Main St – Billings, UPN 8718001 – Preliminary Traffic Report

Billings, Montana

Prepared For:
Montana Department of Transportation
2701 Prospect Ave
Helena, MT 59601
(406) 444-0451
MDT Project Manager: Wade Salyards, PE

Prepared By:
Kittelson & Associates, Inc.
101 South Capitol Boulevard, Suite 301
Boise, ID 83702
(208) 338-2683

Project Manager: Yuri Mereszczak, PE
Project Principal: Andy Daleiden, PE
Project Analyst: Mark Heisinger, EIT

Project No. 21018

October 2018

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

INTRODUCTION

This report addresses Activity 112 (Preliminary Traffic) for the Airport Road and Main Street – Billings final design project. This project includes lane modifications, new traffic signals, traffic signal upgrades, median work, and minor realignment of routes and approaches near and at the intersection of Airport Road and Main Street in Billings, MT. This report discusses traffic related issues that affect roadway and operational characteristics of the design consistent with MDT's guidelines for a Preliminary Traffic Report (Reference 1).

The Airport Road and Main Street Concept Design Study (herein referred to as "Concept Study", Reference 2) was conducted to evaluate alternative designs and it identified the following needs for this project:

- The subject intersection, Airport Road and Main Street, currently operates at a level of service (LOS) C and near capacity (intersection volume-to-capacity (v/c) ratio of 0.92) during the weekday a.m. peak hour, and LOS D and near capacity (intersection v/c ratio of 0.92) during the weekday p.m. peak hour. Future year 2040 traffic conditions forecast the intersection operations to be at LOS F and over capacity (intersection v/c ratio of greater than 1.0) during the weekday a.m. and p.m. peak hours. With the substandard operations at the intersection, vehicle queues frequently spill back and impact adjacent intersection operations during the weekday a.m. and p.m. peak hours.
- The subject intersection had 111 reported crashes from 2010 to 2014, of which 61% were rear-end crashes and 40% were injury related. The crash rate is 1.33 crashes per million entering vehicles.
- The existing pedestrian facilities (e.g., sidewalks, ramps, and crossings) generally do not provide a comfortable experience for pedestrians.
- The intersection is located on the Camino Real International Trade Corridor and experiences high truck traffic ranging between 3% and 12% of all vehicles throughout the day.
- The intersection is near MetraPark, a major activity and event center for the Billings area and the Yellowstone County fairgrounds. During events, heavy traffic volumes travel through the subject intersection to access and depart from MetraPark.

Figure 1 illustrates the design alternative recommended in the Concept Study. *Through scoping for the design project, it was determined that a detailed crash analysis would not be needed with the Preliminary Traffic Report since this was covered in the Concept Study*.

Project Area

Located in Yellowstone County, within the Billings city limits, the Airport Road and Main Street intersection is located two miles northeast of downtown Billings, just north of MetraPark. The intersection resides on the Camino Real International Trade Corridor that connects Canada, United

States, and Mexico, and is a critical junction for commuter, regional, and freight trips along the Airport Road and Main Street corridors. The two corridors connect recreational, residential neighborhoods (Heights West and East), low density commercial, and light industrial land uses with downtown Billings and Interstate 90. Figure 1 illustrates the project limits.

Figure 1 Recommended Intersection Alternative for Design

Roadway Characteristics

Table 1 displays ownership and classification information for major roadways within the proposed designs' area of impact.

Table 1 Roadway Characteristics

Roadway	Ownership	MDT Classification (Reference 3)	Posted Speed	Notes
Airport Road (west of Main Street)	MDT	Urban Minor Arterial	45 mph	Proposed design speed is 45 mph
Airport Road (east of Main Street)	Yellowstone County	Urban Local Road	none	Proposed design speed is 30 mph
Main Street	MDT	Principal Arterial	35 mph	Proposed design speed is 40 mph
Aronson Avenue	City of Billings	Urban Local Road (Classified as Minor Arterial by City of Billings)	none	Proposed design speed is 30 mph

OPERATIONAL ANALYSIS

An operational analysis was performed on the roadway system assuming the recommended alternative in place under existing (year 2018), let year (year 2022), and design year (year 2040) conditions during the weekday AM and PM peak hours. The purpose of this operational analysis was to confirm lane geometry and signal phasing, as well as report LOS, v/c ratios, and 95th percentile queue results for use in the design effort. A sensitivity analysis was also performed during MetraPark event conditions. The assumed lane configurations and traffic control devices for each intersection are displayed in Figure 2.

Signal timing and coordination was optimized using the existing cycle lengths, existing signal phasing configurations, and the proposed signal phasing configuration for the new traffic signal at the Aronson Avenue and Main Street intersection. The existing cycle lengths are 130 seconds and 150 seconds for the AM and PM peak hours, respectively. The cycle lengths during the design year (year 2040) AM condition were adjusted to 150 seconds.

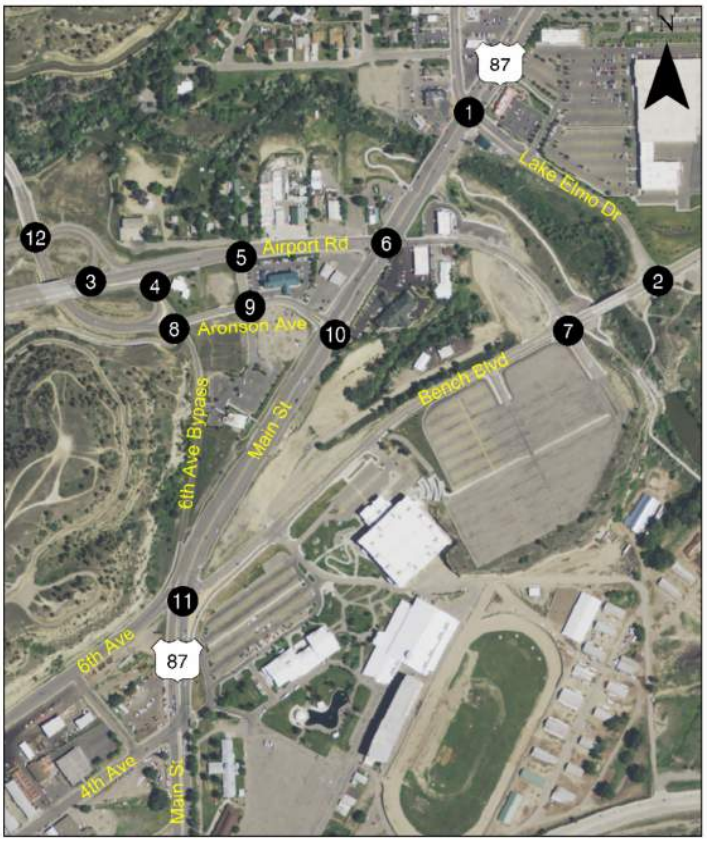
Traffic Volumes

Traffic count data from the Concept Study was used to develop traffic volumes for all scenarios. The original count data was collected on a weekday in April 2015 for AM (7:00 to 9:00 a.m.) and PM (4:00 to 6:00 p.m.) peak hours and a MetraPark event. The MDT regional travel demand model for the Billings Urban Area/Yellowstone County was used to compare year 2015 and year 2040 traffic volumes and develop an overall growth rate for the study area. The annual growth rate was determined to be 1.6% and was applied to the year 2015 traffic counts to estimate the traffic volumes for existing (2018) and let year (2022) conditions. Traffic volumes for design year (2040) conditions were developed during the Concept Study using the MDT regional travel demand model and used for the analysis in this report.

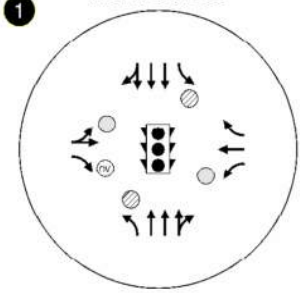
To account for the removal of the northbound and southbound left turn movements at the Airport Road and Main Street intersection, the following changes were made to the traffic volumes for existing, let-year, and MetraPark event conditions (the design year traffic volumes were already re-routed in the Concept Study):

- Northbound left turns at the Airport Road and Main Street intersection were re-routed to the Aronson Avenue and Main Street intersection.
- Southbound left turns at the Airport Road and Main Street intersection were re-routed to the Lake Elmo Drive and Main Street intersection.

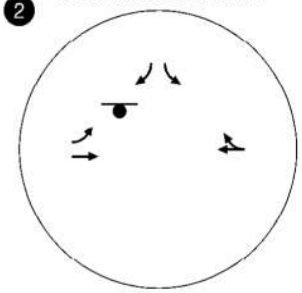
The traffic volumes used for all conditions can be seen in Figures 3 through 8. Raw count data is included in the Concept Study.



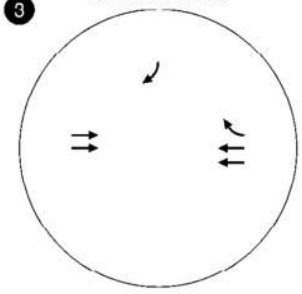
Lake Elmo Drive & Main Street



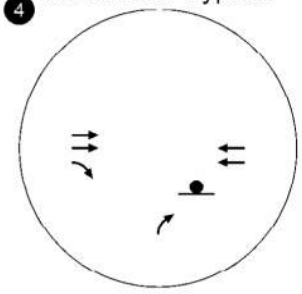
Lake Elmo Drive & Bench Boulevard



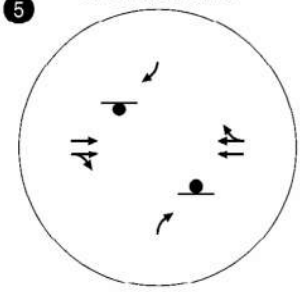
Airport Road & Alkali Creek Road



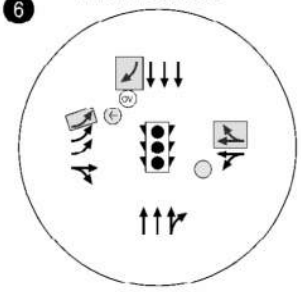
Airport Road & 6th Avenue Bypass



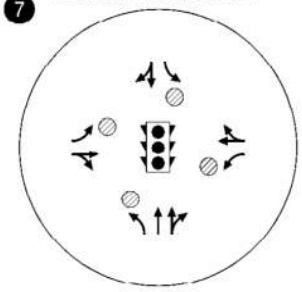
Airport Road & Swords Lane



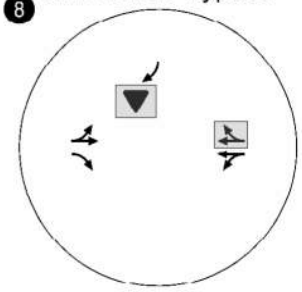
Airport Road & Main Street*



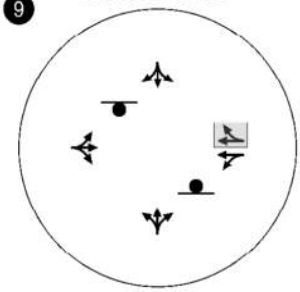
Alkali Creek Road & Bench Boulevard



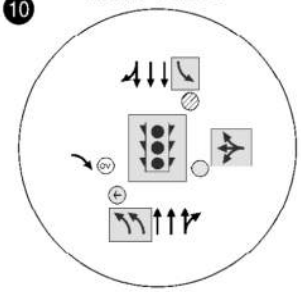
Aronson Avenue & 6th Avenue Bypass



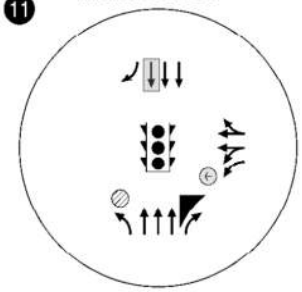
Aronson Avenue & Swords Lane



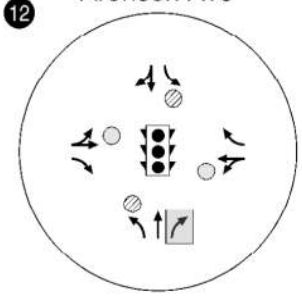
Aronson Avenue & Main Street



6th Avenue & Main Street**



Alkali Creek Road & Aronson Ave



* Northbound and Southbound left-turns removed from intersection.
** Second Southbound right-turn lane removed from intersection.

Traffic Signal
Stop Sign
Yield Sign
New Configuration

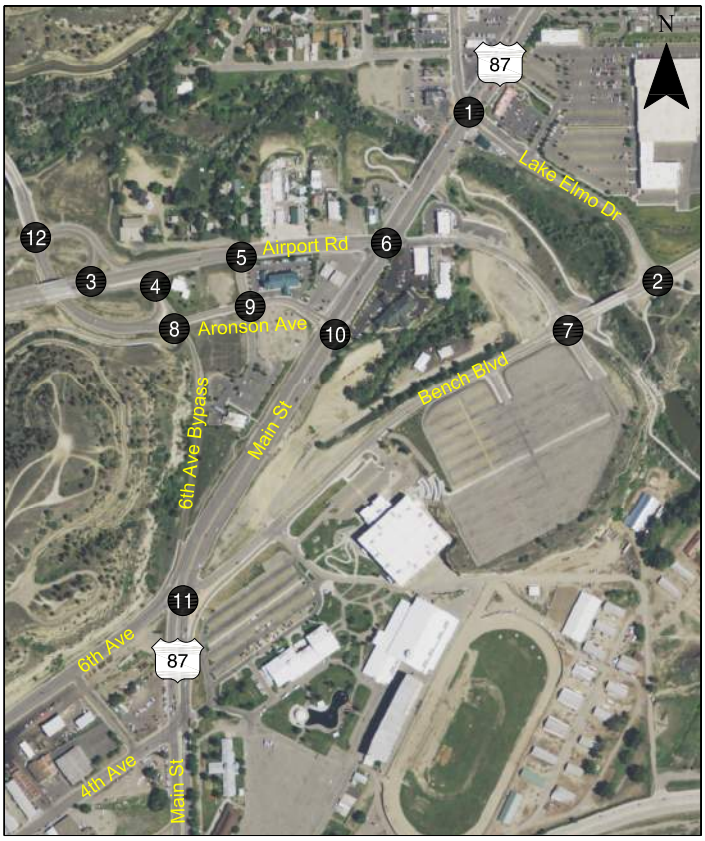
Permissive Left-Turn
Protected Left-Turn
Permissive + Protected Left-Turn
Right-Turn Overlap Phasing

Assumed Lane Configurations and Traffic Control Devices Billings, MT

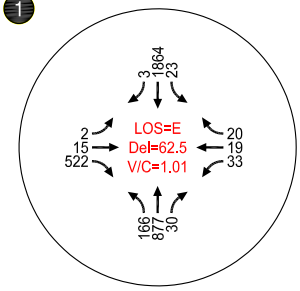
Figure 2

H:\21\2018 - Airport Rd & Main St Design\112_Preliminary Traffic Report\dwgs\CAD\210118_18460FinalReportFigures.dwg Oct 30, 2018 - 3:53pm - mhelsinger Layout Tab: LaneConfig

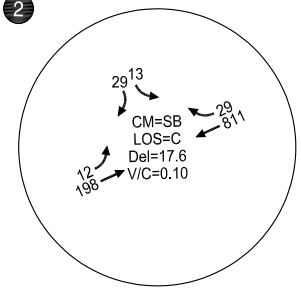
KITTELSON & ASSOCIATES



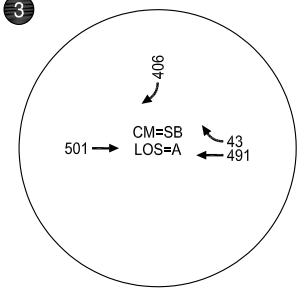
1 Lake Elmo Drive & Main Street



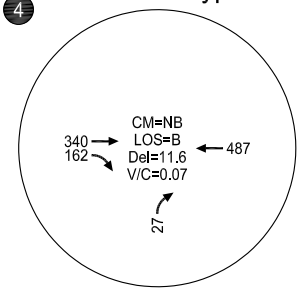
2 Lake Elmo Drive & Bench Boulevard



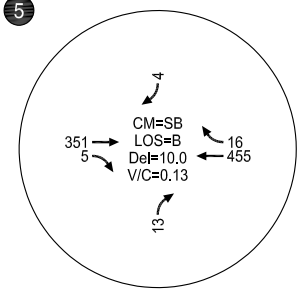
3 Airport Road & Alkali Creek Road



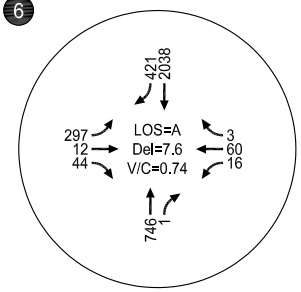
4 Airport Road & 6th Avenue Bypass



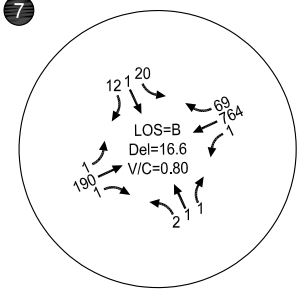
5 Airport Road & Swords Lane



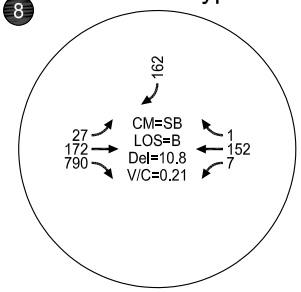
6 Airport Road & Main Street



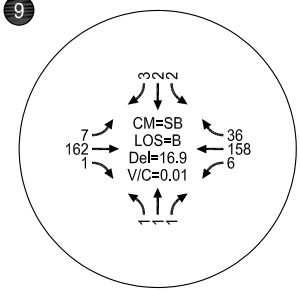
7 Alkali Creek Road & Bench Boulevard



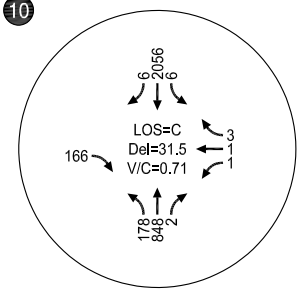
8 Aronson Avenue & 6th Avenue Bypass



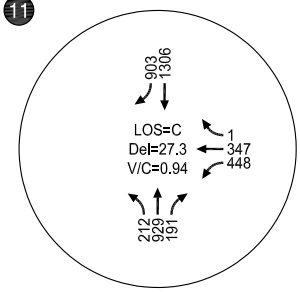
9 Aronson Avenue & Swords Lane



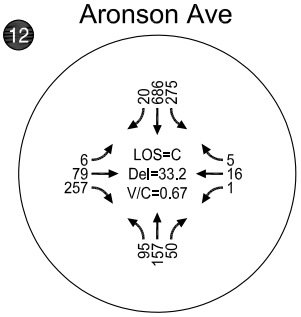
10 Aronson Avenue & Main Street



11 6th Avenue & Main Street*



12 Alkali Creek Road & Aronson Ave

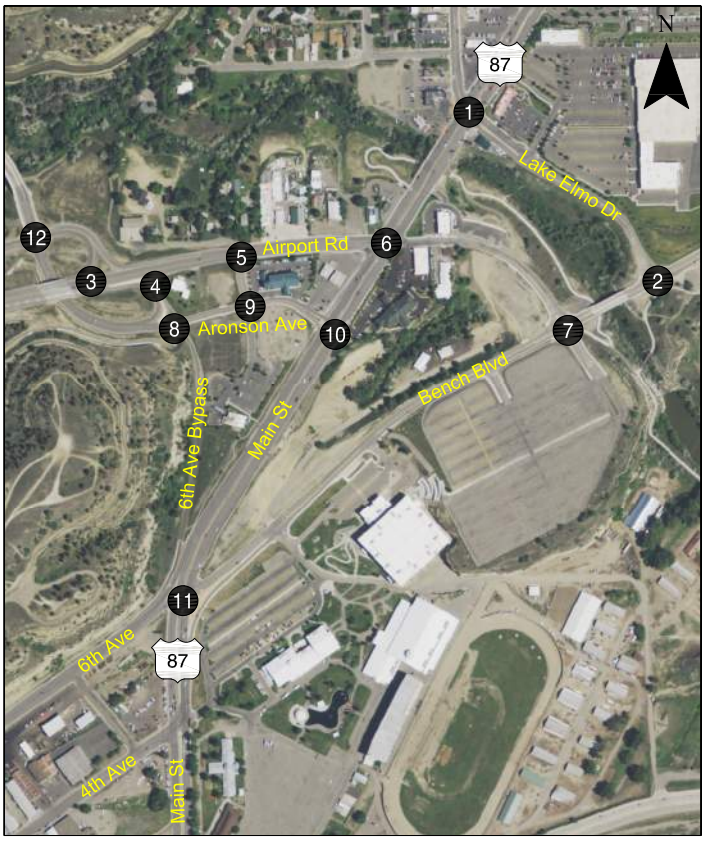


* HCM 6th Edition Methodology does not support intersection's configuration. Operation results were determined using HCM 2000 Methodology.

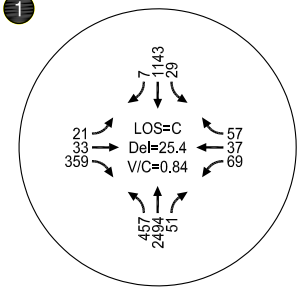
CM = Critical Movement
LOS = Level of Service (HCM 6th Edition)
Del = Delay (seconds) (HCM 6th Edition)
V/C = Volume-to-Capacity Ratio (HCM 2000)
Red text denotes operations exceed LOS E or F / volume-to-capacity ratio > 1.0

(Year 2018) Traffic Volumes and Operations Weekday AM Peak Hour Billings, MT

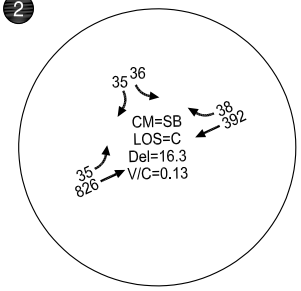
Figure 3



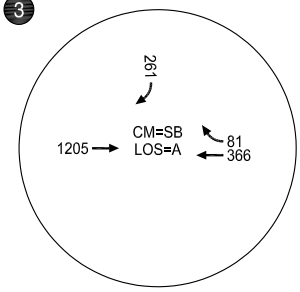
1 Lake Elmo Drive & Main Street



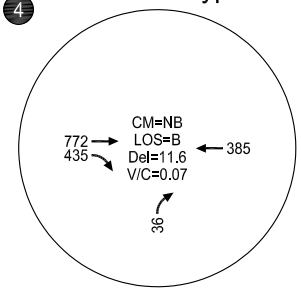
2 Lake Elmo Drive & Bench Boulevard



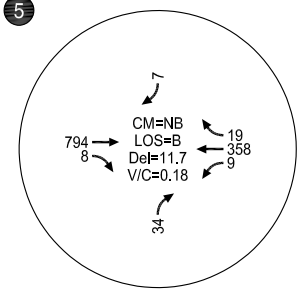
3 Airport Road & Alkali Creek Road



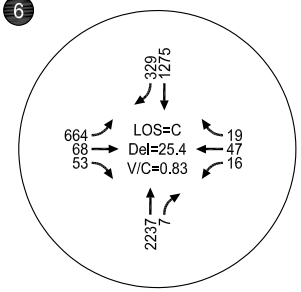
4 Airport Road & 6th Avenue Bypass



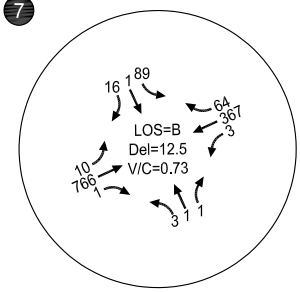
5 Airport Road & Swords Lane



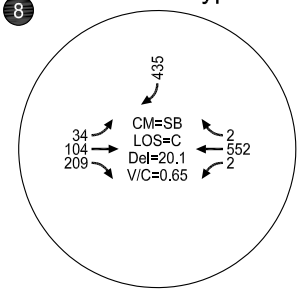
6 Airport Road & Main Street



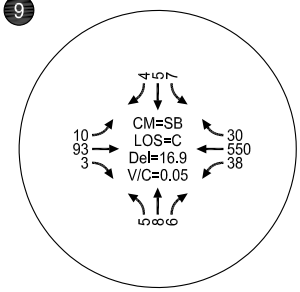
7 Alkali Creek Road & Bench Boulevard



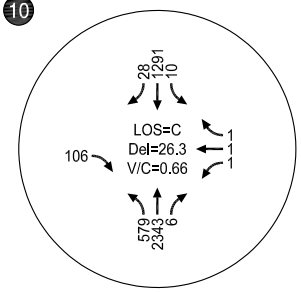
8 Aronson Avenue & 6th Avenue Bypass



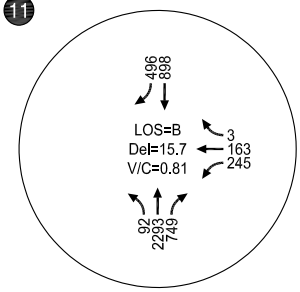
9 Aronson Avenue & Swords Lane



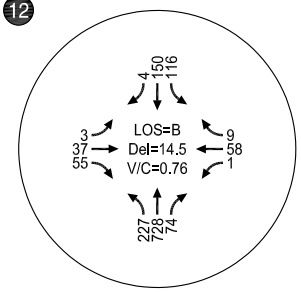
10 Aronson Avenue & Main Street



11 6th Avenue & Main Street*



12 Alkali Creek Road & Aronson Ave

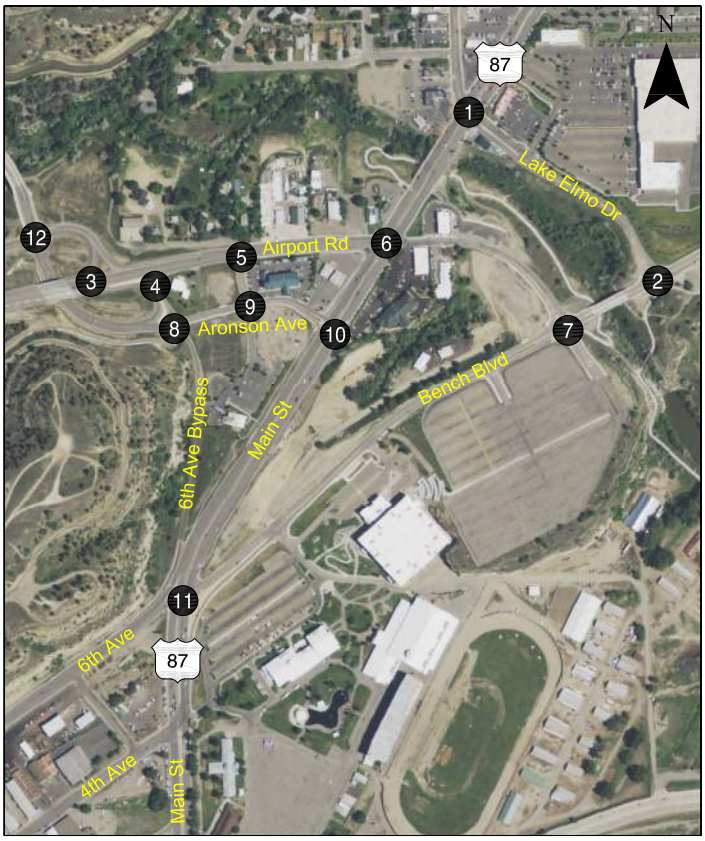


* HCM 6th Edition Methodology does not support intersection's configuration. Operation results were determined using HCM 2000 Methodology.

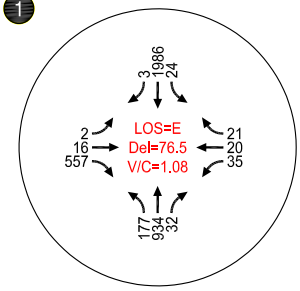
CM = Critical Movement
LOS = Level of Service (HCM 6th Edition)
Del = Delay (seconds) (HCM 6th Edition)
V/C = Volume-to-Capacity Ratio (HCM 2000)
Red text denotes operations exceed LOS E or F / volume-to-capacity ratio > 1.0

(Year 2018) Traffic Volumes and Operations Weekday PM Peak Hour Billings, MT

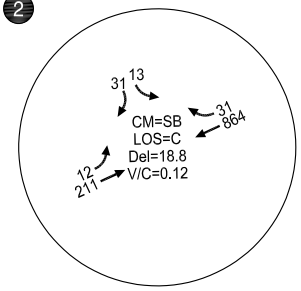
Figure 4



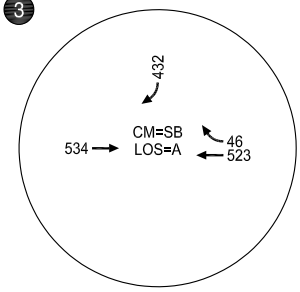
1 Lake Elmo Drive & Main Street



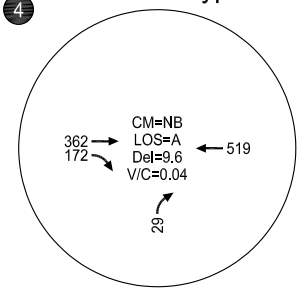
2 Lake Elmo Drive & Bench Boulevard



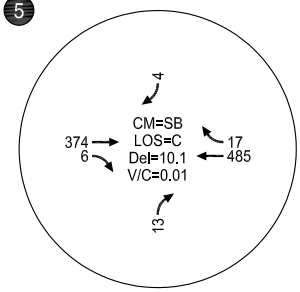
3 Airport Road & Alkali Creek Road



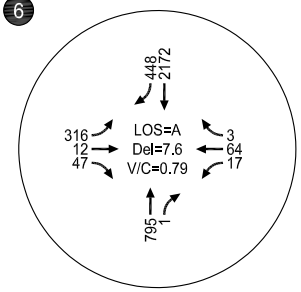
4 Airport Road & 6th Avenue Bypass



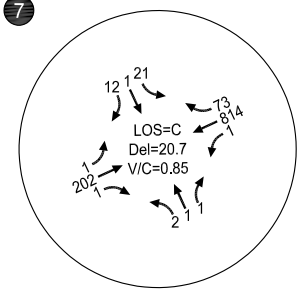
5 Airport Road & Swords Lane



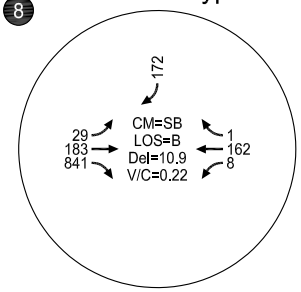
6 Airport Road & Main Street



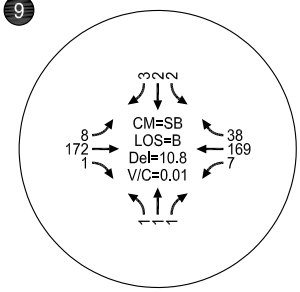
7 Alkali Creek Road & Bench Boulevard



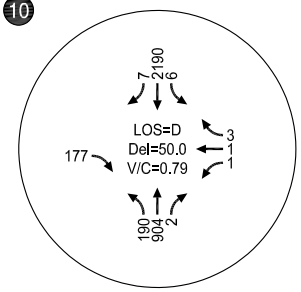
8 Aronson Avenue & 6th Avenue Bypass



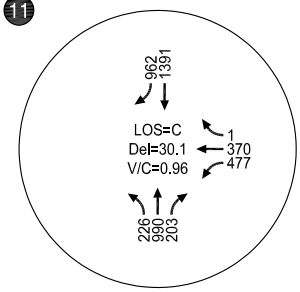
9 Aronson Avenue & Swords Lane



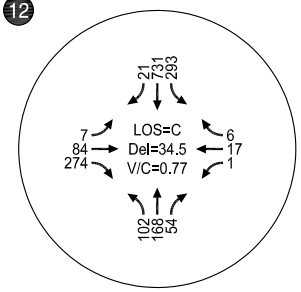
10 Aronson Avenue & Main Street



11 6th Avenue & Main Street*



12 Alkali Creek Road & Aronson Ave

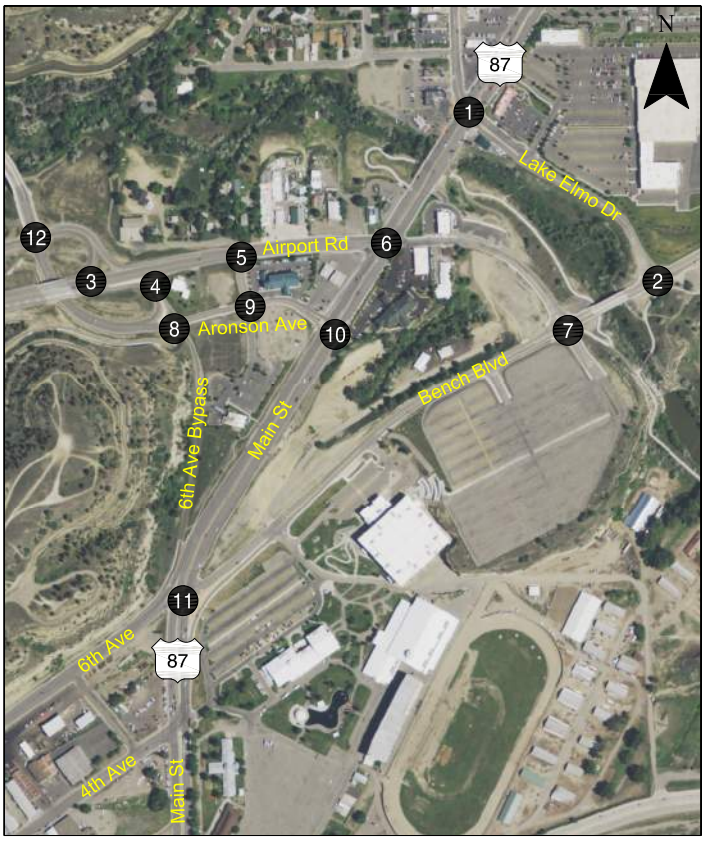


* HCM 6th Edition Methodology does not support intersection's configuration. Operation results were determined using HCM 2000 Methodology.

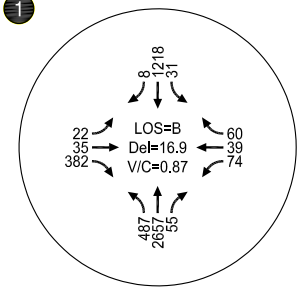
CM = Critical Movement
LOS = Level of Service (HCM 6th Edition)
Del = Delay (seconds) (HCM 6th Edition)
V/C = Volume-to-Capacity Ratio (HCM 2000)
Red text denotes operations exceed LOS E or F / volume-to-capacity ratio > 1.0

(Year 2022) Traffic Volumes and Operations Weekday AM Peak Hour Billings, MT

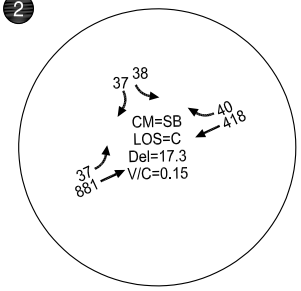
Figure 5



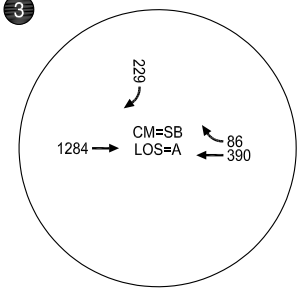
1 Lake Elmo Drive & Main Street



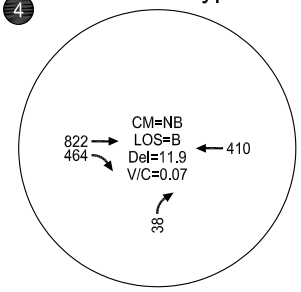
2 Lake Elmo Drive & Bench Boulevard



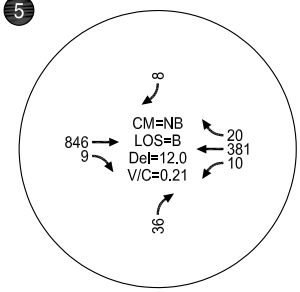
3 Airport Road & Alkali Creek Road



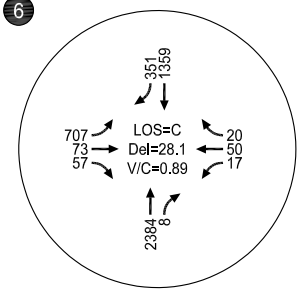
4 Airport Road & 6th Avenue Bypass



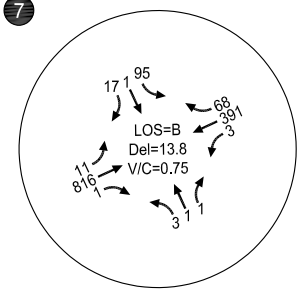
5 Airport Road & Swords Lane



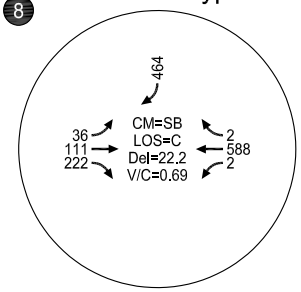
6 Airport Road & Main Street



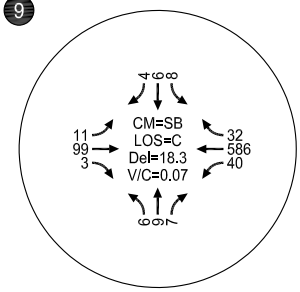
7 Alkali Creek Road & Bench Boulevard



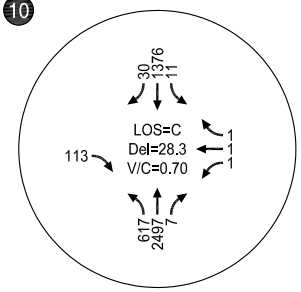
8 Aronson Avenue & 6th Avenue Bypass



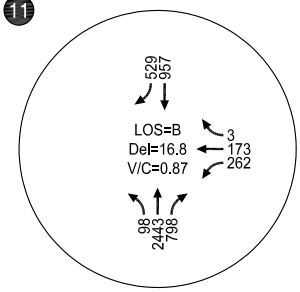
9 Aronson Avenue & Swords Lane



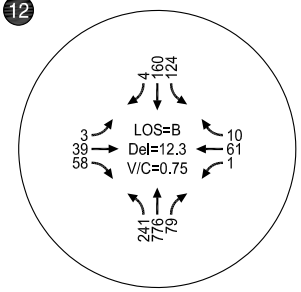
10 Aronson Avenue & Main Street



11 6th Avenue & Main Street*



12 Alkali Creek Road & Aronson Ave

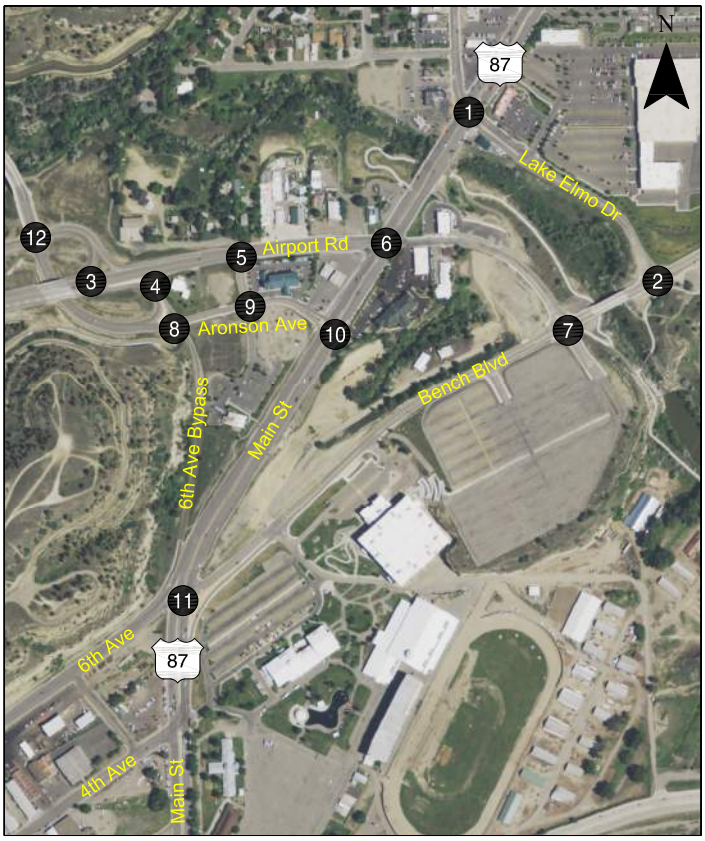


* HCM 6th Edition Methodology does not support intersection's configuration. Operation results were determined using HCM 2000 Methodology.

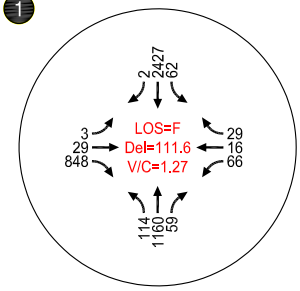
CM = Critical Movement
LOS = Level of Service (HCM 6th Edition)
Del = Delay (seconds) (HCM 6th Edition)
V/C = Volume-to-Capacity Ratio (HCM 2000)
Red text denotes operations exceed LOS E or F / volume-to-capacity ratio > 1.0

(Year 2022) Traffic Volumes and Operations Weekday PM Peak Hour Billings, MT

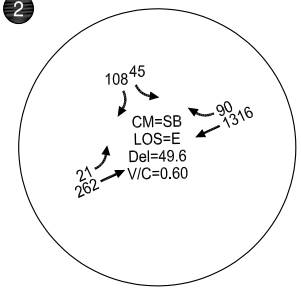
Figure 6



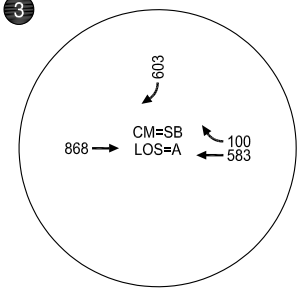
1 Lake Elmo Drive & Main Street



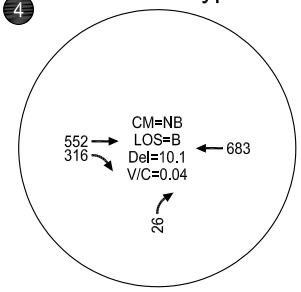
2 Lake Elmo Drive & Bench Boulevard



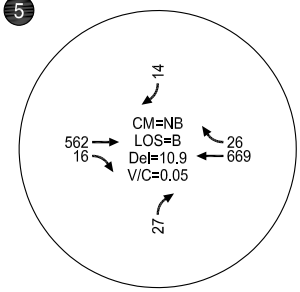
3 Airport Road & Alkali Creek Road



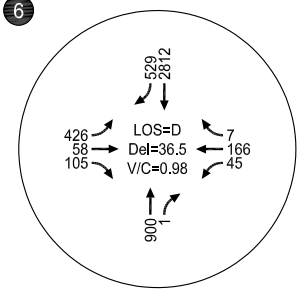
4 Airport Road & 6th Avenue Bypass



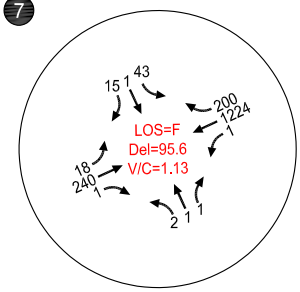
5 Airport Road & Swords Lane



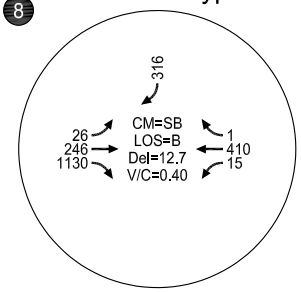
6 Airport Road & Main Street



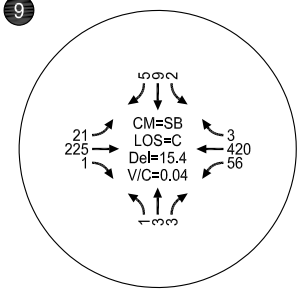
7 Alkali Creek Road & Bench Boulevard



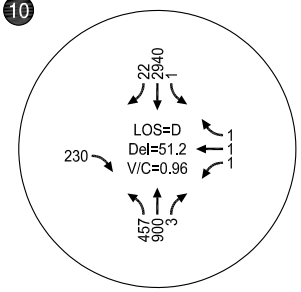
8 Aronson Avenue & 6th Avenue Bypass



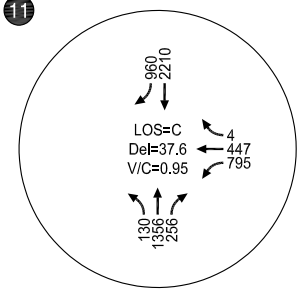
9 Aronson Avenue & Swords Lane



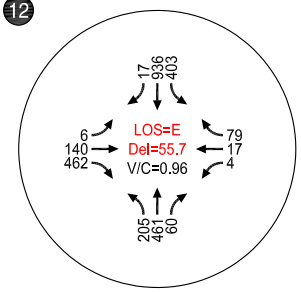
10 Aronson Avenue & Main Street



11 6th Avenue & Main Street*



12 Alkali Creek Road & Aronson Ave

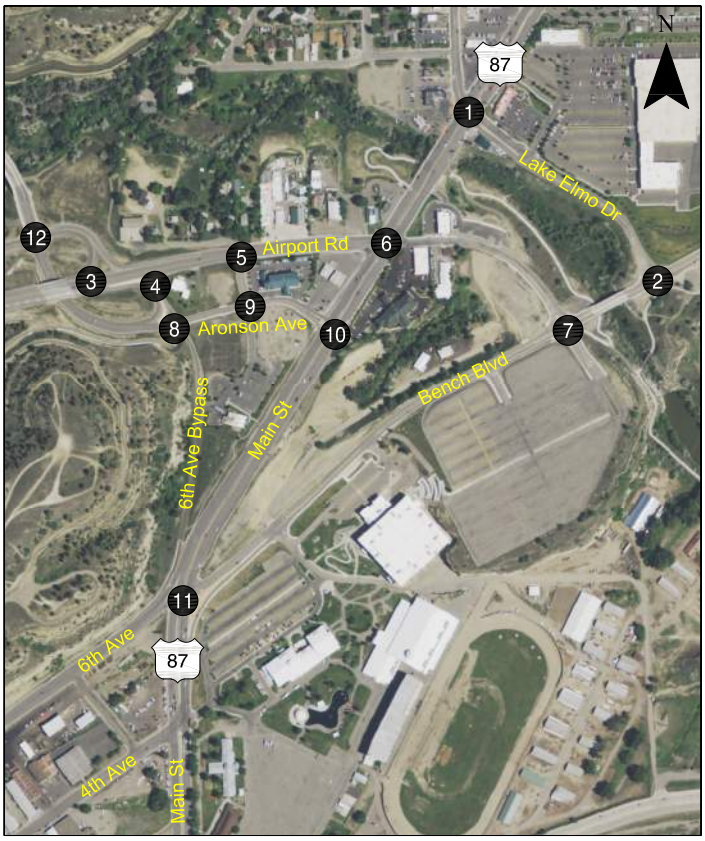


* HCM 6th Edition Methodology does not support intersection's configuration. Operation results were determined using HCM 2000 Methodology.

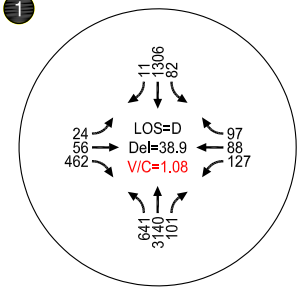
CM = Critical Movement
LOS = Level of Service (HCM 6th Edition)
Del = Delay (seconds) (HCM 6th Edition)
V/C = Volume-to-Capacity Ratio (HCM 2000)
Red text denotes operations exceed LOS E or F / volume-to-capacity ratio > 1.0

(Year 2040) Traffic Volumes and Operations Weekday AM Peak Hour Billings, MT

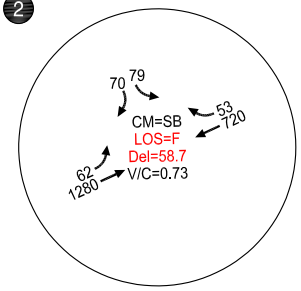
Figure 7



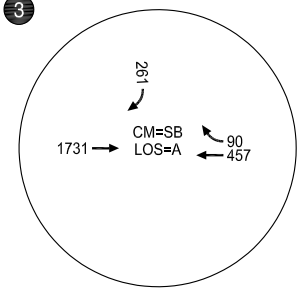
1 Lake Elmo Drive & Main Street



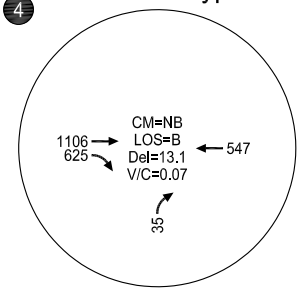
2 Lake Elmo Drive & Bench Boulevard



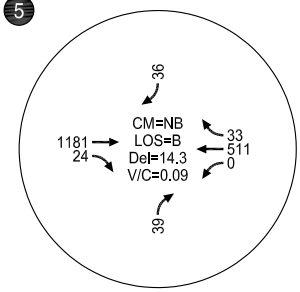
3 Airport Road & Alkali Creek Road



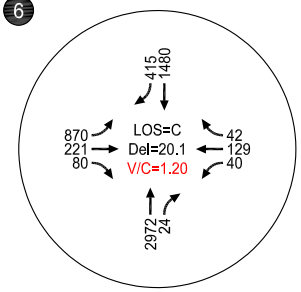
4 Airport Road & 6th Avenue Bypass



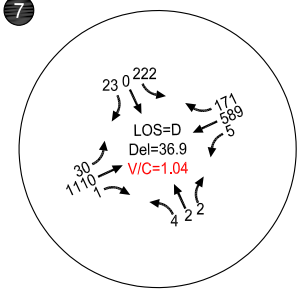
5 Airport Road & Swords Lane



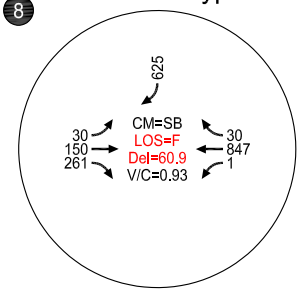
6 Airport Road & Main Street**



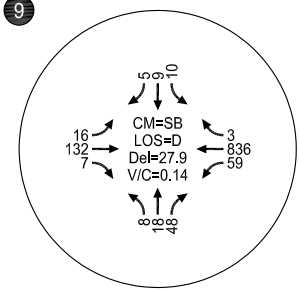
7 Alkali Creek Road & Bench Boulevard



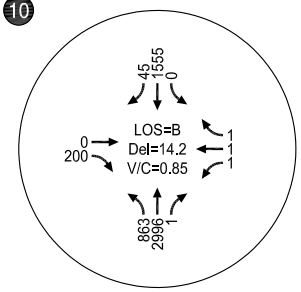
8 Aronson Avenue & 6th Avenue Bypass



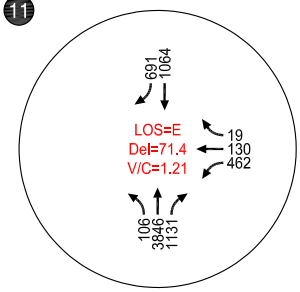
9 Aronson Avenue & Swords Lane



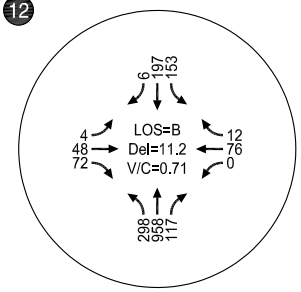
10 Aronson Avenue & Main Street



11 6th Avenue & Main Street*



12 Alkali Creek Road & Aronson Ave



* HCM 6th Edition Methodology does not support intersection's configuration. Operation results were determined using HCM 2000 Methodology.
** All movements projected to be under capacity based on HCM 6th Edition and VISSIM analysis.

CM = Critical Movement
LOS = Level of Service (HCM 6th Edition)
Del = Delay (seconds) (HCM 6th Edition)
V/C = Volume-to-Capacity Ratio (HCM 2000)
Red text denotes operations exceed LOS E or F / volume-to-capacity ratio > 1.0

(Year 2040) Traffic Volumes and Operations Weekday PM Peak Hour Billings, MT

Figure 8

OPERATIONS RESULTS

Figures 3 through 8 present a summary of LOS, delay, and v/c ratios at the study intersections. LOS and delay were calculated in Synchro using the HCM 6th (Reference 4) edition methodology and v/c ratios were calculated in Synchro using the HCM 2000 methodology. HCS 2010 Ramp analysis was used for the Alkali Creek Road and Airport Road intersection (#3 on the figures) and HCS 2010 Two-Way-Stop-Controlled (TWSC) analysis was used for the Aronson Avenue and 6th Avenue Bypass intersection (#8 on the figures). The traffic analysis summaries for the intersections under different conditions can be found in the following Appendices:

- Appendix A – Year 2018 (AM)
- Appendix B – Year 2018 (PM)
- Appendix C – Year 2022 (AM)
- Appendix D – Year 2022 (PM)
- Appendix E – Year 2040 (AM)
- Appendix F – Year 2040 (PM)

The following sections contain summaries of the traffic analysis during each condition and identifies intersections or movements that exceed capacity and other operational issues.

Existing Conditions (Year 2018)

Figures 3 and 4 show the year 2018 operations during the AM and PM peaks hours, respectively. During the AM and PM peak hours, all intersections operate at under capacity except for the Lake Elmo Drive and Main Street intersection, which has a v/c ratio of 1.01 during the AM peak hour. During the AM peak hour, the eastbound right turn volume is over 500 vehicles and is conflicting with the heavy southbound through volumes at the Lake Elmo Drive and Main Street intersection. The eastbound right movement takes time that is needed by the southbound through movement. To improve the operations (achieving a v/c of less than 1.0), there needs to be a second eastbound right turn lane or a free right turn lane.

Let Year Conditions (Year 2022)

Figures 5 and 6 show the year 2022 operations during the AM and PM peaks hours, respectively. The results were similar to the results of the existing conditions analysis.

Design Year Conditions (Year 2040)

Figures 7 and 8 show the year 2040 operations during the AM and PM peaks hours, respectively. It is worth noting that, although the v/c ratio calculated using HCM 2000 methodology of the Airport Road and Main Street intersection is greater than one during the PM peak hour, the calculated LOS (“C”), average intersection delay (20.1 seconds), and v/c ratios for individual movements calculated using HCM 6th Edition methodology indicate that the intersection will operate below capacity.

The Lake Elmo Drive and Main Street intersection is projected to operate over-capacity during AM and PM peak hours. To improve operations, there needs to be a second northbound left turn lane (641 vehicles projected for this movement) and the eastbound right turn improvements identified in the

existing conditions analysis. For these improvements to occur, a section of Main Street south of Lake Elmo Drive would need to be widened by one lane to accommodate an additional northbound left turn lane. A section of Lake Elmo Drive west of Main Street would need to be widened by two lanes to accommodate the following: a.) the second eastbound right turn lane, and b.) the receiving auxiliary lane for the second northbound left turn lane. The length of the receiving auxiliary lane plus roadway taper on Lake Elmo Drive extending northwest from Main Street would be approximately 1,230 feet. The auxiliary lane length was determined using NCHRP methodology (Reference 5) and the calculations are presented in Appendix G. Additionally, the Billings Bypass and Inner Belt Loop projects are two large projects that when implemented are anticipated to have an impact on traffic patterns at this intersection.

Based on the above assessment, these improvements are not recommended as part of this project due to the potential impacts with widening Main Street and Lake Elmo Drive, as well as the anticipated changes to future traffic patterns with the Billings Bypass and Inner Belt Loop projects. Therefore, it is recommended that the intersection widening projects be revisited after the implementation of the Billings Bypass and Inner Belt Loop projects.

VISSIM Model Results

As part of the operations analysis for year 2040, results from a microsimulation analysis performed during the Concept Study were evaluated for the AM and PM peak hours. The microsimulation models were created using PTV VISSIM and were calibrated to local driving conditions. The results from this VISSIM analysis are included in this report because VISSIM can be a better indicator of system performance than Synchro. While Synchro focuses its analysis on individual intersections, VISSIM creates a dynamic environment that, a.) accounts for the routing of traffic through intersection and driveways b.) accounts for constraints and bottlenecks at roadways and intersections surrounding the study area that may limit the number of vehicles traveling through the roadway system.

Table 2 presents the VISSIM operations results for year 2040 during the AM and PM peak hours. Included in the table are the delays for individual movements at the Airport Road and Main Street intersection and the Aronson Avenue and Main Street intersection. The VISSIM model did not account for two westbound through lanes at the Airport Road and Main Street intersection, resulting in higher delays for westbound movements than from the results of the Synchro analysis.

Table 2 Year 2040 VISSIM Operations Results

Intersection	Scenario	Delay by Movement (seconds)*											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Airport Road & Main St	2040 AM	-	9.5	0.0	-	8.8	8.5	51.5	55.0	30.2	50.5	59.9	61.1
	2040 PM	-	20.4	19.8	-	27.8	14.7	58.2	69.4	57.0	55.9	93.5	77.2
Aronson Ave & Main St	2040 AM	54.5	0.4	-	-	4.1	5.7	-	-	-	-	-	-
	2040 PM	31.1	9.8	-	-	13.9	14.4	-	-	-	-	-	-
*Northbound (NB) Southbound (SB) Eastbound (EB) Westbound (WB) - Left (L) Right (R) Through (T)													

Out-of-Scope Intersection Operations

Some of the intersections that underwent operations analysis are outside the scope of work for the intersection design process. Although these intersections are not expected to be part of this design project, the findings and potential mitigations to improve operations at these intersections are presented here and consistent with the findings from the Concept Study.

During year 2040 traffic conditions, the Alkali Creek Road and Bench Boulevard intersection is projected to have a v/c ratio of 1.13 and 1.04 during the AM and PM peak hours, respectively. To improve operations, additional lanes on Bench Boulevard would need to be installed to accommodate the heavy volumes of through traffic on Bench Boulevard.

Intersection Queue Length Findings

Table 3 presents 95th percentile queue lengths from the Synchro analysis for existing (year 2018) and let year (year 2022) conditions and VISSIM average queue lengths for design year conditions (year 2040) for AM and PM peak hours. These queue lengths will help to determine the left and right turn lanes required storage lengths and assess potential spillback between intersections. The queue lengths used to determine storage lane lengths are also identified later in this report in the schematic intersection figures.

Table 3 Intersection 95th Percentile Queue Lengths

Intersection	Movements*	Synchro 95th Percentile Queue Lengths (ft)				VISSIM Queue Lengths	
		2018		2022		2040	
		AM	PM	AM	PM	AM	PM
Lake Elmo Dr & Main St	NBL	191	401	204	440	219	791
	EBR	727	295	806	323	979	272
	NBT	108	492	114	604	328	746
	SBT	580	449	645	489	1287	603
Airport Rd & Main St	EBL	126	285	134	306	245	568
	NBT	149	430	158	656	338	457
	SBT	183	131	205	140	747	533
Aronson Ave & Main St	NBL	124	390	131	408	388	370
	SBL	0	3	0	3	0	0
	NBT	13	416	6	10	81	604
	SBT	17	213	19	112	559	532
6th Ave & Main St	NBT	156	610	173	643	421	697
	SBT	183	157	308	152	N.A.**	N.A.**
Aronson Ave & Alkali Creek Rd	NBL	62	74	78	83	162***	98
*Northbound (NB) Southbound (SB) Eastbound (EB) Westbound (WB) - Left (L) Right (R) Through (T)							
**Not included in the report because VISSIM analysis does not include a 3rd southbound through lane							
***Synchro 95th percentile queue length							

The key findings related to intersection queue lengths during year 2040 conditions are as follows:

- The eastbound left turn queue length at the Airport Road and Main Street intersection is projected to extend 568 feet and it is likely there will not be enough space to carry three left turn lanes for this distance in the design. However, since Airport Road (to the west of the intersection) feeds directly into the left turn lanes and the left turn is a protected movement, shorter storage lengths are acceptable as shown in the Concept Study. Two of the left turn lanes have a storage length of 600 feet and the third left turn lane has a storage length of 450 feet. This design is sufficient for the projected 95th percentile queues for this movement.
- The southbound left turn queue length at the Aronson Avenue and Main Street intersection is projected to be minimal due to the low volumes on the movement. The storage length for that movement should be developed in the design process and be a minimum of 50 feet.
- As signal timing is developed for the intersections on Main Street, they will require coordination to mitigate spillback effect into upstream intersections.

Southbound Through Lane Queue at 6th Avenue and Main Street

The project team is investigating whether the dual right turn lanes should be modified to a single right turn lane and a third through lane at this intersection. This intersection reconfiguration would provide three southbound travel lanes as maintained on Main Street between 4th Avenue and US 87 (when the Bypass project is completed). Therefore, a detailed queue analysis is reported to assist with this determination.

The southbound queue at the 6th Avenue and Main Street intersection must be considered when determining the feasibility of converting the inside southbound right turn lane to a through lane. If the southbound through queue extends more than approximately 610 feet, it will block southbound vehicles from entering the right turn lane. This concept is illustrated in Figure 9, along with the locations of the southbound-through 95th percentile queue lengths estimated in Synchro. The 95th percentile queue length during the 2040 AM scenario is 696 feet and the only queue length to extend past the beginning of the southbound right turn lane.

Figure 9 Southbound-Through 95th Percentile Queue Length Locations at 6th Ave/Main St

Southbound Right Turn Lane at Aronson Avenue and 6th Avenue Bypass

At Aronson Avenue and 6th Avenue Bypass intersection, the southbound right turn is proposed to be modified from a free flow condition to a yield condition, so that the 2nd westbound through lane can be developed on Aronson Avenue. Therefore, a detailed queue analysis is reported to assist with this determination.

The southbound right turn queue was analyzed at the Aronson Avenue and 6th Avenue Bypass to determine if the queue would spill into the deceleration lane of Airport Road. The maximum queue length calculated in HCS 2010 TWSC (adjusted for yield-control) for the southbound right turn was 477 feet during the year 2040 PM peak hour. The minimum deceleration length for the exit off Airport road is 446 feet (AASHTO Stopping Sight Distance, Reference 6) assuming a speed of 50 mph and a 3% downgrade. The total length of the existing deceleration lane and existing storage for the southbound right turn is 1,050 feet. There is a gap of 127 feet between the end of the 95th percentile queue length (year 2040 PM peak hour) and the end of the deceleration lane. This concept is illustrated in Figure 10. The existing storage length is adequate, but the queue lengths should be monitored as the traffic volumes grow to ensure there is no conflict between queues and the deceleration lane.

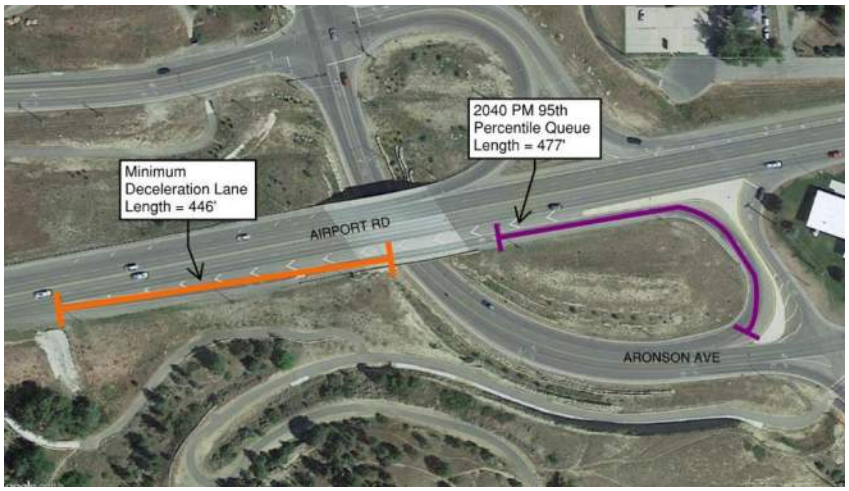


Figure 10 Southbound Right Turn Lane at Aronson Avenue and 6th Avenue Bypass

A sight-distance evaluation will be performed and documented for the southbound right turn movement at the Aronson Avenue and 6th Avenue Bypass intersection as part of the roadway design activity.

MetraPark Sensitivity Test

Traffic count data was obtained during an (PBR) event in 2015 at MetraPark. This data was used to perform a sensitivity-operations analysis on the study intersections with the recommended alternative in place. The purpose of this analysis was to test the operations at the Airport Road and Main Street intersection (westbound through movement), the Lake Elmo Road and Main Street intersection (southbound left movement), the Bench Boulevard and Airport Road intersection (eastbound left movement), and the Lake Elmo Road and Bench Boulevard intersection to identify any issues that could arise from the re-routing of MetraPark event traffic from the proposed project.

Event Traffic Entering

During the beginning of a major event (identified as 6:45 to 7:45 p.m.), the analysis focused on the traffic re-routed from the southbound-left movement at the Airport Road and Main Street intersection to the southbound-left movement at the Lake Elmo Drive and Main Street intersection. Figure 11 shows the volumes used for this portion of the analysis. No adjustments were made to the collected traffic count data.

Figure 11 MetraPark Traffic Volumes (Entering)

All of the intersections are projected to operate under capacity during a major event with no significant issues. The southbound left movement at the Lake Elmo Drive and Main Street intersection experiences a 95th percentile queue length of 118 feet, less than the existing storage length of 300 feet.

Sensitivity Test

100 additional vehicles were re-routed to the southbound left turn movement at the Main Street and Lake Elmo Drive intersection and to the left turn at the Airport Road and Bench Boulevard intersection as part of the sensitivity test during the "entering" scenario. The resulting southbound-left queue length extended to 284 feet, still less than the existing storage length of 300 feet, and all affected intersections still operated under capacity.

Event Traffic Exiting

At the end of a major event (identified as 10:00 to 11:00 p.m.), the analysis focused on the traffic traveling westbound at the Airport Road and Main Street intersection. Figure 12 shows the traffic volumes used for this portion of the analysis. No adjustments were made to the collected traffic count data.

Figure 12 MetraPark Traffic Volumes (Exiting)

The Airport Road and Main Street intersection is projected to operate over-capacity with the existing PM peak hour signal timings but operate under capacity and at LOS "D" with the following improvements:

- Modify the westbound right-only lane to a shared through-right lane and keep the westbound shared through-left lane (already assumed in prior analysis)
- Modify the eastbound and westbound movements to split phasing

- Coordinate the westbound movements between the Airport Road/Main Street and Airport Road/Bench Boulevard intersections

Based on this analysis, the project team recommends that MDT work with MetraPark to develop and implement an event management plan that considers the above recommendations. A special event signal timing plan is recommended for operation during MetraPark events. It should also be noted that a major event with an earlier start time that coincides with the PM peak hour (5:00 – 6:00 p.m.) may put intersections discussed in this section over capacity. The traffic analysis worksheets for the MetraPark sensitivity test are shown in Appendix H.

ROUTING CONSIDERATIONS

With the removal of the northbound and southbound left-turns at the Main Street and Airport Road intersection, the routing changes for freight traffic and vehicles entering/exiting MetraPark. This section displays changes in routing and analyzes potential improvements to consider for bicycle and pedestrian routes in the project area.

Pedestrian and Bicycle Routes

Pedestrian and bicycle routes were identified in the project area to analyze existing connections and identify potential areas for improvement. Figure 13 shows existing facilities, proposed facilities based on the Billings Area Bikeway and Trail Master Plan (Reference 7), and potential improvements for consideration with the design. Potential improvements for consideration are discussed in Table 4.

Table 4 Potential Improvements to Pedestrian and Bicycle Routes

Number on Figure 13	Potential Improvement	Purpose	Recommendation
1	Add a crosswalk on the southern leg of the Lake Elmo Drive and Main Street intersection	Provides pedestrians on the south side of Lake Elmo Drive the ability to cross Main Street without having to go out of direction and cross three legs (East, North, and West) of the intersection versus only crossing one leg (South)	Include with project.
2	Add a crosswalk on the southern leg of the Aronson Avenue and Main Street intersection	Provides pedestrians on the south side of Aronson Avenue the ability to cross Main Street without having to go out of direction and cross three legs (East, North, and West) of the intersection versus only crossing one leg (South)	Include with project.
3	Add sidewalks on Swords Lane between Airport Road and the western Multi-Use Trail connection	Fills gap for pedestrians between sidewalk on Airport Road and multi-use trail to the west of Swords Lane	Include with project.
4	Improve the crossing treatment on the southern leg of the Aronson Avenue and 6th Avenue Bypass Intersection (e.g. Rectangular Rapid Flashing Beacon (RRFB))	Provides pedestrians with an active crossing treatment to alert drivers when a pedestrian is present	This item was discussed with MDT on July 26, 2017. Kittelson reviewed the pedestrian counts (2 – AM peak period, 4 – PM peak period) for this location, which were low and therefore, recommend not including an RRFB with the project.
5	Improve the crossing treatment where the 6th Avenue Bypass meets Main St (e.g. RRFB)	Provides pedestrians with an active crossing treatment to alert drivers when a pedestrian is present	This item was discussed with MDT on July 26, 2017. Kittelson reviewed the location further regarding potential pedestrian

			activity and deemed it low; therefore, recommend not including an RRFB with the project.
6	Add a crossing treatment on the southwest leg of the 6th Avenue N and 7th Street intersection	Provides pedestrians a crossing across Main Street without having to go out of direction to the crossing at Aronson Ave (2000 feet to the North) or at 13th St (2300 feet to the Southwest)	Outside of scope of work for this project; include with future pedestrian and bicycle projects on 6th Avenue N

MetraPark Routing

Figure 14 shows all routes to and from the MetraPark after the implementation of recommended improvements. The storage lengths at the Airport Road and Main Street intersection and the Lake Elmo Drive and Main Street intersection accommodate the projected queue lengths from the re-routing of traffic. Shared through-left and shared through-right lanes (westbound) are recommended at the Airport Road and Main Street intersection to accommodate traffic exiting MetraPark during events.

Truck Routing

The Airport Road and Main Street intersection resides on the Camino Real International Trade Corridor that connects Canada, United States, and Mexico, and is a junction for freight trips along the Airport Road and Main Street corridors. Figure 15 shows the existing truck routes and the new truck routes after the inclusion of the project. The only change is the re-routing of the northbound left-turn traffic from the Airport Road and Main Street intersection to the new traffic signal at the Aronson Avenue and Main Street intersection and continues to the Alkali Creek Road and Aronson Avenue intersection loop-ramp to access Airport Road westbound. Advanced signing and sign structures for truck routing are required as part of the project design and will be addressed during the alignment and grade traffic design phase (Activity 112) of the project.

Access Management

Access to driveways in the study area will be modified as part of the design. Figures 16 through 21 display the recommended movement restrictions for each driveway. A raised median is recommended on Airport Road from the intersection at Swords Lane to the intersection at Main Street to eliminate left turn access to driveways. The raised median would reduce conflicts between left turn movements and through movements on a four-lane roadway with high traffic speeds and volumes, as well as crossing the triple left turn lanes with the project. U-turns will be allowed on the eastbound left turn movement at the Airport Road and Main Street intersection to allow for business access.

RECOMMENDED LANE GEOMETRY, STORAGE LENGTHS, AND ACCESS CONFIGURATIONS AT STUDY INTERSECTIONS

Figures 16 through 20 identify the recommended lane geometry, storage lengths, and access configuration at the intersections for the proposed design. Potential improvements identified in this report's operational analysis are also noted for consideration by the project team.

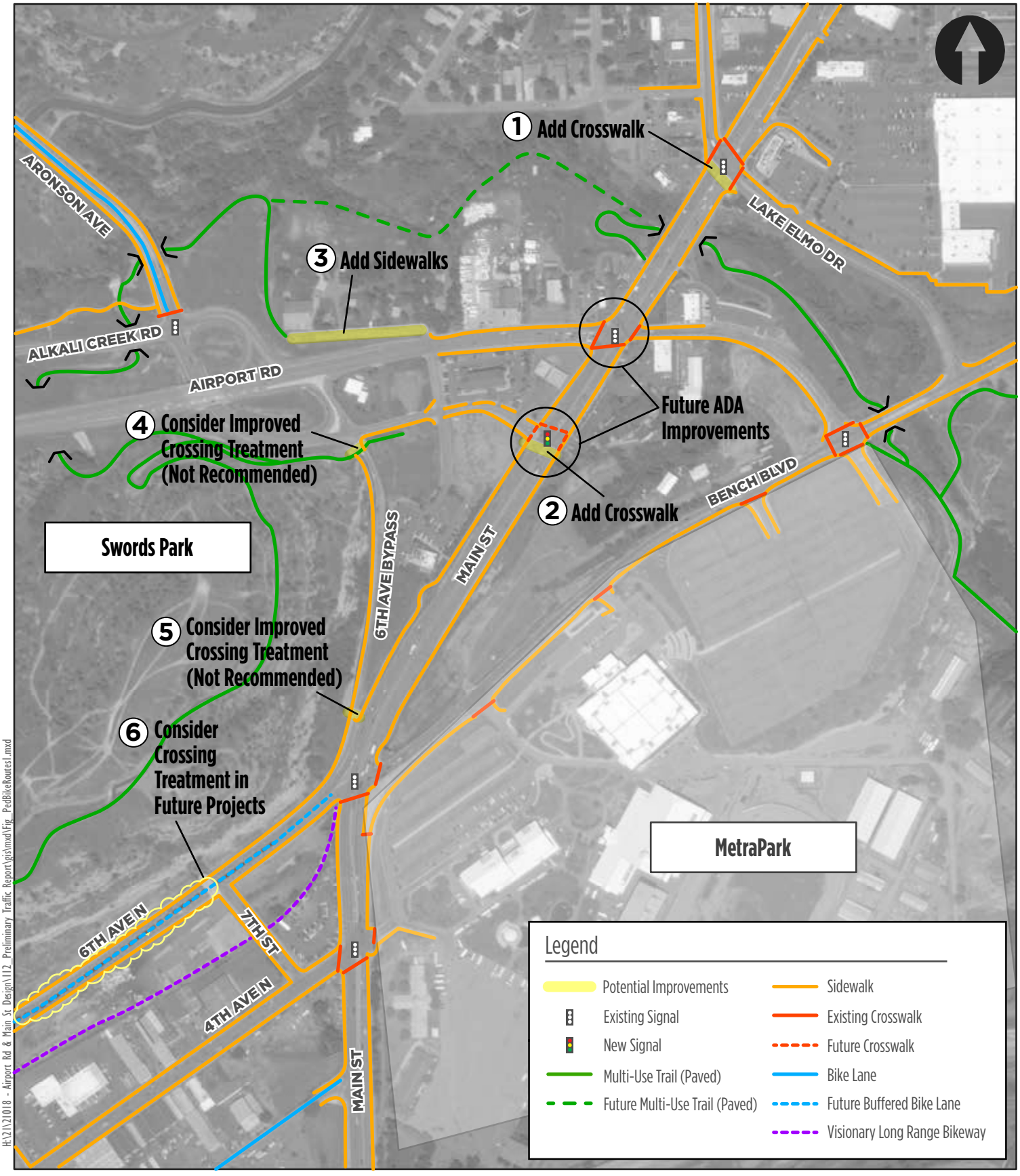
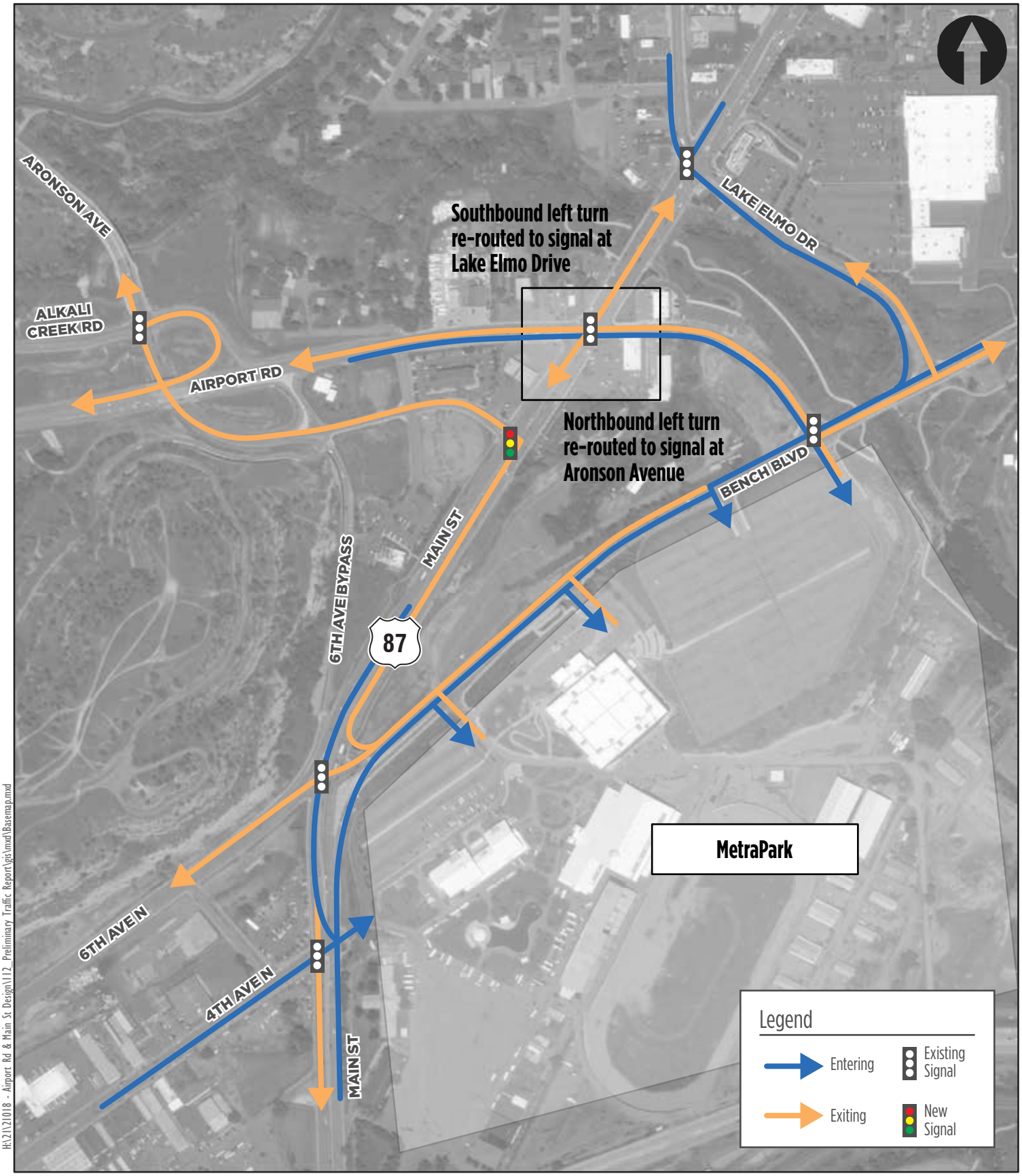


Figure 13

Pedestrian and Bicycle Routes Potential Improvements

KITTELSON & ASSOCIATES

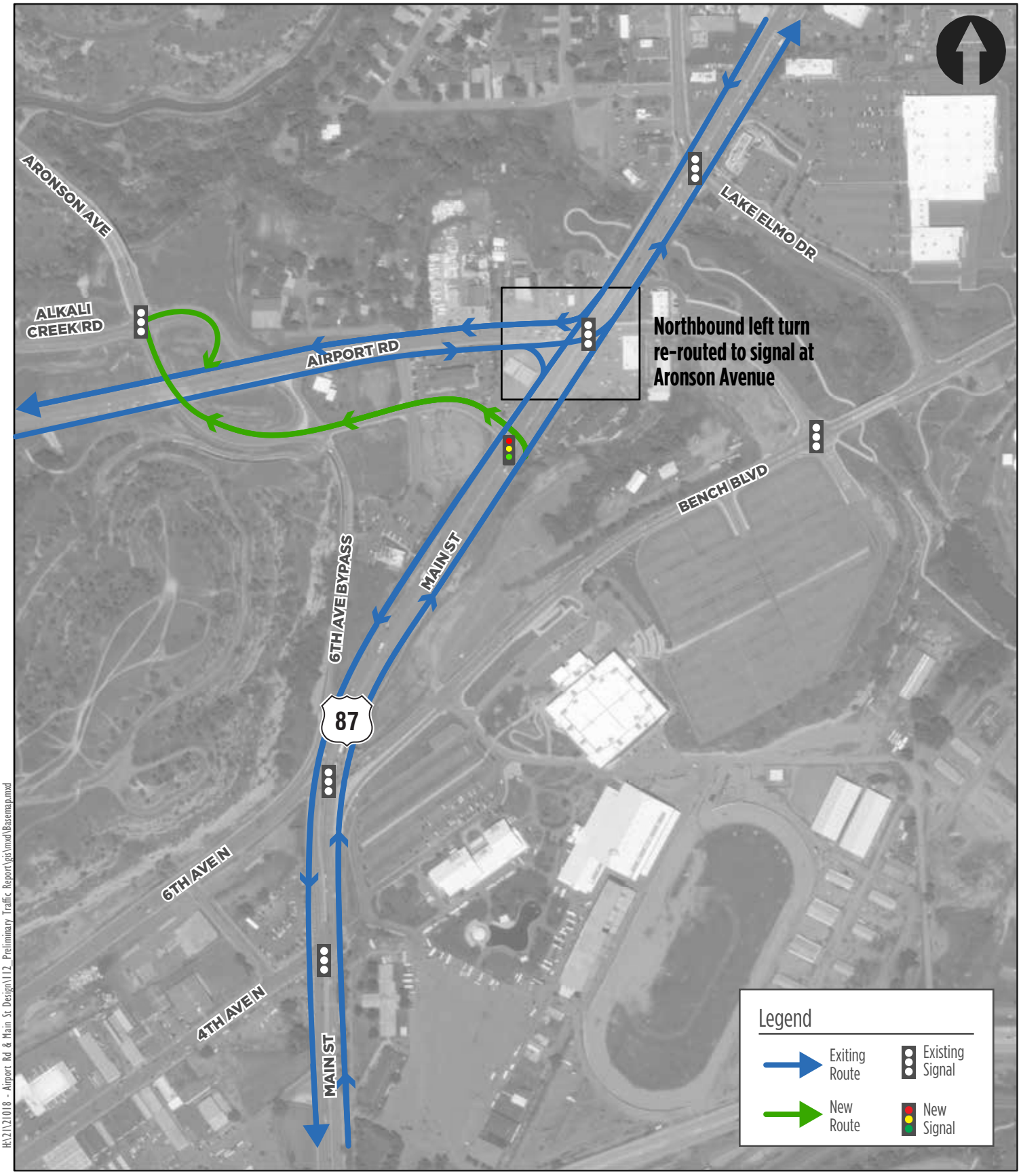


H:\21\210018 - Airport Rd & Main St Design\112_Preliminary Traffic Report\gis\mxd\Basemap.mxd

KITTELSON & ASSOCIATES

Figure 14

MetraPark Event Routes for Vehicles

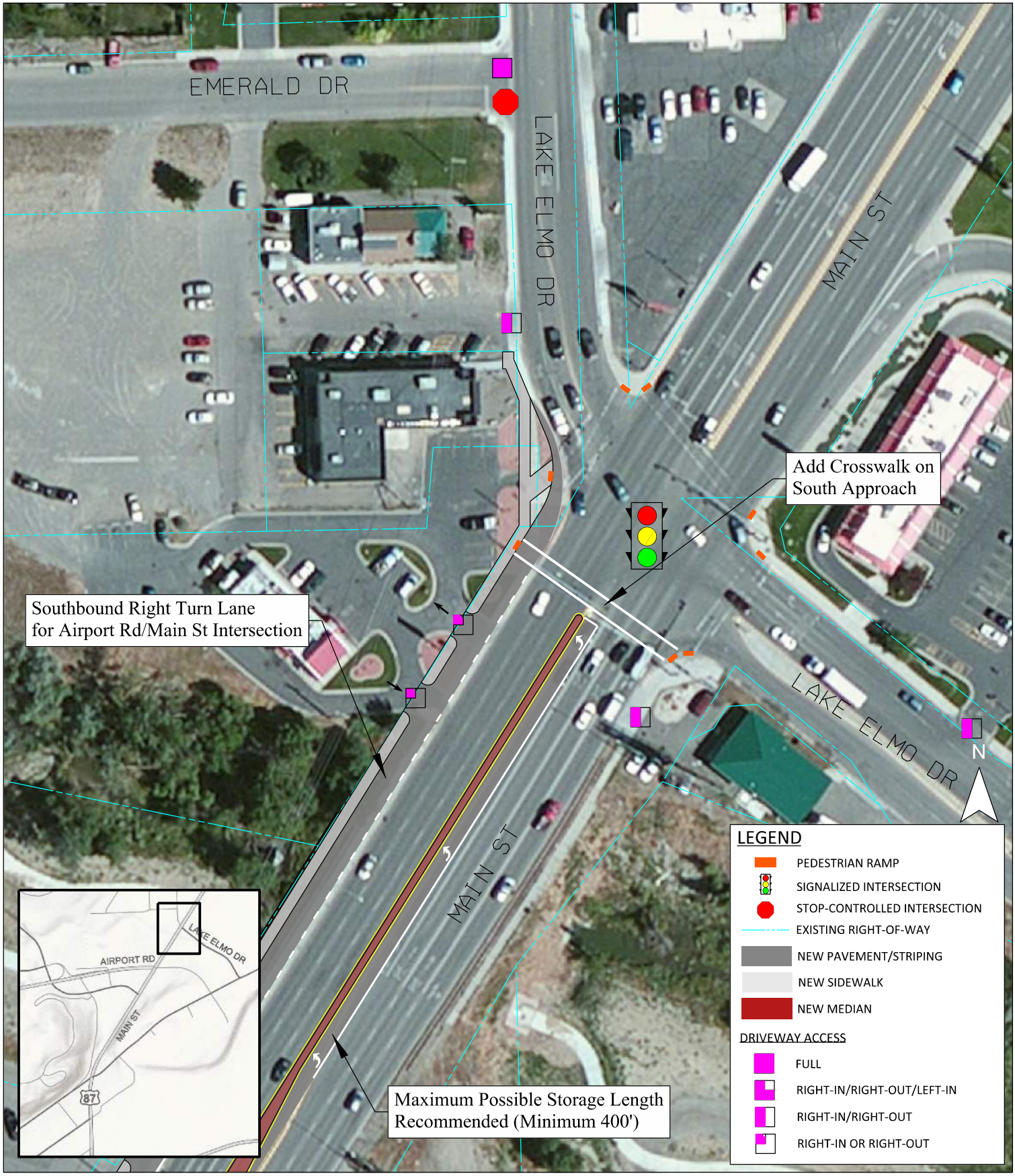


H:\21\21018 - Airport Rd & Main St Design\112_Preliminary Traffic Report\gis\mxd\Basemap.mxd

KITTELSON & ASSOCIATES

Figure 15

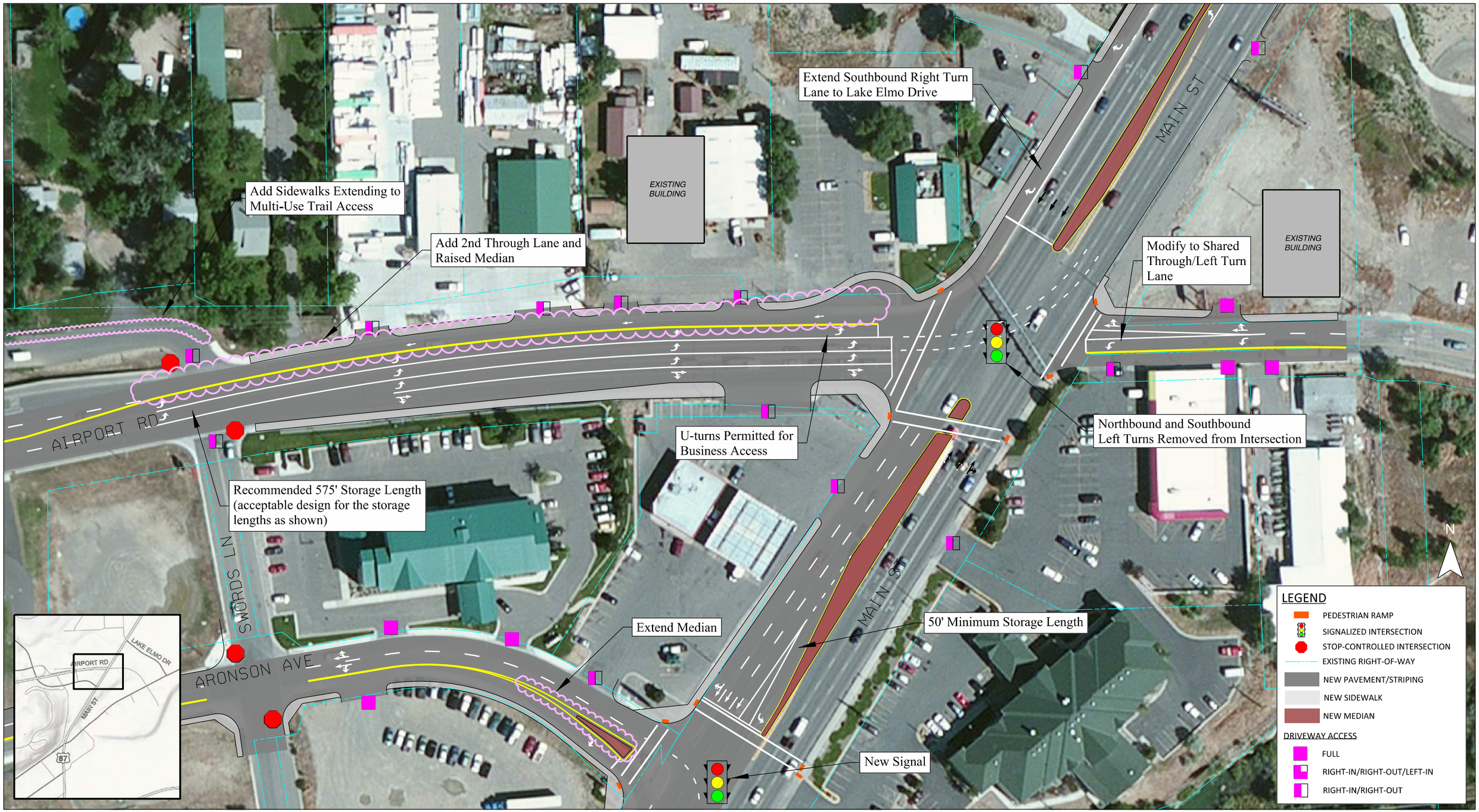
Truck Routes



NOT TO SCALE

INTERSECTION CONFIGURATION
LAKE ELMO DRIVE AND MAIN STREET

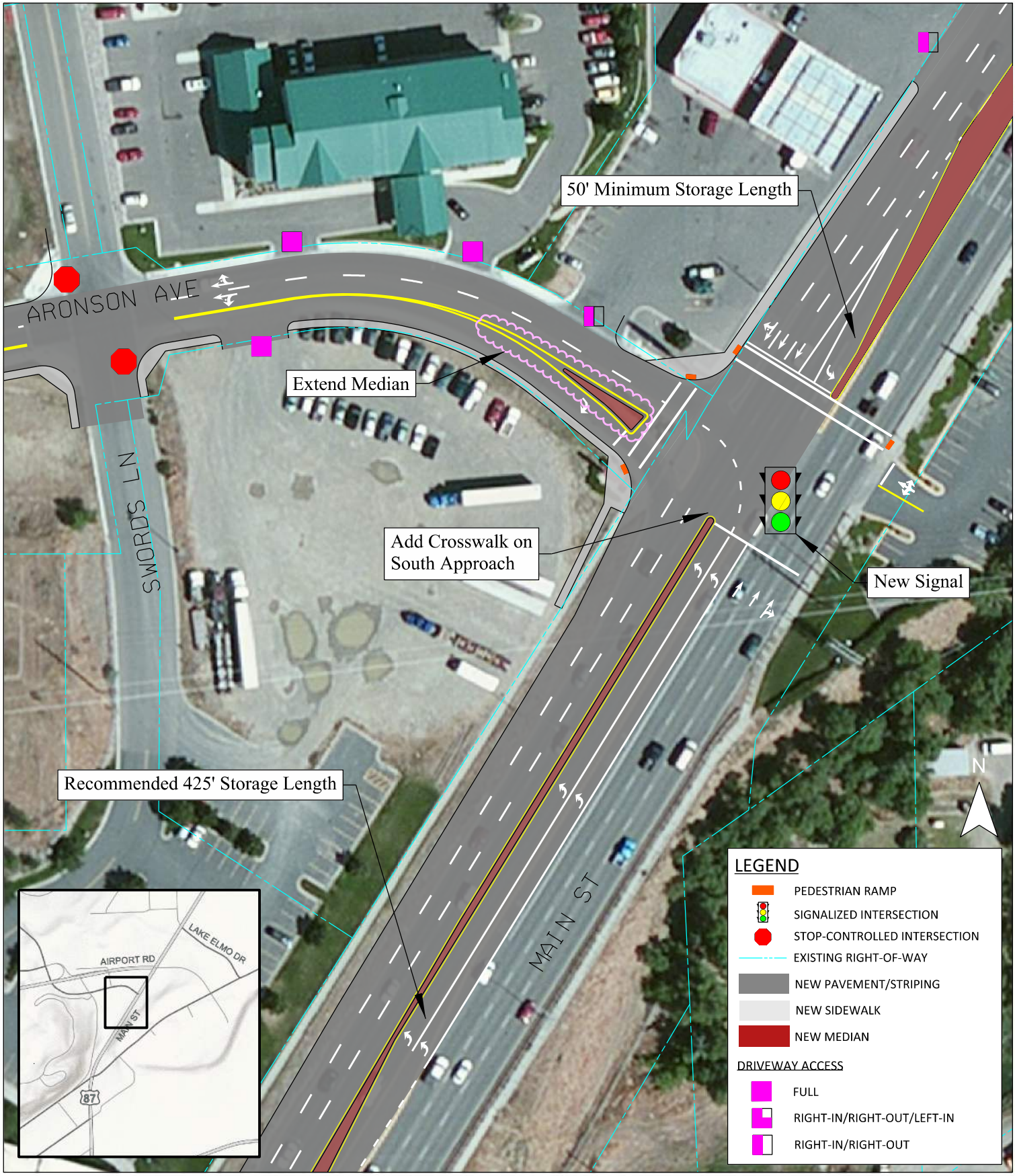
FIGURE 16



NOT TO SCALE

INTERSECTION CONFIGURATION
AIRPORT ROAD AND MAIN STREET

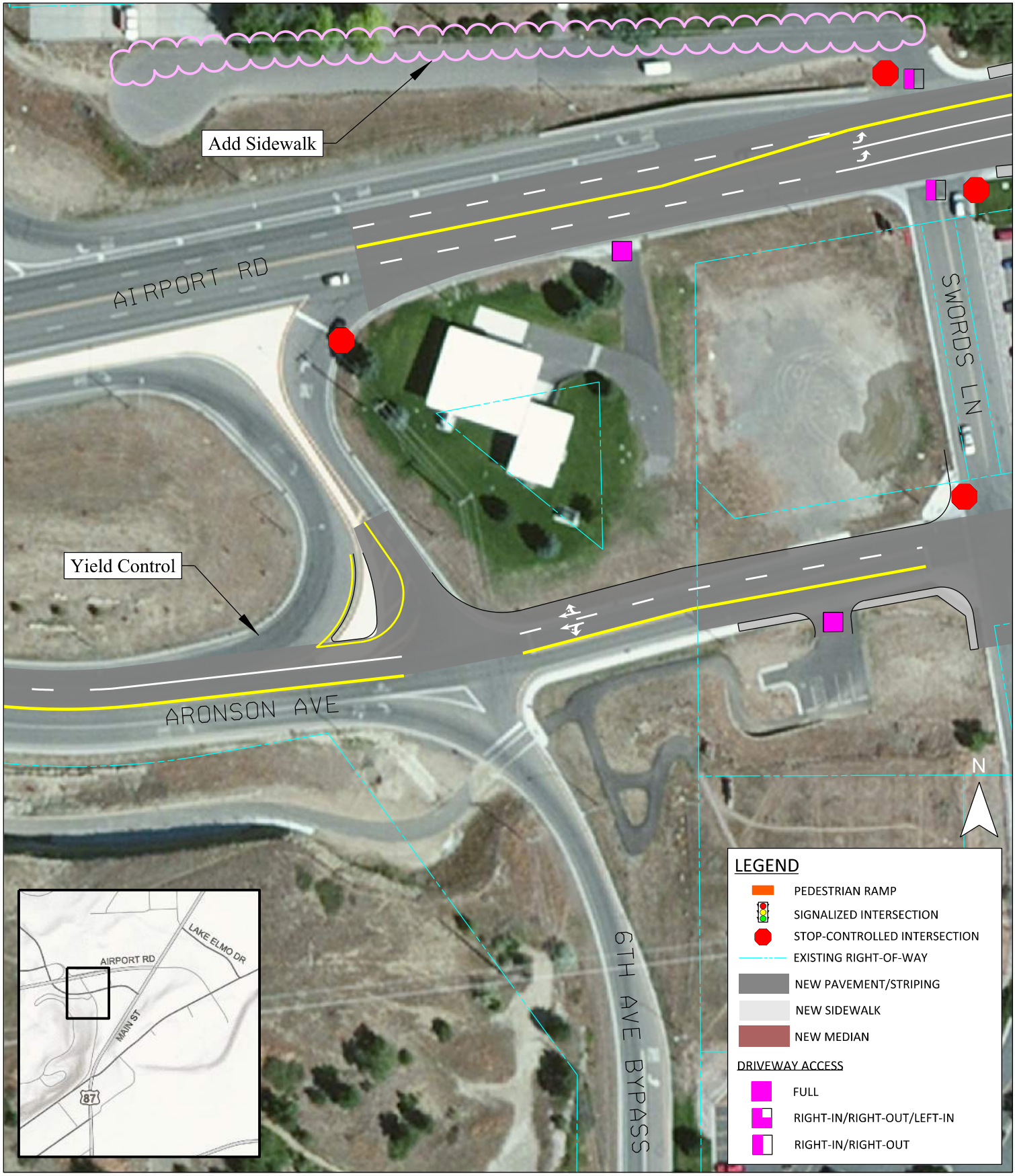
FIGURE
17



NOT TO SCALE

INTERSECTION CONFIGURATION
ARONSON AVENUE AND MAIN STREET

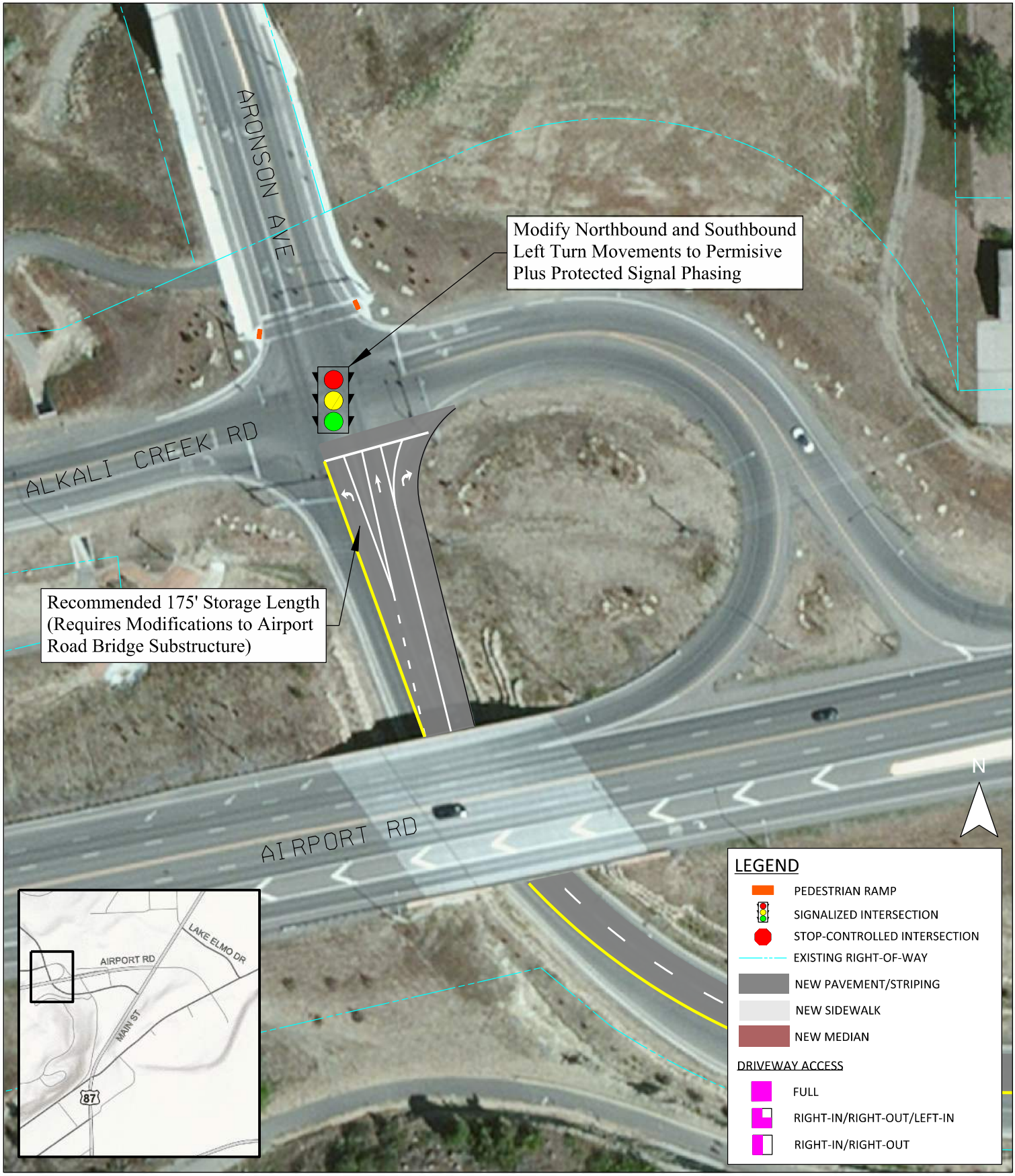
FIGURE
18



NOT TO SCALE

INTERSECTION CONFIGURATION
ARONSON AVENUE AND 6TH AVENUE BYPASS

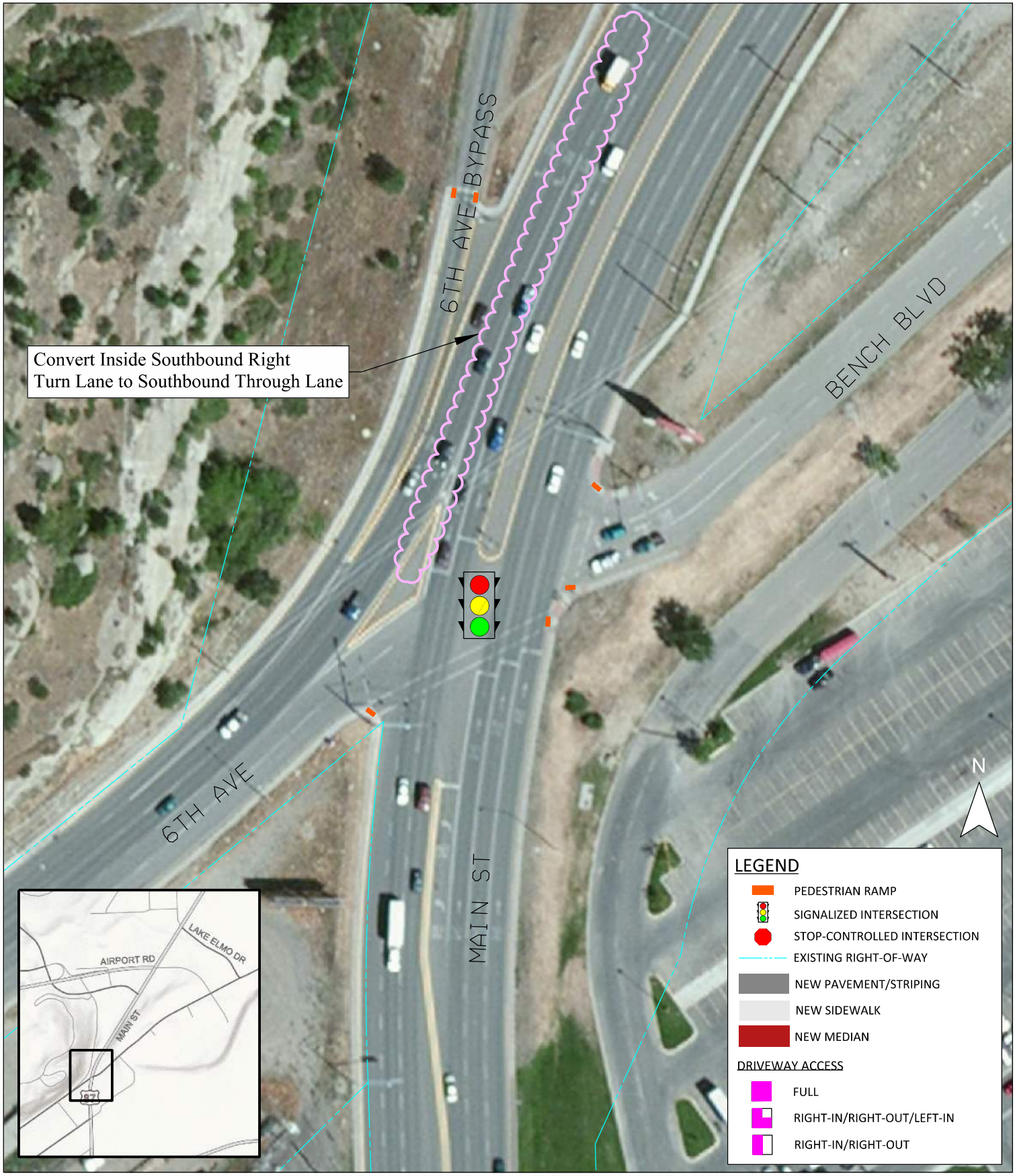
FIGURE 19



NOT TO SCALE

INTERSECTION CONFIGURATION
ARONSON AVENUE AND ALKALI CREEK ROAD

FIGURE 20



NOT TO SCALE

INTERSECTION CONFIGURATION
6TH AVENUE AND MAIN STREET

FIGURE
21

REFERENCES

1. Montana Department of Transportation. *Consultant Design Manual.* 2017.
2. Kittelson & Associates, Inc. *Billings Airport Road and Main Street Concept Study*. September, 2016.
3. Montana Department of Transportation. *Functional Classification Map.* 2018.
4. Transportation Research Board. *Highway Capacity Manual*. 2016.
5. National Cooperative Highway Research Program. *Guidelines on the Use of Auxiliary Through Lanes at Signalized Intersections*. 2011.
6. American Association of State Highway and Transportation Officials. *Geometric Design of Highways and Streets*. 2004.
7. City of Billings/Yellowstone County. *Billings Area Bikeway and Trails Master Plan*. 2011.
8. Montana Department of Transportation. *Airport Road and Main Street – Preliminary Field Report*. February, 2006.

Appendix A
Year 2018 AM Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	15	522	33	19	20	166	877	30	23	1864	3
Future Volume (veh/h)	2	15	522	33	19	20	166	877	30	23	1864	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1607	1607	1647	1700	1620	1700	1607	1541	1541	1620	1647	1647
Adj Flow Rate, veh/h	2	17	600	38	22	23	191	1008	34	26	2143	3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	7	7	4	0	6	0	7	12	12	6	4	4
Cap, veh/h	52	350	588	239	379	370	343	2549	86	286	1976	3
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.38	1.00	1.00	0.02	0.43	0.43
Sat Flow, veh/h	90	1496	1392	818	1620	1437	1531	4176	141	1543	4637	6
Grp Volume(v), veh/h	19	0	600	38	22	23	191	677	365	26	1385	761
Grp Sat Flow(s),veh/h/ln	1586	0	1392	818	1620	1437	1531	1402	1512	1543	1499	1646
Q Serve(g_s), s	0.0	0.0	30.4	4.9	1.4	1.6	7.2	0.0	0.0	1.3	55.4	55.4
Cycle Q Clear(g_c), s	1.2	0.0	30.4	6.1	1.4	1.6	7.2	0.0	0.0	1.3	55.4	55.4
Prop In Lane	0.11		1.00	1.00		1.00	1.00		0.09	1.00		0.00
Lane Grp Cap(c), veh/h	402	0	588	239	379	370	343	1712	923	286	1277	701
V/C Ratio(X)	0.05	0.00	1.02	0.16	0.06	0.06	0.56	0.40	0.40	0.09	1.08	1.08
Avail Cap(c_a), veh/h	402	0	588	239	379	370	373	1712	923	381	1277	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	37.6	41.0	38.7	36.4	34.2	0.0	0.0	23.0	37.3	37.3
Incr Delay (d2), s/veh	0.0	0.0	42.6	0.3	0.1	0.1	1.4	0.6	1.2	0.1	51.4	59.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	16.0	1.0	0.6	0.6	4.0	0.1	0.3	0.5	28.7	33.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.7	0.0	80.2	41.3	38.7	36.5	35.6	0.6	1.2	23.1	88.7	96.6
LnGrp LOS	D	A	F	D	D	D	D	A	A	C	F	F
Approach Vol, veh/h		619			83			1233			2172	
Approach Delay, s/veh		78.9			39.3			6.2			90.7	
Approach LOS		E			D			A			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	86.0		37.0	31.0	62.0		37.0				
Change Period (Y+Rc), s	4.0	6.6		6.6	6.6	* 6.6		6.6				
Max Green Setting (Gmax), s	11.0	71.4		30.4	27.0	* 55		30.4				
Max Q Clear Time (g_c+I1), s	3.3	2.0		8.1	9.2	57.4		32.4				
Green Ext Time (p_c), s	0.0	8.8		0.3	0.5	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	62.5
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	198	811	29	13	29
Future Vol, veh/h	12	198	811	29	13	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	160	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	5	0	0	25	0
Mvmt Flow	13	222	911	33	15	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	944	0	-	0	1176	928
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	248	-
Critical Hdwy	4.1	-	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.2	-	-	-	3.725	3.3
Pot Cap-1 Maneuver	735	-	-	-	190	328
Stage 1	-	-	-	-	350	-
Stage 2	-	-	-	-	742	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	735	-	-	-	187	328
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	742	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	17.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	735	-	-	-	282	328
HCM Lane V/C Ratio	0.018	-	-	-	0.052	0.099
HCM Control Delay (s)	10	-	-	-	18.5	17.2
HCM Lane LOS	A	-	-	-	C	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Vol, veh/h	340	162	0	487	0	27
Future Vol, veh/h	340	162	0	487	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	7	2	0	8	0	0
Mvmt Flow	382	182	0	547	0	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	191
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	825
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	825
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)	825	-	-	-
HCM Lane V/C Ratio	0.037	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑↱				↱			↱
Traffic Vol, veh/h	8	351	5	1	455	16	25	5	13	2	1	4
Future Vol, veh/h	8	351	5	1	455	16	25	5	13	2	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	5	0	0	5	0	0	0	8	50	0	0
Mvmt Flow	9	413	6	1	535	19	29	6	15	2	1	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	554	0	0	419	0	0	704	990	210	775	984	277
Stage 1	-	-	-	-	-	-	434	434	-	547	547	-
Stage 2	-	-	-	-	-	-	270	556	-	228	437	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	7.06	8.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	7.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	7.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.38	4	4	3.3
Pot Cap-1 Maneuver	1026	-	-	1151	-	-	328	248	777	215	250	726
Stage 1	-	-	-	-	-	-	576	585	-	384	521	-
Stage 2	-	-	-	-	-	-	718	516	-	634	583	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1026	-	-	1151	-	-	322	245	777	205	247	726
Mov Cap-2 Maneuver	-	-	-	-	-	-	322	245	-	205	247	-
Stage 1	-	-	-	-	-	-	570	579	-	380	520	-
Stage 2	-	-	-	-	-	-	711	515	-	608	577	-

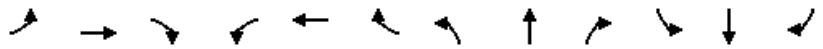
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	9.7	10
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	777	1026	-	-	1151	-	-	726
HCM Lane V/C Ratio	0.02	0.009	-	-	0.001	-	-	0.006
HCM Control Delay (s)	9.7	8.5	-	-	8.1	-	-	10
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	297	12	44	16	60	3	0	746	1	0	2038	421
Future Volume (veh/h)	297	12	44	16	60	3	0	746	1	0	2038	421
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	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1581	1581	1634	1634	1634	0	1567	1567	0	1660	1660
Adj Flow Rate, veh/h	338	14	50	18	68	3	0	848	1	0	2316	478
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	5	9	9	5	5	5	0	10	10	0	3	3
Cap, veh/h	421	57	205	58	117	5	0	3104	4	0	3188	1123
Arrive On Green	0.10	0.19	0.19	0.05	0.05	0.05	0.00	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	4388	303	1081	430	2445	113	0	4555	5	0	4682	1405
Grp Volume(v), veh/h	338	0	64	50	0	39	0	548	301	0	2316	478
Grp Sat Flow(s),veh/h/ln	1463	0	1384	1523	0	1466	0	1426	1566	0	1511	1405
Q Serve(g_s), s	9.8	0.0	5.1	2.9	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.8	0.0	5.1	4.2	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.78	0.36		0.08	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	421	0	263	110	0	70	0	2006	1102	0	3188	1123
V/C Ratio(X)	0.80	0.00	0.24	0.45	0.00	0.56	0.00	0.27	0.27	0.00	0.73	0.43
Avail Cap(c_a), veh/h	608	0	348	139	0	98	0	2006	1102	0	3188	1123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.98	0.98	0.00	0.34	0.34
Uniform Delay (d), s/veh	57.6	0.0	44.7	60.9	0.0	60.6	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	5.0	0.0	0.5	2.9	0.0	6.8	0.0	0.3	0.6	0.0	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	1.8	1.7	0.0	1.4	0.0	0.1	0.2	0.0	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.6	0.0	45.2	63.8	0.0	67.3	0.0	0.3	0.6	0.0	0.5	0.4
LnGrp LOS	E	A	D	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		402			89			849			2794	
Approach Delay, s/veh		59.9			65.3			0.4			0.5	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	98.0	32.0	98.0	18.5	13.5
Change Period (Y+Rc), s	6.6	7.3	6.6	6.0	7.3
Max Green Setting (Gmax), s	83.4	32.7	83.4	18.0	8.7
Max Q Clear Time (g_c+I1), s	2.0	7.1	2.0	11.8	6.2
Green Ext Time (p_c), s	1.0	0.3	4.5	0.6	0.1

Intersection Summary	
HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	190	1	1	764	69	2	1	1	20	1	12
Future Volume (veh/h)	1	190	1	1	764	69	2	1	1	20	1	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.96		0.98	0.96		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1647	1647	1700	1673	1673	374	1700	1700	1634	1700	1700
Adj Flow Rate, veh/h	1	221	1	1	888	80	2	1	1	23	1	14
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	4	4	0	2	2	100	0	0	5	0	0
Cap, veh/h	194	1055	5	805	973	88	124	68	57	197	6	80
Arrive On Green	0.00	0.64	0.64	0.00	0.64	0.64	0.00	0.04	0.04	0.02	0.06	0.06
Sat Flow, veh/h	1619	1638	7	1619	1511	136	356	1650	1388	1556	96	1338
Grp Volume(v), veh/h	1	0	222	1	0	968	2	1	1	23	0	15
Grp Sat Flow(s),veh/h/ln	1619	0	1646	1619	0	1647	356	1615	1423	1556	0	1433
Q Serve(g_s), s	0.0	0.0	3.6	0.0	0.0	32.9	0.1	0.0	0.0	0.9	0.0	0.6
Cycle Q Clear(g_c), s	0.0	0.0	3.6	0.0	0.0	32.9	0.1	0.0	0.0	0.9	0.0	0.6
Prop In Lane	1.00		0.00	1.00		0.08	1.00		0.98	1.00		0.93
Lane Grp Cap(c), veh/h	194	0	1060	805	0	1061	124	66	58	197	0	86
V/C Ratio(X)	0.01	0.00	0.21	0.00	0.00	0.91	0.02	0.01	0.02	0.12	0.00	0.17
Avail Cap(c_a), veh/h	466	0	1293	1077	0	1293	184	448	395	428	0	397
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	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	4.7	4.2	0.0	10.0	29.9	29.9	29.9	29.0	0.0	29.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	0.0	8.8	0.1	0.1	0.1	0.3	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.9	0.0	0.0	10.3	0.0	0.0	0.0	0.3	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	0.0	4.8	4.2	0.0	18.7	29.9	30.0	30.0	29.3	0.0	30.0
LnGrp LOS	B	A	A	A	A	B	C	C	C	C	A	C
Approach Vol, veh/h		223			969			4			38	
Approach Delay, s/veh		4.9			18.7			30.0			29.5	
Approach LOS		A			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.1	47.8	4.1	8.9	4.1	47.8	5.4	7.7
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	51.0	11.0	18.0	11.0	51.0	11.0	18.0
Max Q Clear Time (g_c+I1), s	2.0	5.6	2.1	2.6	2.0	34.9	2.9	2.0
Green Ext Time (p_c), s	0.0	1.3	0.0	0.0	0.0	6.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

Notes

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕			↔			↔	
Traffic Vol, veh/h	7	162	1	6	158	36	1	1	1	2	2	3
Future Vol, veh/h	7	162	1	6	158	36	1	1	1	2	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	14	5	0	17	8	6	0	0	0	0	0	0
Mvmt Flow	8	180	1	7	176	40	1	1	1	2	2	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	216	0	0	181	0	0	300	427	181	408	407	108
Stage 1	-	-	-	-	-	-	197	197	-	210	210	-
Stage 2	-	-	-	-	-	-	103	230	-	198	197	-
Critical Hdwy	4.31	-	-	4.355	-	-	7.3	6.5	6.2	7.3	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.333	-	-	2.3615	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1277	-	-	1299	-	-	645	523	867	545	537	932
Stage 1	-	-	-	-	-	-	809	742	-	778	732	-
Stage 2	-	-	-	-	-	-	897	718	-	808	742	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1277	-	-	1299	-	-	634	516	867	538	530	932
Mov Cap-2 Maneuver	-	-	-	-	-	-	634	516	-	538	530	-
Stage 1	-	-	-	-	-	-	803	737	-	773	728	-
Stage 2	-	-	-	-	-	-	886	714	-	800	737	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	10.6	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	643	1277	-	-	1299	-	-	654
HCM Lane V/C Ratio	0.005	0.006	-	-	0.005	-	-	0.012
HCM Control Delay (s)	10.6	7.8	0	-	7.8	0	-	10.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	166	1	1	3	178	848	2	6	2056	6
Future Volume (veh/h)	0	0	166	1	1	3	178	848	2	6	2056	6
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1700	1647	1700	1700	1700	1620	1514	1514	1700	1634	1634
Adj Flow Rate, veh/h	0	0	189	1	1	3	202	964	2	7	2336	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	4	0	0	0	6	14	14	0	5	5
Cap, veh/h	0	65	524	39	17	34	1009	3536	7	301	2161	
Arrive On Green	0.00	0.00	0.04	0.04	0.04	0.04	0.34	0.83	0.83	0.01	0.97	0.00
Sat Flow, veh/h	0	1700	1396	143	450	889	2994	4260	9	1619	4607	0
Grp Volume(v), veh/h	0	0	189	5	0	0	202	624	342	7	2336	0
Grp Sat Flow(s),veh/h/ln	0	1700	1396	1482	0	0	1497	1378	1513	1619	1487	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	6.2	6.5	6.5	0.3	63.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.4	0.0	0.0	6.2	6.5	6.5	0.3	63.0	0.0
Prop In Lane	0.00		1.00	0.20		0.60	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	0	65	524	90	0	0	1009	2288	1256	301	2161	
V/C Ratio(X)	0.00	0.00	0.36	0.06	0.00	0.00	0.20	0.27	0.27	0.02	1.08	
Avail Cap(c_a), veh/h	0	432	825	376	0	0	1009	2288	1256	427	2161	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.54	0.54	0.00
Uniform Delay (d), s/veh	0.0	0.0	29.3	60.3	0.0	0.0	30.6	2.4	2.4	18.5	2.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.3	0.0	0.0	0.1	0.3	0.5	0.0	41.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	4.4	0.2	0.0	0.0	2.3	1.3	1.5	0.1	9.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	29.7	60.6	0.0	0.0	30.7	2.7	3.0	18.6	43.6	0.0
LnGrp LOS	A	A	C	E	A	A	C	A	A	B	F	
Approach Vol, veh/h		189			5			1168			2343	A
Approach Delay, s/veh		29.7			60.6			7.6			43.5	
Approach LOS		C			E			A			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	114.1		11.0	50.0	69.0		11.0				
Change Period (Y+Rc), s	4.0	* 6.2		* 6	6.2	* 6		6.0				
Max Green Setting (Gmax), s	11.0	* 72		* 33	17.8	* 63		31.0				
Max Q Clear Time (g_c+I1), s	2.3	8.5		2.0	8.2	65.0		2.4				
Green Ext Time (p_c), s	0.0	7.8		0.6	0.4	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	31.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	79	257	1	16	5	95	157	50	275	686	20
Future Volume (veh/h)	6	79	257	1	16	5	95	157	50	275	686	20
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1700	1594	1594	1567	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	7	91	295	1	18	6	109	180	57	316	789	23
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	5	5	0	8	8	10	0	0	0	0	0	0
Cap, veh/h	49	333	302	45	328	279	313	1121	950	796	1084	32
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.66	0.66	0.66	0.66	0.66	0.66
Sat Flow, veh/h	38	1588	1441	20	1561	1328	683	1700	1441	1161	1643	48
Grp Volume(v), veh/h	98	0	295	19	0	6	109	180	57	316	0	812
Grp Sat Flow(s),veh/h/ln	1626	0	1441	1580	0	1328	683	1700	1441	1161	0	1691
Q Serve(g_s), s	0.0	0.0	19.0	0.0	0.0	0.3	11.6	3.8	1.3	13.3	0.0	29.4
Cycle Q Clear(g_c), s	4.7	0.0	19.0	0.9	0.0	0.3	41.0	3.8	1.3	17.1	0.0	29.4
Prop In Lane	0.07		1.00	0.05		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	382	0	302	372	0	279	313	1121	950	796	0	1116
V/C Ratio(X)	0.26	0.00	0.98	0.05	0.00	0.02	0.35	0.16	0.06	0.40	0.00	0.73
Avail Cap(c_a), veh/h	382	0	302	372	0	279	313	1121	950	796	0	1116
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	0.00	1.00
Uniform Delay (d), s/veh	31.0	0.0	36.7	29.5	0.0	29.3	23.8	6.1	5.6	9.3	0.0	10.4
Incr Delay (d2), s/veh	0.3	0.0	45.0	0.3	0.0	0.1	3.0	0.3	0.1	1.5	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	10.2	0.4	0.0	0.1	2.1	1.3	0.4	3.4	0.0	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.4	0.0	81.7	29.8	0.0	29.4	26.9	6.4	5.8	10.8	0.0	14.6
LnGrp LOS	C	A	F	C	A	C	C	A	A	B	A	B
Approach Vol, veh/h		393			25			346			1128	
Approach Delay, s/veh		69.1			29.7			12.7			13.5	
Approach LOS		E			C			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	67.4	26.0	67.4	26.0
Change Period (Y+Rc), s	* 5.8	* 6.4	* 5.8	* 6.4
Max Green Setting (Gmax), s	* 62	* 20	* 62	* 20
Max Q Clear Time (g_c+I1), s	43.0	21.0	31.4	2.9
Green Ext Time (p_c), s	2.0	0.0	8.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	15	522	33	19	20	166	877	30	23	1864	3
Future Volume (vph)	2	15	522	33	19	20	166	877	30	23	1864	3
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.99	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	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1591	1389	1615	1604	1432	1509	4135		1524	4462	
Flt Permitted		0.96	1.00	0.75	1.00	1.00	0.05	1.00		0.24	1.00	
Satd. Flow (perm)		1537	1389	1267	1604	1432	86	4135		388	4462	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	2	17	600	38	22	23	191	1008	34	26	2143	3
RTOR Reduction (vph)	0	0	46	0	0	21	0	1	0	0	0	0
Lane Group Flow (vph)	0	19	554	38	22	2	191	1041	0	26	2146	0
Confl. Peds. (#/hr)	2					2	1					1
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	0%	7%	4%	0%	6%	0%	7%	12%	0%	6%	4%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		8	5		4	1	5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)		8.3	36.1	8.3	8.3	13.6	101.8	99.2		76.7	76.7	
Effective Green, g (s)		8.3	36.1	8.3	8.3	13.6	101.8	99.2		76.7	76.7	
Actuated g/C Ratio		0.06	0.28	0.06	0.06	0.10	0.78	0.76		0.59	0.59	
Clearance Time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		98	428	80	102	149	371	3155		275	2632	
v/s Ratio Prot			c0.28		0.01	0.00	0.11	0.25		0.00	c0.48	
v/s Ratio Perm		0.01	0.12	0.03		0.00	0.29			0.05		
v/c Ratio		0.19	1.29	0.47	0.22	0.02	0.51	0.33		0.09	0.82	
Uniform Delay, d1		57.7	47.0	58.7	57.8	52.2	23.9	4.9		11.2	21.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.05	1.28		1.00	1.00	
Incremental Delay, d2		1.0	148.7	4.4	1.1	0.0	1.1	0.3		0.2	2.9	
Delay (s)		58.6	195.7	63.1	58.8	52.2	26.3	6.5		11.4	24.0	
Level of Service		E	F	E	E	D	C	A		B	C	
Approach Delay (s)		191.4			59.0			9.6			23.8	
Approach LOS		F			E			A			C	

Intersection Summary			
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	198	811	29	13	29
Future Volume (Veh/h)	12	198	811	29	13	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	13	222	911	33	15	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (ft)		504				
pX, platoon unblocked					1.00	
vC, conflicting volume	944				1176	928
vC1, stage 1 conf vol					928	
vC2, stage 2 conf vol					248	
vCu, unblocked vol	944				1175	928
tC, single (s)	4.1				6.6	6.2
tC, 2 stage (s)					5.6	
tF (s)	2.2				3.7	3.3
p0 queue free %	98				95	90
cM capacity (veh/h)	735				332	328

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	13	222	944	15	33
Volume Left	13	0	0	15	0
Volume Right	0	0	33	0	33
cSH	735	1700	1700	332	328
Volume to Capacity	0.02	0.13	0.56	0.05	0.10
Queue Length 95th (ft)	1	0	0	4	8
Control Delay (s)	10.0	0.0	0.0	16.4	17.2
Lane LOS	A			C	C
Approach Delay (s)	0.6		0.0	16.9	
Approach LOS				C	

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	501	491	43	0	406
Future Volume (Veh/h)	0	501	491	43	0	406
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	563	552	48	0	456
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	600				740	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	600				740	276
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	37
cM capacity (veh/h)	987				357	727

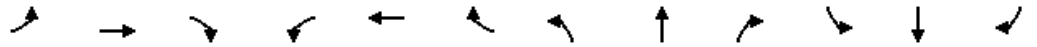
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	188	188	188	276	276	48	456
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	48	456
cSH	1700	1700	1700	1700	1700	1700	727
Volume to Capacity	0.11	0.11	0.11	0.16	0.16	0.03	0.63
Queue Length 95th (ft)	0	0	0	0	0	0	111
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	17.9
Lane LOS							C
Approach Delay (s)	0.0			0.0			17.9
Approach LOS							C

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Volume (veh/h)	340	162	0	487	0	27
Future Volume (Veh/h)	340	162	0	487	0	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	382	182	0	547	0	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1202		
pX, platoon unblocked						
vC, conflicting volume			564		564	191
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			564		564	191
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1018		460	825

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	191	191	182	182	182	182	30
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	182	0	0	0	30
cSH	1700	1700	1700	1700	1700	1700	825
Volume to Capacity	0.11	0.11	0.11	0.11	0.11	0.11	0.04
Queue Length 95th (ft)	0	0	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.5
Approach LOS							A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	351	5	1	455	16	25	5	13	2	1	4
Future Volume (Veh/h)	8	351	5	1	455	16	25	5	13	2	1	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	9	413	6	1	535	19	29	6	15	2	1	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					728							
pX, platoon unblocked												
vC, conflicting volume	554			419			709	990	210	789	984	277
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	554			419			709	990	210	789	984	277
tC, single (s)	4.1			4.1			7.5	6.5	7.1	8.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	4.0	4.0	3.3
p0 queue free %	99			100			91	98	98	99	100	99
cM capacity (veh/h)	1026			1151			319	246	778	200	248	726

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	216	212	268	286	50	8
Volume Left	9	0	1	0	29	2
Volume Right	0	6	0	19	15	5
cSH	1026	1700	1151	1700	372	383
Volume to Capacity	0.01	0.13	0.00	0.17	0.13	0.02
Queue Length 95th (ft)	1	0	0	0	12	2
Control Delay (s)	0.4	0.0	0.0	0.0	16.2	14.6
Lane LOS	A		A		C	B
Approach Delay (s)	0.2		0.0		16.2	14.6
Approach LOS					C	B

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	Err%	ICU Level of Service	H	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	297	12	44	16	60	3	0	746	1	0	2038	421
Future Volume (vph)	297	12	44	16	60	3	0	746	1	0	2038	421
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Lane Util. Factor	0.94	1.00			0.95			0.91			0.91	1.00
Frpb, ped/bikes	1.00	0.99			1.00			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.88			0.99			1.00			1.00	0.85
Flt Protected	0.95	1.00			0.99			1.00			1.00	1.00
Satd. Flow (prot)	4337	1271			3022			4219			4506	1383
Flt Permitted	0.95	1.00			0.88			1.00			1.00	1.00
Satd. Flow (perm)	4337	1271			2687			4219			4506	1383
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	338	14	50	18	68	3	0	848	1	0	2316	478
RTOR Reduction (vph)	0	5	0	0	2	0	0	0	0	0	0	63
Lane Group Flow (vph)	338	59	0	0	87	0	0	849	0	0	2316	415
Confl. Peds. (#/hr)			1	1			4		2	2		4
Heavy Vehicles (%)	5%	9%	19%	7%	5%	0%	40%	10%	0%	0%	3%	3%
Turn Type	Prot	NA		Perm	NA			NA			NA	pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases				8								6
Actuated Green, G (s)	15.5	29.9			8.4			86.2			86.2	101.7
Effective Green, g (s)	15.5	29.9			8.4			86.2			86.2	101.7
Actuated g/C Ratio	0.12	0.23			0.06			0.66			0.66	0.78
Clearance Time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Vehicle Extension (s)	3.0	3.0			3.0			0.2			0.2	3.0
Lane Grp Cap (vph)	517	292			173			2797			2987	1081
v/s Ratio Prot	c0.08	0.05						0.20			c0.51	0.05
v/s Ratio Perm					c0.03							0.25
v/c Ratio	0.65	0.20			0.50			0.30			0.78	0.38
Uniform Delay, d1	54.7	40.4			58.8			9.2			15.2	4.4
Progression Factor	1.00	1.00			1.00			0.96			0.57	0.19
Incremental Delay, d2	3.0	0.3			2.3			0.3			0.9	0.1
Delay (s)	57.7	40.7			61.1			9.2			9.7	0.9
Level of Service	E	D			E			A			A	A
Approach Delay (s)		55.0			61.1			9.2			8.2	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	190	1	1	764	69	2	1	1	20	1	12
Future Volume (vph)	1	190	1	1	764	69	2	1	1	20	1	12
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.93		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1615	1634		1612	1643		804	2988		1538	1428	
Flt Permitted	0.19	1.00		0.62	1.00		1.00	1.00		1.00	1.00	
Satd. Flow (perm)	318	1634		1051	1643		846	2988		1619	1428	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1	221	1	1	888	80	2	1	1	23	1	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	2	0	0	13	0
Lane Group Flow (vph)	1	222	0	1	966	0	2	0	0	23	2	0
Confl. Peds. (#/hr)			4	4			3					3
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	0%	4%	0%	0%	2%	3%	100%	0%	0%	5%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	55.3	54.6		55.3	54.6		3.9	3.1		4.3	3.3	
Effective Green, g (s)	55.3	54.6		55.3	54.6		3.9	3.1		4.3	3.3	
Actuated g/C Ratio	0.71	0.70		0.71	0.70		0.05	0.04		0.05	0.04	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	235	1137		746	1144		41	118		87	60	
v/s Ratio Prot	c0.00	0.14		0.00	c0.59		0.00	0.00		c0.00	0.00	
v/s Ratio Perm	0.00			0.00			0.00			c0.01		
v/c Ratio	0.00	0.20		0.00	0.84		0.05	0.00		0.26	0.03	
Uniform Delay, d1	6.4	4.2		3.4	8.8		35.5	36.2		35.5	36.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	5.9		0.5	0.0		1.6	0.2	
Delay (s)	6.4	4.3		3.4	14.7		36.0	36.2		37.1	36.2	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s)		4.3			14.6			36.1			36.7	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	19.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Volume (veh/h)	27	172	790	7	152	0	0	162	0	0
Future Volume (Veh/h)	27	172	790	7	152	0	0	162	0	0
Sign Control		Free			Free		Yield		Stop	
Grade		0%			0%		0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	1.00	1.00
Hourly flow rate (vph)	31	200	919	8	177	0	0	188	0	0
Pedestrians									2	
Lane Width (ft)									0.0	
Walking Speed (ft/s)									4.0	
Percent Blockage									0	
Right turn flare (veh)										
Median type		None			None					
Median storage veh)										
Upstream signal (ft)		896			759					
pX, platoon unblocked										
vC, conflicting volume	177			202			457	88	368	457
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	177			202			457	88	368	457
tC, single (s)	4.1			4.1			6.5	6.9	7.5	6.5
tC, 2 stage (s)										
tF (s)	2.2			2.2			4.0	3.3	3.5	4.0
p0 queue free %	98			99			100	80	100	100
cM capacity (veh/h)	1411			1382			489	952	442	485

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	231	919	96	88	188
Volume Left	31	0	8	0	0
Volume Right	0	919	0	0	188
cSH	1411	1700	1382	1700	952
Volume to Capacity	0.02	0.54	0.01	0.05	0.20
Queue Length 95th (ft)	2	0	0	0	18
Control Delay (s)	1.2	0.0	0.7	0.0	9.7
Lane LOS	A		A		A
Approach Delay (s)	0.2		0.4		9.7
Approach LOS					A

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	66.5%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	162	1	6	158	36	1	1	1	2	2	3
Future Volume (Veh/h)	7	162	1	6	158	36	1	1	1	2	2	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	180	1	7	176	40	1	1	1	2	2	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1251			404							
pX, platoon unblocked												
vC, conflicting volume	216			181			302	426	180	408	407	108
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	216			181			302	426	180	408	407	108
tC, single (s)	4.4			4.4			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	100	100	100	100
cM capacity (veh/h)	1268			1289			623	517	837	526	530	932

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	189	95	128	3	7
Volume Left	8	7	0	1	2
Volume Right	1	0	40	1	3
cSH	1268	1289	1700	634	649
Volume to Capacity	0.01	0.01	0.08	0.00	0.01
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.4	0.6	0.0	10.7	10.6
Lane LOS	A	A		B	B
Approach Delay (s)	0.4	0.3		10.7	10.6
Approach LOS				B	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	26.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	166	1	1	3	178	848	2	6	2056	6
Future Volume (vph)	0	0	166	1	1	3	178	848	2	6	2056	6
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)			6.2		6.0		6.2	6.0		4.0	6.0	
Lane Util. Factor			1.00		1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes			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	
Frt			0.85		0.92		1.00	1.00		1.00	1.00	
Flt Protected			1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)			1389		1547		2956	4071		1615	4416	
Flt Permitted			1.00		1.00		0.95	1.00		0.27	1.00	
Satd. Flow (perm)			1389		1562		2956	4071		461	4416	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	0	189	1	1	3	202	964	2	7	2336	7
RTOR Reduction (vph)	0	0	48	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	141	0	2	0	202	966	0	7	2343	0
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	6%	14%	0%	0%	5%	17%
Turn Type			pm+ov	Perm	NA		Prot	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4	8						6		
Actuated Green, G (s)			24.4		1.4		21.0	111.4		89.4	89.4	
Effective Green, g (s)			24.4		1.4		21.0	111.4		89.4	89.4	
Actuated g/C Ratio			0.19		0.01		0.16	0.86		0.69	0.69	
Clearance Time (s)			6.2		6.0		6.2	6.0		4.0	6.0	
Vehicle Extension (s)			3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)			326		16		477	3488		327	3036	
v/s Ratio Prot			c0.07				0.07	0.24		0.00	c0.53	
v/s Ratio Perm			0.03		0.00					0.01		
v/c Ratio			0.43		0.13		0.42	0.28		0.02	0.77	
Uniform Delay, d1			46.7		63.7		49.1	1.7		6.4	13.5	
Progression Factor			1.00		1.00		0.84	0.20		0.13	0.11	
Incremental Delay, d2			0.9		3.6		0.6	0.2		0.0	1.2	
Delay (s)			47.6		67.3		41.9	0.5		0.8	2.7	
Level of Service			D		E		D	A		A	A	
Approach Delay (s)		47.6			67.3			7.7			2.7	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	448	347	1	212	929	191	0	1306	0
Future Volume (vph)	0	0	0	448	347	1	212	929	191	0	1306	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)				6.6	6.6		4.0	6.2	6.2		6.2	
Lane Util. Factor				0.91	0.91		1.00	0.91	1.00		0.91	
Frpb, ped/bikes				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	
Frt				1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected				0.95	0.98		0.95	1.00	1.00		1.00	
Satd. Flow (prot)				1441	2999		1553	4181	1403		4420	
Flt Permitted				0.95	0.98		0.10	1.00	1.00		1.00	
Satd. Flow (perm)				1441	2999		162	4181	1403		4420	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	527	408	1	249	1093	225	0	1536	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	75	0	0	0
Lane Group Flow (vph)	0	0	0	306	630	0	249	1093	150	0	1536	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	0%	0%	2%	1%	0%	4%	11%	3%	0%	5%	2%
Turn Type				Split	NA		pm+pt	NA	Perm		NA	Free
Protected Phases				4	4		5	2			6	
Permitted Phases							2		2			Free
Actuated Green, G (s)				30.5	30.5		86.7	86.7	86.7		67.5	
Effective Green, g (s)				30.5	30.5		86.7	86.7	86.7		67.5	
Actuated g/C Ratio				0.23	0.23		0.67	0.67	0.67		0.52	
Clearance Time (s)				6.6	6.6		4.0	6.2	6.2		6.2	
Vehicle Extension (s)				3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)				338	703		270	2788	935		2295	
v/s Ratio Prot				c0.21	0.21		c0.11	0.26			0.35	
v/s Ratio Perm							c0.51		0.11			
v/c Ratio				0.91	0.90		0.92	0.39	0.16		0.67	
Uniform Delay, d1				48.3	48.2		30.6	9.8	8.1		23.0	
Progression Factor				1.00	1.00		1.25	0.86	1.19		0.48	
Incremental Delay, d2				26.4	14.0		32.9	0.4	0.3		1.1	
Delay (s)				74.8	62.2		71.2	8.8	9.9		12.1	
Level of Service				E	E		E	A	A		B	
Approach Delay (s)		0.0			66.3			18.8			12.1	
Approach LOS		A			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	79	257	1	16	5	95	157	50	275	686	20
Future Volume (vph)	6	79	257	1	16	5	95	157	50	275	686	20
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1619	1445		1576	1314	1615	1700	1445	1615	1692	
Flt Permitted		0.98	1.00		0.99	1.00	0.24	1.00	1.00	0.64	1.00	
Satd. Flow (perm)		1598	1445		1563	1314	409	1700	1445	1094	1692	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	7	91	295	1	18	6	109	180	57	316	789	23
RTOR Reduction (vph)	0	0	181	0	0	5	0	0	19	0	1	0
Lane Group Flow (vph)	0	98	114	0	19	1	109	180	38	316	811	0
Heavy Vehicles (%)	0%	5%	0%	0%	8%	10%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)		19.6	19.6		19.6	19.6	61.6	61.6	61.6	61.6	61.6	
Effective Green, g (s)		19.6	19.6		19.6	19.6	61.6	61.6	61.6	61.6	61.6	
Actuated g/C Ratio		0.21	0.21		0.21	0.21	0.66	0.66	0.66	0.66	0.66	
Clearance Time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		335	303		327	275	269	1121	953	721	1115	
v/s Ratio Prot								0.11			c0.48	
v/s Ratio Perm		0.06	c0.08		0.01	0.00	0.27		0.03	0.29		
v/c Ratio		0.29	0.38		0.06	0.00	0.41	0.16	0.04	0.44	0.73	
Uniform Delay, d1		31.1	31.7		29.5	29.2	7.4	6.1	5.6	7.6	10.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5	0.8		0.3	0.0	4.5	0.3	0.1	1.9	4.2	
Delay (s)		31.6	32.4		29.9	29.2	11.9	6.4	5.6	9.5	14.6	
Level of Service		C	C		C	C	B	A	A	A	B	
Approach Delay (s)		32.2			29.7			8.0			13.2	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	12.2
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	444	7	112	0	0	0	0	967	1	1	1769	0
Future Volume (vph)	444	7	112	0	0	0	0	967	1	1	1769	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.6	6.6						6.6		6.6	6.6	
Lane Util. Factor	0.86	0.86						0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.94						1.00		1.00	1.00	
Flt Protected	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (prot)	2572	2376						4107		1615	4378	
Flt Permitted	0.95	0.97						1.00		0.22	1.00	
Satd. Flow (perm)	2572	2376						4107		381	4378	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	522	8	132	0	0	0	0	1138	1	1	2081	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	350	305	0	0	0	0	0	1139	0	1	2081	0
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	8%	14%	16%	0%	0%	0%	0%	13%	0%	0%	6%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)	25.3	25.3						91.5		91.5	91.5	
Effective Green, g (s)	25.3	25.3						91.5		91.5	91.5	
Actuated g/C Ratio	0.19	0.19						0.70		0.70	0.70	
Clearance Time (s)	6.6	6.6						6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0						0.2		0.2	0.2	
Lane Grp Cap (vph)	500	462						2890		268	3081	
v/s Ratio Prot								0.28			c0.48	
v/s Ratio Perm	c0.14	0.13								0.00		
v/c Ratio	0.70	0.66						0.39		0.00	0.68	
Uniform Delay, d1	48.8	48.4						7.9		5.7	10.9	
Progression Factor	1.00	1.00						1.00		0.95	0.62	
Incremental Delay, d2	4.3	3.4						0.4		0.0	0.8	
Delay (s)	53.1	51.8						8.3		5.4	7.6	
Level of Service	D	D						A		A	A	
Approach Delay (s)		52.5			0.0			8.3			7.6	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCS7 Two-Way Stop-Control Report

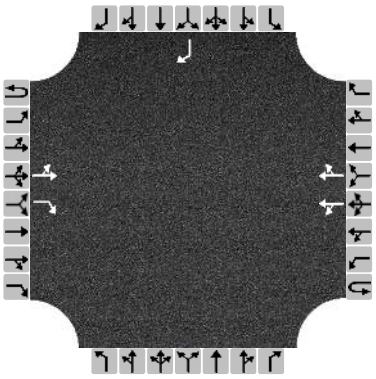
General Information

Analyst	mah
Agency/Co.	KAI
Date Performed	5/9/2018
Analysis Year	2018
Time Analyzed	
Intersection Orientation	East-West
Project Description	21018-112

Site Information

Intersection	Aronson Ave/6thAve Bypass
Jurisdiction	
East/West Street	Aronson Ave
North/South Street	6th Ave Bypass
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	0		0	0	1
Configuration		LT		R		LT		TR								R
Volume, V (veh/h)		27	172	790		7	152	1								162
Percent Heavy Vehicles (%)		0				0										2
Proportion Time Blocked		0.000	0.000	0.000		0.000	0.000	0.000								0.300
Percent Grade (%)														0		
Right Turn Channelized		Yes				No				No				Yes		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		27				7										162
Capacity, c (veh/h)		1440				1417										783
v/c Ratio		0.02				0.00										0.21
95% Queue Length, Q_{95} (veh)		0.1				0.0										0.8
Control Delay (s/veh)		7.5				7.6										10.8
Level of Service, LOS		A				A										B
Approach Delay (s/veh)		0.3				0.3								10.8		
Approach LOS														B		

Appendix B
Year 2018 Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	33	359	69	37	57	457	2494	51	29	1143	7
Future Volume (veh/h)	21	33	359	69	37	57	457	2494	51	29	1143	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1620	1660	1700	1673	1673	1660	1660	1700	1647	1647
Adj Flow Rate, veh/h	23	35	386	74	40	61	491	2682	55	31	1229	8
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	6	3	0	2	2	3	3	0	4	4
Cap, veh/h	111	153	453	161	254	246	513	3253	66	146	2559	17
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.36	1.00	1.00	0.02	0.56	0.56
Sat Flow, veh/h	521	1023	1373	958	1700	1418	1594	4570	93	1619	4609	30
Grp Volume(v), veh/h	58	0	386	74	40	61	491	1768	969	31	799	438
Grp Sat Flow(s),veh/h/ln	1544	0	1373	958	1700	1418	1594	1511	1641	1619	1499	1642
Q Serve(g_s), s	1.7	0.0	22.4	11.1	3.1	5.6	23.5	0.0	0.0	1.2	24.3	24.3
Cycle Q Clear(g_c), s	4.7	0.0	22.4	15.8	3.1	5.6	23.5	0.0	0.0	1.2	24.3	24.3
Prop In Lane	0.40		1.00	1.00		1.00	1.00		0.06	1.00		0.02
Lane Grp Cap(c), veh/h	264	0	453	161	254	246	513	2151	1168	146	1664	911
V/C Ratio(X)	0.22	0.00	0.85	0.46	0.16	0.25	0.96	0.82	0.83	0.21	0.48	0.48
Avail Cap(c_a), veh/h	264	0	453	161	254	246	820	2151	1168	225	1664	911
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.40	0.40	0.40	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.2	0.0	46.8	63.3	55.6	53.5	14.2	0.0	0.0	13.5	20.2	20.2
Incr Delay (d2), s/veh	0.4	0.0	14.4	2.0	0.3	0.5	8.1	1.5	2.9	0.7	1.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	15.4	2.8	1.4	2.1	9.0	0.5	0.9	0.5	8.6	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.6	0.0	61.2	65.3	55.9	54.1	22.3	1.5	2.9	14.3	21.2	22.0
LnGrp LOS	E	A	E	E	E	D	C	A	A	B	C	C
Approach Vol, veh/h		444			175			3228			1268	
Approach Delay, s/veh		60.6			59.2			5.1			21.3	
Approach LOS		E			E			A			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	113.4		29.0	31.1	89.9		29.0				
Change Period (Y+Rc), s	4.0	6.6		6.6	4.0	6.6		6.6				
Max Green Setting (Gmax), s	11.0	99.4		22.4	56.0	54.4		22.4				
Max Q Clear Time (g_c+I1), s	3.2	2.0		17.8	25.5	26.3		24.4				
Green Ext Time (p_c), s	0.0	60.4		0.3	1.6	9.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		15.8	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	826	392	38	36	35
Future Vol, veh/h	35	826	392	38	36	35
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	160	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	4	0	0	4
Mvmt Flow	37	879	417	40	38	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	459	0	-	0	1393	439
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	954	-
Critical Hdwy	4.1	-	-	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.336
Pot Cap-1 Maneuver	1113	-	-	-	158	614
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	377	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1111	-	-	-	152	613
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1111	-	-	-	262	613
HCM Lane V/C Ratio	0.034	-	-	-	0.146	0.061
HCM Control Delay (s)	8.4	-	-	-	21.1	11.3
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Vol, veh/h	772	435	0	385	0	36
Future Vol, veh/h	772	435	0	385	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	4	0	0
Mvmt Flow	839	473	0	418	0	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	420
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	588
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	588
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	588	-	-	-
HCM Lane V/C Ratio	0.067	-	-	-
HCM Control Delay (s)	11.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↰↑↱				↱			↱
Traffic Vol, veh/h	3	794	8	9	358	19	16	2	34	12	1	7
Future Vol, veh/h	3	794	8	9	358	19	16	2	34	12	1	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	0	2	6	7	0	3	0	0	0
Mvmt Flow	3	845	9	10	381	20	17	2	36	13	1	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	401	0	0	854	0	0	1067	1277	427	841	1271	201
Stage 1	-	-	-	-	-	-	856	856	-	411	411	-
Stage 2	-	-	-	-	-	-	211	421	-	430	860	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.64	6.5	6.96	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.64	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.64	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.57	4	3.33	3.5	4	3.3
Pot Cap-1 Maneuver	1169	-	-	794	-	-	170	168	573	261	169	813
Stage 1	-	-	-	-	-	-	309	377	-	594	598	-
Stage 2	-	-	-	-	-	-	757	592	-	579	376	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1169	-	-	794	-	-	165	164	573	238	165	813
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	164	-	238	165	-
Stage 1	-	-	-	-	-	-	307	375	-	591	588	-
Stage 2	-	-	-	-	-	-	737	583	-	537	374	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	11.7	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	573	1169	-	-	794	-	-	813
HCM Lane V/C Ratio	0.063	0.003	-	-	0.012	-	-	0.009
HCM Control Delay (s)	11.7	8.1	-	-	9.6	0.1	-	9.5
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

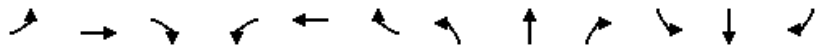
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	664	68	53	16	47	19	0	2237	7	0	1275	329
Future Volume (veh/h)	664	68	53	16	47	19	0	2237	7	0	1275	329
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1660	1673	1673	1700	1700	1700	0	1660	1660	0	1634	1673
Adj Flow Rate, veh/h	706	72	56	17	50	20	0	2380	7	0	1356	350
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	2	0	0	0	0	3	3	0	5	2
Cap, veh/h	788	251	195	37	78	33	0	2879	8	0	2753	1124
Arrive On Green	0.18	0.29	0.29	0.06	0.06	0.06	0.00	0.62	0.62	0.00	1.00	1.00
Sat Flow, veh/h	4459	865	673	3	1209	512	0	4815	14	0	4607	1415
Grp Volume(v), veh/h	706	0	128	31	0	56	0	1541	846	0	1356	350
Grp Sat Flow(s),veh/h/ln	1486	0	1538	283	0	1440	0	1511	1657	0	1487	1415
Q Serve(g_s), s	23.2	0.0	9.7	0.0	0.0	5.7	0.0	59.8	59.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	23.2	0.0	9.7	9.7	0.0	5.7	0.0	59.8	59.9	0.0	0.0	0.0
Prop In Lane	1.00		0.44	0.55		0.36	0.00		0.01	0.00		1.00
Lane Grp Cap(c), veh/h	788	0	446	56	0	93	0	1865	1023	0	2753	1124
V/C Ratio(X)	0.90	0.00	0.29	0.55	0.00	0.60	0.00	0.83	0.83	0.00	0.49	0.31
Avail Cap(c_a), veh/h	892	0	469	56	0	93	0	1865	1023	0	2753	1124
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.77	0.77	0.00	0.79	0.79
Uniform Delay (d), s/veh	60.4	0.0	41.2	69.8	0.0	68.3	0.0	22.4	22.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	10.7	0.0	0.4	11.4	0.0	10.5	0.0	3.4	6.0	0.0	0.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	0.0	3.7	1.4	0.0	2.4	0.0	21.1	23.9	0.0	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.1	0.0	41.6	81.2	0.0	78.8	0.0	25.8	28.5	0.0	0.5	0.6
LnGrp LOS	E	A	D	F	A	E	A	C	C	A	A	A
Approach Vol, veh/h		834			87			2387			1706	
Approach Delay, s/veh		66.6			79.7			26.8			0.5	
Approach LOS		E			E			C			A	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	99.2	50.8	99.2	33.8	17.0
Change Period (Y+Rc), s	6.6	7.3	6.6	7.3	* 7.3
Max Green Setting (Gmax), s	90.4	45.7	90.4	30.0	* 9.7
Max Q Clear Time (g_c+I1), s	61.9	11.7	2.0	25.2	11.7
Green Ext Time (p_c), s	3.7	0.7	2.0	1.3	0.0

Intersection Summary	
HCM 6th Ctrl Delay	25.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	766	1	3	367	64	3	1	1	89	1	16
Future Volume (veh/h)	10	766	1	3	367	64	3	1	1	89	1	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	0.99		1.00	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1673	1673	1700	1660	1660	1262	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	11	806	1	3	386	67	3	1	1	94	1	17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	3	3	33	0	0	0	0	0
Cap, veh/h	503	937	1	234	761	132	168	62	53	290	8	138
Arrive On Green	0.01	0.56	0.56	0.00	0.55	0.55	0.00	0.04	0.04	0.07	0.10	0.10
Sat Flow, veh/h	1619	1671	2	1619	1378	239	1202	1650	1404	1619	79	1335
Grp Volume(v), veh/h	11	0	807	3	0	453	3	1	1	94	0	18
Grp Sat Flow(s),veh/h/ln	1619	0	1673	1619	0	1617	1202	1615	1439	1619	0	1414
Q Serve(g_s), s	0.2	0.0	23.6	0.0	0.0	10.0	0.1	0.0	0.0	3.1	0.0	0.7
Cycle Q Clear(g_c), s	0.2	0.0	23.6	0.0	0.0	10.0	0.1	0.0	0.0	3.1	0.0	0.7
Prop In Lane	1.00		0.00	1.00		0.15	1.00		0.98	1.00		0.94
Lane Grp Cap(c), veh/h	503	0	938	234	0	894	168	60	54	290	0	147
V/C Ratio(X)	0.02	0.00	0.86	0.01	0.00	0.51	0.02	0.02	0.02	0.32	0.00	0.12
Avail Cap(c_a), veh/h	794	0	1682	537	0	1625	393	588	524	486	0	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.4	0.0	10.8	10.4	0.0	8.0	26.6	26.8	26.8	22.8	0.0	23.5
Incr Delay (d2), s/veh	0.0	0.0	2.5	0.0	0.0	0.4	0.0	0.1	0.1	0.6	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	6.8	0.0	0.0	2.7	0.0	0.0	0.0	1.1	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.4	0.0	13.2	10.4	0.0	8.5	26.7	26.9	26.9	23.4	0.0	23.9
LnGrp LOS	A	A	B	B	A	A	C	C	C	C	A	C
Approach Vol, veh/h		818			456			5			112	
Approach Delay, s/veh		13.1			8.5			26.7			23.5	
Approach LOS		B			A			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.2	38.3	4.2	11.0	4.6	37.9	8.0	7.2
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	58.0	11.0	21.0	11.0	58.0	11.0	21.0
Max Q Clear Time (g_c+I1), s	2.2	25.6	2.1	2.7	2.2	12.0	5.1	2.0
Green Ext Time (p_c), s	0.0	6.7	0.0	0.0	0.0	3.1	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

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

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕↔			↔			↔	
Traffic Vol, veh/h	10	93	3	38	550	30	5	8	6	7	5	4
Future Vol, veh/h	10	93	3	38	550	30	5	8	6	7	5	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	9	0	0	1	7	0	0	0	0	0	0
Mvmt Flow	11	101	3	41	598	33	5	9	7	8	5	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	631	0	0	104	0	0	509	838	103	830	823	316
Stage 1	-	-	-	-	-	-	125	125	-	697	697	-
Stage 2	-	-	-	-	-	-	384	713	-	133	126	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.2	7.3	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	961	-	-	1500	-	-	465	305	957	278	311	686
Stage 1	-	-	-	-	-	-	884	796	-	402	446	-
Stage 2	-	-	-	-	-	-	616	438	-	875	796	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	961	-	-	1500	-	-	437	289	957	259	295	686
Mov Cap-2 Maneuver	-	-	-	-	-	-	437	289	-	259	295	-
Stage 1	-	-	-	-	-	-	873	786	-	397	427	-
Stage 2	-	-	-	-	-	-	579	420	-	849	786	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.5	14	16.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	419	961	-	-	1500	-	-	321
HCM Lane V/C Ratio	0.049	0.011	-	-	0.028	-	-	0.054
HCM Control Delay (s)	14	8.8	0	-	7.5	0.1	-	16.9
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	106	1	1	1	579	2343	6	10	1291	28
Future Volume (veh/h)	0	0	106	1	1	1	579	2343	6	10	1291	28
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1700	1594	1700	1700	1700	1700	1660	1660	1700	1634	1634
Adj Flow Rate, veh/h	0	0	114	1	1	1	623	2519	6	11	1388	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	8	0	0	0	0	3	3	0	5	5
Cap, veh/h	0	56	674	40	25	17	1462	3964	9	86	1695	
Arrive On Green	0.00	0.00	0.03	0.03	0.03	0.03	0.47	0.85	0.85	0.00	0.13	0.00
Sat Flow, veh/h	0	1700	1351	250	771	510	3141	4669	11	1619	4607	0
Grp Volume(v), veh/h	0	0	114	3	0	0	623	1630	895	11	1388	0
Grp Sat Flow(s),veh/h/ln	0	1700	1351	1531	0	0	1570	1511	1658	1619	1487	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	19.8	26.5	26.5	0.7	45.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.3	0.0	0.0	19.8	26.5	26.5	0.7	45.5	0.0
Prop In Lane	0.00		1.00	0.33		0.33	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	0	56	674	83	0	0	1462	2566	1408	86	1695	
V/C Ratio(X)	0.00	0.00	0.17	0.04	0.00	0.00	0.43	0.64	0.64	0.13	0.82	
Avail Cap(c_a), veh/h	0	272	845	249	0	0	1462	2566	1408	188	1695	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.86	0.86	0.00
Uniform Delay (d), s/veh	0.0	0.0	20.6	70.3	0.0	0.0	26.7	3.7	3.7	33.5	60.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.2	0.0	0.0	0.2	1.2	2.2	0.6	3.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	2.3	0.1	0.0	0.0	7.5	6.1	7.1	0.3	18.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	20.7	70.4	0.0	0.0	26.9	4.9	5.9	34.1	64.5	0.0
LnGrp LOS	A	A	C	E	A	A	C	A	A	C	E	
Approach Vol, veh/h		114			3			3148			1399	A
Approach Delay, s/veh		20.7			70.4			9.6			64.3	
Approach LOS		C			E			A			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	133.6		11.0	76.0	63.0		11.0				
Change Period (Y+Rc), s	4.0	* 6.2		* 6	6.2	* 6		6.0				
Max Green Setting (Gmax), s	11.0	* 1E2		* 24	52.8	* 57		22.0				
Max Q Clear Time (g_c+I1), s	2.7	28.5		2.0	21.8	47.5		2.3				
Green Ext Time (p_c), s	0.0	43.7		0.3	2.4	6.1		0.0				

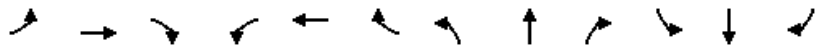
Intersection Summary	
HCM 6th Ctrl Delay	26.3
HCM 6th LOS	C

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	37	55	1	58	9	227	728	74	116	150	4
Future Volume (veh/h)	3	37	55	1	58	9	227	728	74	116	150	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1700	1634	1634	1660	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	4	48	71	1	75	12	295	945	96	151	195	5
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	0	5	5	3	0	0	0	0	0	0
Cap, veh/h	51	119	107	45	126	103	982	1318	1117	359	1279	33
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.78	0.78	0.78	0.78	0.78	0.78
Sat Flow, veh/h	53	1538	1384	8	1623	1332	1201	1700	1441	551	1650	42
Grp Volume(v), veh/h	52	0	71	76	0	12	295	945	96	151	0	200
Grp Sat Flow(s),veh/h/ln	1590	0	1384	1631	0	1332	1201	1700	1441	551	0	1692
Q Serve(g_s), s	0.0	0.0	4.1	0.0	0.0	0.7	6.9	23.3	1.3	15.8	0.0	2.5
Cycle Q Clear(g_c), s	3.7	0.0	4.1	3.7	0.0	0.7	9.4	23.3	1.3	39.1	0.0	2.5
Prop In Lane	0.08		1.00	0.01		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	170	0	107	170	0	103	982	1318	1117	359	0	1312
V/C Ratio(X)	0.31	0.00	0.66	0.45	0.00	0.12	0.30	0.72	0.09	0.42	0.00	0.15
Avail Cap(c_a), veh/h	411	0	311	410	0	299	982	1318	1117	359	0	1312
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	0.00	1.00
Uniform Delay (d), s/veh	36.4	0.0	37.1	37.0	0.0	35.6	3.6	4.7	2.2	14.6	0.0	2.4
Incr Delay (d2), s/veh	1.0	0.0	6.8	1.8	0.0	0.5	0.8	3.4	0.2	3.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	1.6	1.5	0.0	0.2	1.4	6.1	0.3	2.2	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	0.0	44.0	38.8	0.0	36.1	4.3	8.1	2.4	18.2	0.0	2.6
LnGrp LOS	D	A	D	D	A	D	A	A	A	B	A	A
Approach Vol, veh/h		123			88			1336			351	
Approach Delay, s/veh		41.2			38.4			6.8			9.3	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	70.0	12.8	70.0	12.8
Change Period (Y+Rc), s	* 5.8	* 6.4	* 5.8	* 6.4
Max Green Setting (Gmax), s	* 64	* 19	* 64	* 19
Max Q Clear Time (g_c+I1), s	25.3	6.1	41.1	5.7
Green Ext Time (p_c), s	12.0	0.3	2.9	0.3

Intersection Summary	
HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

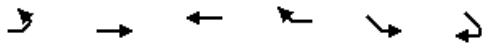
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	33	359	69	37	57	457	2494	51	29	1143	7
Future Volume (vph)	21	33	359	69	37	57	457	2494	51	29	1143	7
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes		1.00	1.00	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	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1667	1363	1568	1700	1417	1583	4491		1615	4459	
Flt Permitted		0.85	1.00	0.72	1.00	1.00	0.15	1.00		0.05	1.00	
Satd. Flow (perm)		1450	1363	1187	1700	1417	255	4491		90	4459	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	23	35	386	74	40	61	491	2682	55	31	1229	8
RTOR Reduction (vph)	0	0	16	0	0	48	0	1	0	0	0	0
Lane Group Flow (vph)	0	58	370	74	40	13	491	2736	0	31	1237	0
Confl. Peds. (#/hr)							1		1	1		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	6%	3%	0%	2%	2%	3%	2%	0%	4%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		8	5		4	1	5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)		14.6	57.5	14.6	14.6	19.6	122.2	113.2		80.3	75.3	
Effective Green, g (s)		14.6	57.5	14.6	14.6	19.6	122.2	113.2		80.3	75.3	
Actuated g/C Ratio		0.10	0.38	0.10	0.10	0.13	0.81	0.75		0.54	0.50	
Clearance Time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		141	522	115	165	185	587	3389		99	2238	
v/s Ratio Prot			c0.20		0.02	0.00	c0.24	0.61		0.01	0.28	
v/s Ratio Perm		0.04	0.07	0.06		0.01	c0.44			0.16		
v/c Ratio		0.41	0.71	0.64	0.24	0.07	0.84	0.81		0.31	0.55	
Uniform Delay, d1		63.7	39.2	65.2	62.6	57.2	29.3	11.6		25.6	25.7	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.40	0.52		1.00	1.00	
Incremental Delay, d2		1.9	4.4	11.7	0.8	0.2	6.0	1.2		1.8	1.0	
Delay (s)		65.6	43.5	76.9	63.4	57.4	47.1	7.3		27.4	26.7	
Level of Service		E	D	E	E	E	D	A		C	C	
Approach Delay (s)		46.4			67.0			13.3			26.7	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	826	392	38	36	35
Future Volume (Veh/h)	35	826	392	38	36	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	37	879	417	40	38	37
Pedestrians			1		2	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (ft)		504				
pX, platoon unblocked					0.61	
vC, conflicting volume	459				1393	439
vC1, stage 1 conf vol					439	
vC2, stage 2 conf vol					954	
vCu, unblocked vol	459				1323	439
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	97				87	94
cM capacity (veh/h)	1111				293	613

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	37	879	457	38	37
Volume Left	37	0	0	38	0
Volume Right	0	0	40	0	37
cSH	1111	1700	1700	293	613
Volume to Capacity	0.03	0.52	0.27	0.13	0.06
Queue Length 95th (ft)	3	0	0	11	5
Control Delay (s)	8.4	0.0	0.0	19.1	11.3
Lane LOS	A			C	B
Approach Delay (s)	0.3		0.0	15.2	
Approach LOS				C	

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	1205	366	81	0	0
Future Volume (Veh/h)	0	1205	366	81	0	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	1.00	1.00
Hourly flow rate (vph)	0	1310	398	88	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	486				835	199
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	486				835	199
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1087				310	806

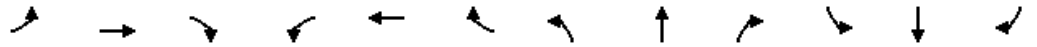
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SE 1
Volume Total	437	437	437	199	199	88	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	88	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.26	0.26	0.26	0.12	0.12	0.05	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Volume (veh/h)	772	435	0	385	0	36
Future Volume (Veh/h)	772	435	0	385	0	36
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	839	473	0	418	0	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1202		
pX, platoon unblocked						
vC, conflicting volume			1312		978	420
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1312		978	420
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	93
cM capacity (veh/h)			534		251	588

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	420	420	473	139	139	139	39
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	473	0	0	0	39
cSH	1700	1700	1700	1700	1700	1700	588
Volume to Capacity	0.25	0.25	0.28	0.08	0.08	0.08	0.07
Queue Length 95th (ft)	0	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	11.6
Lane LOS							B
Approach Delay (s)	0.0			0.0			11.6
Approach LOS							B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	794	8	9	358	19	16	2	34	12	1	7
Future Volume (Veh/h)	3	794	8	9	358	19	16	2	34	12	1	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	845	9	10	381	20	17	2	36	13	1	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					728							
pX, platoon unblocked												
vC, conflicting volume	401			854			1074	1276	427	876	1271	200
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	401			854			1074	1276	427	876	1271	200
tC, single (s)	4.1			4.1			7.6	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			90	99	94	94	99	99
cM capacity (veh/h)	1169			794			164	166	573	226	167	813

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	426	432	200	210	55	21
Volume Left	3	0	10	0	17	13
Volume Right	0	9	0	20	36	7
cSH	1169	1700	794	1700	308	291
Volume to Capacity	0.00	0.25	0.01	0.12	0.18	0.07
Queue Length 95th (ft)	0	0	1	0	16	6
Control Delay (s)	0.1	0.0	0.6	0.0	19.2	18.3
Lane LOS	A		A		C	C
Approach Delay (s)	0.0		0.3		19.2	18.3
Approach LOS					C	C

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	Err%	ICU Level of Service	H	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	664	68	53	16	47	19	0	2237	7	0	1275	329
Future Volume (vph)	664	68	53	16	47	19	0	2237	7	0	1275	329
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Lane Util. Factor	0.94	1.00			0.95			0.91			0.91	1.00
Frpb, ped/bikes	1.00	0.99			1.00			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.93			0.97			1.00			1.00	0.85
Flt Protected	0.95	1.00			0.99			1.00			1.00	1.00
Satd. Flow (prot)	4422	1456			3043			4504			4420	1397
Flt Permitted	0.95	1.00			0.82			1.00			1.00	1.00
Satd. Flow (perm)	4422	1456			2535			4504			4420	1397
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)	706	72	56	17	50	20	0	2380	7	0	1356	350
RTOR Reduction (vph)	0	19	0	0	5	0	0	0	0	0	0	67
Lane Group Flow (vph)	706	109	0	0	82	0	0	2387	0	0	1356	283
Confl. Peds. (#/hr)			5	5			4					4
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	3%	2%	16%	7%	0%	0%	12%	3%	0%	0%	5%	2%
Turn Type	Prot	NA		Perm	NA			NA			NA	pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases				8								6
Actuated Green, G (s)	28.4	43.3			8.9			92.8			92.8	121.2
Effective Green, g (s)	28.4	43.3			8.9			92.8			92.8	121.2
Actuated g/C Ratio	0.19	0.29			0.06			0.62			0.62	0.81
Clearance Time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Vehicle Extension (s)	3.0	3.0			3.0			0.2			0.2	3.0
Lane Grp Cap (vph)	837	420			150			2786			2734	1184
v/s Ratio Prot	c0.16	0.07						c0.53			0.31	0.05
v/s Ratio Perm					c0.03							0.16
v/c Ratio	0.84	0.26			0.55			0.86			0.50	0.24
Uniform Delay, d1	58.7	41.0			68.6			23.2			15.7	3.4
Progression Factor	1.00	1.00			1.00			0.83			0.63	1.69
Incremental Delay, d2	7.8	0.3			4.1			3.0			0.6	0.1
Delay (s)	66.4	41.3			72.7			22.3			10.5	5.9
Level of Service	E	D			E			C			B	A
Approach Delay (s)		62.6			72.7			22.3			9.5	
Approach LOS		E			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	766	1	3	367	64	3	1	1	89	1	16
Future Volume (vph)	10	766	1	3	367	64	3	1	1	89	1	16
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	0.93		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1615	1666		1615	1618		1214	2956		1614	1428	
Flt Permitted	0.46	1.00		0.22	1.00		1.00	1.00		0.57	1.00	
Satd. Flow (perm)	774	1666		373	1618		1278	2956		971	1428	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	806	1	3	386	67	3	1	1	94	1	17
RTOR Reduction (vph)	0	0	0	0	4	0	0	2	0	0	15	0
Lane Group Flow (vph)	11	807	0	3	449	0	3	0	0	94	3	0
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	33%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	48.7	47.9		48.5	47.8		3.8	3.0		14.9	10.1	
Effective Green, g (s)	48.7	47.9		48.5	47.8		3.8	3.0		14.9	10.1	
Actuated g/C Ratio	0.62	0.61		0.62	0.61		0.05	0.04		0.19	0.13	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	488	1016		241	985		61	112		249	183	
v/s Ratio Prot	c0.00	c0.48		0.00	0.28		0.00	0.00		c0.04	0.00	
v/s Ratio Perm	0.01			0.01			0.00			c0.03		
v/c Ratio	0.02	0.79		0.01	0.46		0.05	0.00		0.38	0.02	
Uniform Delay, d1	5.8	11.6		8.0	8.3		35.6	36.3		27.4	29.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	4.4		0.0	0.3		0.3	0.0		1.0	0.0	
Delay (s)	5.8	15.9		8.0	8.6		36.0	36.3		28.4	29.9	
Level of Service	A	B		A	A		D	D		C	C	
Approach Delay (s)		15.8			8.6			36.1			28.6	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	19.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Volume (veh/h)	34	104	209	2	552	2	0	435	0	0
Future Volume (Veh/h)	34	104	209	2	552	2	0	435	0	0
Sign Control		Free			Free		Yield		Stop	
Grade		0%			0%		0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	1.00	1.00
Hourly flow rate (vph)	36	111	222	2	587	2	0	463	0	0
Pedestrians									4	
Lane Width (ft)									0.0	
Walking Speed (ft/s)									4.0	
Percent Blockage									0	
Right turn flare (veh)										
Median type		None			None					
Median storage veh)										
Upstream signal (ft)		940			759					
pX, platoon unblocked										
vC, conflicting volume	589			115			779	294	484	780
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	589			115			779	294	484	780
tC, single (s)	4.1			4.1			6.5	6.9	7.5	6.5
tC, 2 stage (s)										
tF (s)	2.2			2.2			4.0	3.3	3.5	4.0
p0 queue free %	96			100			100	35	100	100
cM capacity (veh/h)	996			1487			317	708	156	313

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	147	222	296	296	463
Volume Left	36	0	2	0	0
Volume Right	0	222	0	2	463
cSH	996	1700	1487	1700	708
Volume to Capacity	0.04	0.13	0.00	0.17	0.65
Queue Length 95th (ft)	3	0	0	0	122
Control Delay (s)	2.4	0.0	0.1	0.0	19.2
Lane LOS	A		A		C
Approach Delay (s)	1.0		0.0		19.2
Approach LOS					C

Intersection Summary				
Average Delay	6.5			
Intersection Capacity Utilization	54.0%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	93	3	38	550	30	5	8	6	7	5	4
Future Volume (Veh/h)	10	93	3	38	550	30	5	8	6	7	5	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	11	101	3	41	598	33	5	9	7	8	5	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1295			404							
pX, platoon unblocked												
vC, conflicting volume	631			104			512	838	102	832	822	316
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	631			104			512	838	102	832	822	316
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			99	97	99	97	98	99
cM capacity (veh/h)	961			1500			428	293	939	249	299	686

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	115	340	332	21	17
Volume Left	11	41	0	5	8
Volume Right	3	0	33	7	4
cSH	961	1500	1700	421	311
Volume to Capacity	0.01	0.03	0.20	0.05	0.05
Queue Length 95th (ft)	1	2	0	4	4
Control Delay (s)	0.9	1.1	0.0	14.0	17.2
Lane LOS	A	A		B	C
Approach Delay (s)	0.9	0.6		14.0	17.2
Approach LOS				B	C

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	32.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	106	1	1	1	579	2343	6	10	1291	28
Future Volume (vph)	0	0	106	1	1	1	579	2343	6	10	1291	28
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)			6.2		6.0		6.2	6.0		4.0	6.0	
Lane Util. Factor			1.00		1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes			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	
Frt			0.85		0.95		1.00	1.00		1.00	1.00	
Flt Protected			1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)			1338		1597		3133	4505		1615	4408	
Flt Permitted			1.00		1.00		0.95	1.00		0.05	1.00	
Satd. Flow (perm)			1338		1624		3133	4505		93	4408	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	114	1	1	1	623	2519	6	11	1388	30
RTOR Reduction (vph)	0	0	31	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	83	0	2	0	623	2525	0	11	1417	0
Confl. Peds. (#/hr)							6					6
Heavy Vehicles (%)	0%	0%	8%	0%	0%	0%	0%	3%	0%	0%	5%	0%
Turn Type			pm+ov	Perm	NA		Prot	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4	8						6		
Actuated Green, G (s)			58.4		1.3		55.1	130.1		75.4	75.4	
Effective Green, g (s)			58.4		1.3		55.1	130.1		75.4	75.4	
Actuated g/C Ratio			0.39		0.01		0.37	0.87		0.50	0.50	
Clearance Time (s)			6.2		6.0		6.2	6.0		4.0	6.0	
Vehicle Extension (s)			3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)			576		14		1150	3907		73	2215	
v/s Ratio Prot			c0.05				0.20	c0.56		0.00	c0.32	
v/s Ratio Perm			0.01		0.00					0.07		
v/c Ratio			0.14		0.14		0.54	0.65		0.15	0.64	
Uniform Delay, d1			29.6		73.8		37.5	3.0		20.0	27.3	
Progression Factor			1.00		1.00		1.22	0.84		0.32	0.32	
Incremental Delay, d2			0.1		4.7		0.4	0.6		0.9	1.3	
Delay (s)			29.7		78.5		46.0	3.1		7.3	10.1	
Level of Service			C		E		D	A		A	B	
Approach Delay (s)		29.7			78.5			11.6			10.0	
Approach LOS		C			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	245	163	3	92	2293	749	0	898	496
Future Volume (vph)	0	0	0	245	163	3	92	2293	749	0	898	496
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)				6.0	6.0		4.0	6.2	6.2		6.2	4.0
Lane Util. Factor				0.91	0.91		1.00	0.91	1.00		0.91	1.00
Frt				1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected				0.95	0.98		0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)				1427	2975		1599	4506	1417		4463	1403
Flt Permitted				0.95	0.98		0.23	1.00	1.00		1.00	1.00
Satd. Flow (perm)				1427	2975		379	4506	1417		4463	1403
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	0	0	295	196	4	111	2763	902	0	1082	598
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	213	0	0	0
Lane Group Flow (vph)	0	0	0	162	332	0	111	2763	689	0	1082	598
Heavy Vehicles (%)	0%	0%	0%	3%	1%	0%	1%	3%	2%	0%	4%	3%
Turn Type				Split	NA		pm+pt	NA	Perm		NA	Free
Protected Phases				4	4		5	2			6	
Permitted Phases							2		2			Free
Actuated Green, G (s)				23.2	23.2		114.6	114.6	114.6		102.5	150.0
Effective Green, g (s)				23.2	23.2		114.6	114.6	114.6		102.5	150.0
Actuated g/C Ratio				0.15	0.15		0.76	0.76	0.76		0.68	1.00
Clearance Time (s)				6.0	6.0		4.0	6.2	6.2		6.2	
Vehicle Extension (s)				3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)				220	460		355	3442	1082		3049	1403
v/s Ratio Prot				c0.11	0.11		0.02	c0.61			0.24	
v/s Ratio Perm							0.22		0.49			0.43
v/c Ratio				0.74	0.72		0.31	0.80	0.64		0.35	0.43
Uniform Delay, d1				60.5	60.3		5.1	10.8	8.1		9.9	0.0
Progression Factor				1.00	1.00		1.02	0.99	1.29		0.80	1.00
Incremental Delay, d2				12.1	5.5		0.1	0.6	0.8		0.3	0.8
Delay (s)				72.6	65.9		5.3	11.3	11.3		8.2	0.8
Level of Service				E	E		A	B	B		A	A
Approach Delay (s)		0.0			68.1			11.1			5.6	
Approach LOS		A			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	37	55	1	58	9	227	728	74	116	150	4
Future Volume (vph)	3	37	55	1	58	9	227	728	74	116	150	4
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00	0.96		1.00	0.95	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	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1663	1393		1619	1336	1615	1700	1445	1615	1692	
Flt Permitted		0.97	1.00		0.99	1.00	0.63	1.00	1.00	0.24	1.00	
Satd. Flow (perm)		1611	1393		1612	1336	1075	1700	1445	405	1692	
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	4	48	71	1	75	12	295	945	96	151	195	5
RTOR Reduction (vph)	0	0	64	0	0	11	0	0	22	0	1	0
Lane Group Flow (vph)	0	52	7	0	76	1	295	945	74	151	199	0
Confl. Bikes (#/hr)			4			7						
Heavy Vehicles (%)	0%	2%	0%	0%	5%	3%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)		8.2	8.2		8.2	8.2	67.3	67.3	67.3	67.3	67.3	
Effective Green, g (s)		8.2	8.2		8.2	8.2	67.3	67.3	67.3	67.3	67.3	
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.77	0.77	0.77	0.77	0.77	
Clearance Time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		150	130		150	124	824	1304	1108	310	1298	
v/s Ratio Prot								c0.56			0.12	
v/s Ratio Perm		0.03	0.00		c0.05	0.00	0.27		0.05	0.37		
v/c Ratio		0.35	0.05		0.51	0.01	0.36	0.72	0.07	0.49	0.15	
Uniform Delay, d1		37.2	36.2		37.8	36.1	3.3	5.3	2.5	3.8	2.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.4	0.2		2.7	0.0	1.2	3.5	0.1	5.4	0.3	
Delay (s)		38.6	36.4		40.5	36.1	4.5	8.9	2.6	9.2	2.9	
Level of Service		D	D		D	D	A	A	A	A	A	
Approach Delay (s)		37.3			39.9			7.5			5.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	87.7	Sum of lost time (s)	12.2
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1568	6	184	0	0	0	0	2127	6	3	1146	0
Future Volume (vph)	1568	6	184	0	0	0	0	2127	6	3	1146	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.6	6.6						6.6		6.6	6.6	
Lane Util. Factor	0.86	0.86						0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.96						1.00		1.00	1.00	
Flt Protected	0.95	0.96						1.00		0.95	1.00	
Satd. Flow (prot)	2750	2649						4461		1615	4420	
Flt Permitted	0.95	0.96						1.00		0.05	1.00	
Satd. Flow (perm)	2750	2649						4461		89	4420	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1704	7	200	0	0	0	0	2312	7	3	1246	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1142	749	0	0	0	0	0	2319	0	3	1246	0
Confl. Peds. (#/hr)			3	3			1					1
Heavy Vehicles (%)	1%	17%	4%	0%	0%	0%	0%	4%	0%	0%	5%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)	60.4	60.4						76.4		76.4	76.4	
Effective Green, g (s)	60.4	60.4						76.4		76.4	76.4	
Actuated g/C Ratio	0.40	0.40						0.51		0.51	0.51	
Clearance Time (s)	6.6	6.6						6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0						0.2		0.2	0.2	
Lane Grp Cap (vph)	1107	1066						2272		45	2251	
v/s Ratio Prot								c0.52			0.28	
v/s Ratio Perm	c0.42	0.28								0.03		
v/c Ratio	1.03	0.93dl						1.02		0.07	0.55	
Uniform Delay, d1	44.8	37.3						36.8		18.7	25.1	
Progression Factor	1.00	1.00						1.00		0.97	0.84	
Incremental Delay, d2	35.5	2.1						24.3		2.7	0.9	
Delay (s)	80.3	39.4						61.1		20.7	21.9	
Level of Service	F	D						E		C	C	
Approach Delay (s)		63.9			0.0			61.1			21.9	
Approach LOS		E			A			E			C	

Intersection Summary			
HCM 2000 Control Delay	53.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCS7 Two-Way Stop-Control Report

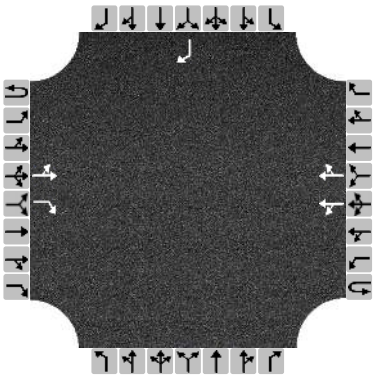
General Information

Analyst	mah
Agency/Co.	KAI
Date Performed	5/9/2018
Analysis Year	2018
Time Analyzed	
Intersection Orientation	East-West
Project Description	21018-112

Site Information

Intersection	Aronson Ave/6thAve Bypass
Jurisdiction	
East/West Street	Aronson Ave
North/South Street	6th Ave Bypass
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	0		0	0	1
Configuration		LT		R		LT		TR								R
Volume, V (veh/h)		34	104	209		2	552	2								435
Percent Heavy Vehicles (%)		0				0										2
Proportion Time Blocked		0.000	0.000	0.000		0.000	0.000	0.000								0.400
Percent Grade (%)														0		
Right Turn Channelized		Yes				No				No				Yes		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		34				2										435
Capacity, c (veh/h)		1027				1500										671
v/c Ratio		0.03				0.00										0.65
95% Queue Length, Q_{95} (veh)		0.1				0.0										5.3
Control Delay (s/veh)		8.6				7.4										20.1
Level of Service, LOS		A				A										C
Approach Delay (s/veh)		1.0				0.0								20.1		
Approach LOS														C		

Appendix C
Year 2022 AM Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	16	557	35	20	21	177	934	32	24	1986	3
Future Volume (veh/h)	2	16	557	35	20	21	177	934	32	24	1986	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1607	1607	1647	1700	1620	1700	1607	1541	1541	1620	1647	1647
Adj Flow Rate, veh/h	2	18	640	40	23	24	203	1074	37	28	2283	3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	7	7	4	0	6	0	7	12	12	6	4	4
Cap, veh/h	50	352	577	232	379	371	331	2542	88	279	2012	3
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.36	1.00	1.00	0.02	0.43	0.43
Sat Flow, veh/h	83	1505	1392	787	1620	1437	1531	4172	144	1543	4637	6
Grp Volume(v), veh/h	20	0	640	40	23	24	203	722	389	28	1476	810
Grp Sat Flow(s),veh/h/ln	1588	0	1392	787	1620	1437	1531	1402	1511	1543	1499	1646
Q Serve(g_s), s	0.0	0.0	30.4	5.4	1.4	1.6	8.6	0.0	0.0	1.4	56.4	56.4
Cycle Q Clear(g_c), s	1.3	0.0	30.4	6.7	1.4	1.6	8.6	0.0	0.0	1.4	56.4	56.4
Prop In Lane	0.10		1.00	1.00		1.00	1.00		0.10	1.00		0.00
Lane Grp Cap(c), veh/h	402	0	577	232	379	371	331	1709	921	279	1300	714
V/C Ratio(X)	0.05	0.00	1.11	0.17	0.06	0.06	0.61	0.42	0.42	0.10	1.13	1.13
Avail Cap(c_a), veh/h	402	0	577	232	379	371	362	1709	921	372	1300	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	38.1	41.2	38.7	36.4	35.7	0.0	0.0	22.4	36.8	36.8
Incr Delay (d2), s/veh	0.1	0.0	71.2	0.3	0.1	0.1	2.4	0.7	1.3	0.2	70.6	77.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	20.5	1.1	0.6	0.6	4.7	0.2	0.3	0.5	32.7	37.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.7	0.0	109.3	41.6	38.8	36.4	38.1	0.7	1.3	22.6	107.4	114.2
LnGrp LOS	D	A	F	D	D	D	D	A	A	C	F	F
Approach Vol, veh/h		660			87			1314			2314	
Approach Delay, s/veh		107.2			39.4			6.7			108.8	
Approach LOS		F			D			A			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	85.8		37.0	30.0	63.0		37.0				
Change Period (Y+Rc), s	4.0	6.6		6.6	6.6	* 6.6		6.6				
Max Green Setting (Gmax), s	11.0	71.4		30.4	26.0	* 56		30.4				
Max Q Clear Time (g_c+I1), s	3.4	2.0		8.7	10.6	58.4		32.4				
Green Ext Time (p_c), s	0.0	9.6		0.3	0.5	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	76.5
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	211	864	31	13	31
Future Vol, veh/h	12	211	864	31	13	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	160	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	5	0	0	25	0
Mvmt Flow	13	237	971	35	15	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1006	0	-	0	1252	989
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	263	-
Critical Hdwy	4.1	-	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.2	-	-	-	3.725	3.3
Pot Cap-1 Maneuver	697	-	-	-	171	302
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	697	-	-	-	168	302
Mov Cap-2 Maneuver	-	-	-	-	263	-
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	731	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	697	-	-	-	263	302
HCM Lane V/C Ratio	0.019	-	-	-	0.056	0.115
HCM Control Delay (s)	10.3	-	-	-	19.5	18.5
HCM Lane LOS	B	-	-	-	C	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0.4

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Vol, veh/h	362	172	0	519	0	29
Future Vol, veh/h	362	172	0	519	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	7	2	0	8	0	0
Mvmt Flow	407	193	0	583	0	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	204
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	809
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	809
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	809	-	-	-
HCM Lane V/C Ratio	0.04	-	-	-
HCM Control Delay (s)	9.6	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑↱				↱			↱
Traffic Vol, veh/h	9	374	6	1	485	17	27	6	13	2	1	4
Future Vol, veh/h	9	374	6	1	485	17	27	6	13	2	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	5	0	0	5	0	0	0	8	50	0	0
Mvmt Flow	11	440	7	1	571	20	32	7	15	2	1	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	591	0	0	447	0	0	754	1059	224	829	1052	296
Stage 1	-	-	-	-	-	-	466	466	-	583	583	-
Stage 2	-	-	-	-	-	-	288	593	-	246	469	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	7.06	8.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	7.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	7.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.38	4	4	3.3
Pot Cap-1 Maneuver	995	-	-	1124	-	-	302	226	761	195	228	706
Stage 1	-	-	-	-	-	-	551	566	-	363	502	-
Stage 2	-	-	-	-	-	-	701	497	-	616	564	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	995	-	-	1124	-	-	295	222	761	184	224	706
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	222	-	184	224	-
Stage 1	-	-	-	-	-	-	543	558	-	358	501	-
Stage 2	-	-	-	-	-	-	694	497	-	587	556	-

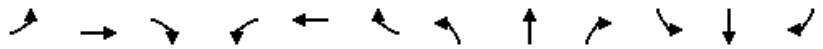
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	9.8	10.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	761	995	-	-	1124	-	-	706
HCM Lane V/C Ratio	0.02	0.011	-	-	0.001	-	-	0.007
HCM Control Delay (s)	9.8	8.7	-	-	8.2	-	-	10.1
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	316	12	47	17	64	3	0	795	1	0	2172	448
Future Volume (veh/h)	316	12	47	17	64	3	0	795	1	0	2172	448
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	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1581	1581	1634	1634	1634	0	1567	1567	0	1660	1660
Adj Flow Rate, veh/h	359	14	53	19	73	3	0	903	1	0	2468	509
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	5	9	9	5	5	5	0	10	10	0	3	3
Cap, veh/h	441	57	215	59	122	5	0	3075	3	0	3157	1120
Arrive On Green	0.10	0.20	0.20	0.05	0.05	0.05	0.00	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	4388	289	1093	427	2457	105	0	4555	5	0	4682	1405
Grp Volume(v), veh/h	359	0	67	53	0	42	0	584	320	0	2468	509
Grp Sat Flow(s),veh/h/ln	1463	0	1382	1522	0	1467	0	1426	1567	0	1511	1405
Q Serve(g_s), s	10.4	0.0	5.3	3.1	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.4	0.0	5.3	4.4	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.79	0.36		0.07	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	441	0	272	113	0	73	0	1987	1091	0	3157	1120
V/C Ratio(X)	0.81	0.00	0.25	0.47	0.00	0.57	0.00	0.29	0.29	0.00	0.78	0.45
Avail Cap(c_a), veh/h	608	0	348	139	0	98	0	1987	1091	0	3157	1120
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.97	0.97	0.00	0.22	0.22
Uniform Delay (d), s/veh	57.3	0.0	44.1	60.7	0.0	60.4	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	6.0	0.0	0.5	3.0	0.0	6.9	0.0	0.4	0.7	0.0	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	1.8	1.8	0.0	1.5	0.0	0.1	0.2	0.0	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.2	0.0	44.6	63.7	0.0	67.3	0.0	0.4	0.7	0.0	0.4	0.3
LnGrp LOS	E	A	D	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		426			95			904			2977	
Approach Delay, s/veh		60.3			65.3			0.5			0.4	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	97.1	32.9	97.1	19.1	13.8
Change Period (Y+Rc), s	6.6	7.3	6.6	6.0	7.3
Max Green Setting (Gmax), s	83.4	32.7	83.4	18.0	8.7
Max Q Clear Time (g_c+I1), s	2.0	7.3	2.0	12.4	6.4
Green Ext Time (p_c), s	1.1	0.3	5.1	0.7	0.1

Intersection Summary	
HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	202	1	1	814	73	2	1	1	21	1	12
Future Volume (veh/h)	1	202	1	1	814	73	2	1	1	21	1	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.96		0.98	0.96		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1647	1647	1700	1673	1673	374	1700	1700	1634	1700	1700
Adj Flow Rate, veh/h	1	235	1	1	947	85	2	1	1	24	1	14
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	4	4	0	2	2	100	0	0	5	0	0
Cap, veh/h	164	1092	5	813	1007	90	116	66	56	188	6	79
Arrive On Green	0.00	0.67	0.67	0.00	0.67	0.67	0.00	0.04	0.04	0.02	0.06	0.06
Sat Flow, veh/h	1619	1639	7	1619	1511	136	356	1650	1386	1556	95	1336
Grp Volume(v), veh/h	1	0	236	1	0	1032	2	1	1	24	0	15
Grp Sat Flow(s),veh/h/ln	1619	0	1646	1619	0	1647	356	1615	1421	1556	0	1431
Q Serve(g_s), s	0.0	0.0	3.9	0.0	0.0	39.2	0.2	0.0	0.0	1.0	0.0	0.7
Cycle Q Clear(g_c), s	0.0	0.0	3.9	0.0	0.0	39.2	0.2	0.0	0.0	1.0	0.0	0.7
Prop In Lane	1.00		0.00	1.00		0.08	1.00		0.98	1.00		0.93
Lane Grp Cap(c), veh/h	164	0	1096	813	0	1097	116	65	57	188	0	85
V/C Ratio(X)	0.01	0.00	0.22	0.00	0.00	0.94	0.02	0.02	0.02	0.13	0.00	0.18
Avail Cap(c_a), veh/h	416	0	1198	1065	0	1199	171	415	365	400	0	368
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	0.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	4.6	4.0	0.0	10.5	32.3	32.3	32.3	31.3	0.0	31.3
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	0.0	13.5	0.1	0.1	0.1	0.3	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.0	0.0	0.0	13.5	0.0	0.0	0.0	0.4	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	4.7	4.0	0.0	24.0	32.4	32.4	32.4	31.6	0.0	32.3
LnGrp LOS	B	A	A	A	A	C	C	C	C	C	A	C
Approach Vol, veh/h		237			1033			4			39	
Approach Delay, s/veh		4.7			23.9			32.4			31.9	
Approach LOS		A			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.1	52.7	4.2	9.1	4.1	52.7	5.5	7.8
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	51.0	11.0	18.0	11.0	51.0	11.0	18.0
Max Q Clear Time (g_c+I1), s	2.0	5.9	2.2	2.7	2.0	41.2	3.0	2.0
Green Ext Time (p_c), s	0.0	1.4	0.0	0.0	0.0	5.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕			↔			↔	
Traffic Vol, veh/h	8	172	1	7	169	38	1	1	1	2	2	3
Future Vol, veh/h	8	172	1	7	169	38	1	1	1	2	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	14	5	0	17	8	6	0	0	0	0	0	0
Mvmt Flow	9	191	1	8	188	42	1	1	1	2	2	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	230	0	0	192	0	0	321	456	192	436	435	115
Stage 1	-	-	-	-	-	-	210	210	-	225	225	-
Stage 2	-	-	-	-	-	-	111	246	-	211	210	-
Critical Hdwy	4.31	-	-	4.355	-	-	7.3	6.5	6.2	7.3	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.333	-	-	2.3615	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1261	-	-	1286	-	-	625	504	855	521	517	922
Stage 1	-	-	-	-	-	-	797	732	-	763	721	-
Stage 2	-	-	-	-	-	-	888	706	-	796	732	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1261	-	-	1286	-	-	614	496	855	514	509	922
Mov Cap-2 Maneuver	-	-	-	-	-	-	614	496	-	514	509	-
Stage 1	-	-	-	-	-	-	791	726	-	757	716	-
Stage 2	-	-	-	-	-	-	876	701	-	787	726	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.3	10.8	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	623	1261	-	-	1286	-	-	632
HCM Lane V/C Ratio	0.005	0.007	-	-	0.006	-	-	0.012
HCM Control Delay (s)	10.8	7.9	0	-	7.8	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	177	0	0	3	190	904	2	6	2190	7
Future Volume (veh/h)	0	0	177	0	0	3	190	904	2	6	2190	7
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1700	1647	1700	1700	1700	1620	1514	1514	1700	1634	1634
Adj Flow Rate, veh/h	0	0	201	0	0	3	216	1027	2	7	2489	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	4	0	0	0	6	14	14	0	5	5
Cap, veh/h	0	65	524	0	0	55	1009	3537	7	285	2161	
Arrive On Green	0.00	0.00	0.04	0.00	0.00	0.04	0.34	0.83	0.83	0.01	0.97	0.00
Sat Flow, veh/h	0	1700	1396	0	0	1441	2994	4261	8	1619	4607	0
Grp Volume(v), veh/h	0	0	201	0	0	3	216	664	365	7	2489	0
Grp Sat Flow(s),veh/h/ln	0	1700	1396	0	0	1441	1497	1378	1513	1619	1487	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.3	6.7	7.0	7.0	0.3	63.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.3	6.7	7.0	7.0	0.3	63.0	0.0
Prop In Lane	0.00		1.00	0.00		1.00	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	0	65	524	0	0	55	1009	2288	1256	285	2161	
V/C Ratio(X)	0.00	0.00	0.38	0.00	0.00	0.05	0.21	0.29	0.29	0.02	1.15	
Avail Cap(c_a), veh/h	0	432	825	0	0	344	1009	2288	1256	411	2161	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.44	0.44	0.00
Uniform Delay (d), s/veh	0.0	0.0	29.6	0.0	0.0	60.2	30.8	2.5	2.5	18.6	2.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.5	0.0	0.0	0.4	0.1	0.3	0.6	0.0	70.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	4.7	0.0	0.0	0.1	2.4	1.4	1.7	0.1	14.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	30.1	0.0	0.0	60.6	30.9	2.8	3.1	18.6	72.9	0.0
LnGrp LOS	A	A	C	A	A	E	C	A	A	B	F	
Approach Vol, veh/h		201			3			1245			2496	A
Approach Delay, s/veh		30.1			60.6			7.7			72.7	
Approach LOS		C			E			A			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	114.1		11.0	50.0	69.0		11.0				
Change Period (Y+Rc), s	4.0	* 6.2		* 6	6.2	* 6		6.0				
Max Green Setting (Gmax), s	11.0	* 72		* 33	17.8	* 63		31.0				
Max Q Clear Time (g_c+I1), s	2.3	9.0		2.0	8.7	65.0		2.3				
Green Ext Time (p_c), s	0.0	8.5		0.7	0.5	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	50.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	477	370	1	226	990	203	0	1391	0
Future Volume (veh/h)	0	0	0	477	370	1	226	990	203	0	1391	0
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	1687	1673	1647	1554	1660	0	1634	1673
Adj Flow Rate, veh/h				332	755	1	266	1165	0	0	1636	0
Peak Hour Factor				0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %				2	1	2	4	11	3	0	5	2
Cap, veh/h				392	829	1	288	2781		0	2339	
Arrive On Green				0.25	0.25	0.25	0.20	1.00	0.00	0.00	0.52	0.00
Sat Flow, veh/h				1594	3368	4	1569	4243	1407	0	4607	1418
Grp Volume(v), veh/h				332	378	378	266	1165	0	0	1636	0
Grp Sat Flow(s),veh/h/ln				1594	1687	1686	1569	1414	1407	0	1487	1418
Q Serve(g_s), s				25.8	28.3	28.3	10.7	0.0	0.0	0.0	35.8	0.0
Cycle Q Clear(g_c), s				25.8	28.3	28.3	10.7	0.0	0.0	0.0	35.8	0.0
Prop In Lane				1.00		0.00	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				392	415	415	288	2781		0	2339	
V/C Ratio(X)				0.85	0.91	0.91	0.92	0.42		0.00	0.70	
Avail Cap(c_a), veh/h				409	433	433	348	2781		0	2339	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.86	0.86	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				46.7	47.6	47.6	21.4	0.0	0.0	0.0	23.2	0.0
Incr Delay (d2), s/veh				14.7	22.7	22.7	24.2	0.4	0.0	0.0	1.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.7	14.4	14.4	5.8	0.1	0.0	0.0	12.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				61.4	70.3	70.3	45.6	0.4	0.0	0.0	25.0	0.0
LnGrp LOS				E	E	E	D	A		A	C	
Approach Vol, veh/h					1088			1431	A		1636	A
Approach Delay, s/veh					67.6			8.8			25.0	
Approach LOS					E			A			C	

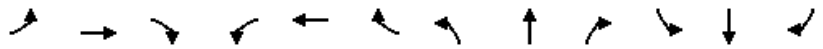
Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	91.4		38.6	17.0	74.4
Change Period (Y+Rc), s	6.2		6.6	4.0	6.2
Max Green Setting (Gmax), s	83.8		33.4	18.0	61.8
Max Q Clear Time (g_c+I1), s	2.0		30.3	12.7	37.8
Green Ext Time (p_c), s	11.3		1.7	0.4	13.3

Intersection Summary	
HCM 6th Ctrl Delay	30.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	84	274	1	17	6	102	168	54	293	731	21
Future Volume (veh/h)	7	84	274	1	17	6	102	168	54	293	731	21
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1700	1594	1594	1567	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	8	97	315	1	20	7	117	193	62	337	840	24
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	5	5	0	8	8	10	0	0	0	0	0	0
Cap, veh/h	50	332	302	44	329	279	275	1121	950	781	1085	31
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.66	0.66	0.66	0.66	0.66	0.66
Sat Flow, veh/h	43	1582	1441	16	1566	1328	650	1700	1441	1142	1645	47
Grp Volume(v), veh/h	105	0	315	21	0	7	117	193	62	337	0	864
Grp Sat Flow(s),veh/h/ln	1625	0	1441	1582	0	1328	650	1700	1441	1142	0	1692
Q Serve(g_s), s	0.0	0.0	19.6	0.0	0.0	0.4	14.3	4.1	1.4	15.0	0.0	33.2
Cycle Q Clear(g_c), s	5.1	0.0	19.6	1.0	0.0	0.4	47.5	4.1	1.4	19.1	0.0	33.2
Prop In Lane	0.08		1.00	0.05		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	382	0	302	372	0	279	275	1121	950	781	0	1116
V/C Ratio(X)	0.27	0.00	1.04	0.06	0.00	0.03	0.43	0.17	0.07	0.43	0.00	0.77
Avail Cap(c_a), veh/h	382	0	302	372	0	279	275	1121	950	781	0	1116
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	0.00	1.00
Uniform Delay (d), s/veh	31.2	0.0	36.9	29.5	0.0	29.3	27.6	6.1	5.7	9.8	0.0	11.1
Incr Delay (d2), s/veh	0.4	0.0	63.1	0.3	0.0	0.2	4.8	0.3	0.1	1.7	0.0	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	12.0	0.4	0.0	0.1	2.5	1.4	0.4	3.8	0.0	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.5	0.0	100.0	29.8	0.0	29.5	32.3	6.4	5.8	11.5	0.0	16.3
LnGrp LOS	C	A	F	C	A	C	C	A	A	B	A	B
Approach Vol, veh/h		420			28			372			1201	
Approach Delay, s/veh		82.9			29.7			14.5			15.0	
Approach LOS		F			C			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	67.4	26.0	67.4	26.0
Change Period (Y+Rc), s	* 5.8	* 6.4	* 5.8	* 6.4
Max Green Setting (Gmax), s	* 62	* 20	* 62	* 20
Max Q Clear Time (g_c+I1), s	49.5	21.6	35.2	3.0
Green Ext Time (p_c), s	1.8	0.0	9.3	0.1

Intersection Summary	
HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	16	557	35	20	21	177	934	32	24	1986	3
Future Volume (vph)	2	16	557	35	20	21	177	934	32	24	1986	3
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.99	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	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1591	1389	1615	1604	1432	1509	4135		1524	4462	
Flt Permitted		0.96	1.00	0.74	1.00	1.00	0.05	1.00		0.22	1.00	
Satd. Flow (perm)		1540	1389	1265	1604	1432	85	4135		357	4462	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	2	18	640	40	23	24	203	1074	37	28	2283	3
RTOR Reduction (vph)	0	0	47	0	0	21	0	1	0	0	0	0
Lane Group Flow (vph)	0	20	593	40	23	3	203	1110	0	28	2286	0
Confl. Peds. (#/hr)	2					2	1					1
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	0%	7%	4%	0%	6%	0%	7%	12%	0%	6%	4%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		8	5		4	1	5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)		8.5	35.3	8.5	8.5	13.9	101.5	98.9		77.5	77.5	
Effective Green, g (s)		8.5	35.3	8.5	8.5	13.9	101.5	98.9		77.5	77.5	
Actuated g/C Ratio		0.07	0.27	0.07	0.07	0.11	0.78	0.76		0.60	0.60	
Clearance Time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		100	419	82	104	153	359	3145		261	2660	
v/s Ratio Prot			c0.29		0.01	0.00	0.12	0.27		0.00	c0.51	
v/s Ratio Perm		0.01	0.14	0.03		0.00	0.32			0.06		
v/c Ratio		0.20	1.42	0.49	0.22	0.02	0.57	0.35		0.11	0.86	
Uniform Delay, d1		57.5	47.4	58.6	57.6	51.9	26.4	5.1		11.0	21.7	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.04	1.25		1.00	1.00	
Incremental Delay, d2		1.0	200.9	4.5	1.1	0.0	1.9	0.3		0.2	3.9	
Delay (s)		58.5	248.3	63.2	58.7	52.0	29.4	6.7		11.2	25.6	
Level of Service		E	F	E	E	D	C	A		B	C	
Approach Delay (s)		242.5			58.9			10.2			25.5	
Approach LOS		F			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	54.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	101.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	211	864	31	13	31
Future Volume (Veh/h)	12	211	864	31	13	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	13	237	971	35	15	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (ft)		504				
pX, platoon unblocked					0.99	
vC, conflicting volume	1006				1252	988
vC1, stage 1 conf vol					988	
vC2, stage 2 conf vol					263	
vCu, unblocked vol	1006				1250	988
tC, single (s)	4.1				6.6	6.2
tC, 2 stage (s)					5.6	
tF (s)	2.2				3.7	3.3
p0 queue free %	98				95	88
cM capacity (veh/h)	697				310	302

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	13	237	1006	15	35
Volume Left	13	0	0	15	0
Volume Right	0	0	35	0	35
cSH	697	1700	1700	310	302
Volume to Capacity	0.02	0.14	0.59	0.05	0.12
Queue Length 95th (ft)	1	0	0	4	10
Control Delay (s)	10.3	0.0	0.0	17.2	18.5
Lane LOS	B			C	C
Approach Delay (s)	0.5		0.0	18.1	
Approach LOS				C	

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	534	523	46	0	432
Future Volume (Veh/h)	0	534	523	46	0	432
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	600	588	52	0	485
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	640				788	294
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	640				788	294
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	32
cM capacity (veh/h)	954				332	708

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	200	200	200	294	294	52	485
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	52	485
cSH	1700	1700	1700	1700	1700	1700	708
Volume to Capacity	0.12	0.12	0.12	0.17	0.17	0.03	0.68
Queue Length 95th (ft)	0	0	0	0	0	0	136
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	20.4
Lane LOS							C
Approach Delay (s)	0.0			0.0			20.4
Approach LOS							C

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Volume (veh/h)	362	172	0	519	0	29
Future Volume (Veh/h)	362	172	0	519	0	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	407	193	0	583	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1202		
pX, platoon unblocked						
vC, conflicting volume			600		601	204
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		601	204
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			987		436	810

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	204	204	193	194	194	194	33
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	193	0	0	0	33
cSH	1700	1700	1700	1700	1700	1700	810
Volume to Capacity	0.12	0.12	0.11	0.11	0.11	0.11	0.04
Queue Length 95th (ft)	0	0	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.6
Approach LOS							A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	374	6	1	485	17	27	6	13	2	1	4
Future Volume (Veh/h)	9	374	6	1	485	17	27	6	13	2	1	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	11	440	7	1	571	20	32	7	15	2	1	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					728							
pX, platoon unblocked												
vC, conflicting volume	591			447			758	1058	224	844	1052	296
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	591			447			758	1058	224	844	1052	296
tC, single (s)	4.1			4.1			7.5	6.5	7.1	8.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	4.0	4.0	3.3
p0 queue free %	99			100			89	97	98	99	100	99
cM capacity (veh/h)	995			1124			294	224	762	179	226	707

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	231	227	286	306	54	8
Volume Left	11	0	1	0	32	2
Volume Right	0	7	0	20	15	5
cSH	995	1700	1124	1700	338	353
Volume to Capacity	0.01	0.13	0.00	0.18	0.16	0.02
Queue Length 95th (ft)	1	0	0	0	14	2
Control Delay (s)	0.5	0.0	0.0	0.0	17.7	15.4
Lane LOS	A		A		C	C
Approach Delay (s)	0.3		0.0		17.7	15.4
Approach LOS					C	C

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	Err%	ICU Level of Service		H
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	316	12	47	17	64	3	0	795	1	0	2172	448
Future Volume (vph)	316	12	47	17	64	3	0	795	1	0	2172	448
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Lane Util. Factor	0.94	1.00			0.95			0.91			0.91	1.00
Frpb, ped/bikes	1.00	0.99			1.00			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.88			1.00			1.00			1.00	0.85
Flt Protected	0.95	1.00			0.99			1.00			1.00	1.00
Satd. Flow (prot)	4337	1268			3024			4219			4506	1383
Flt Permitted	0.95	1.00			0.88			1.00			1.00	1.00
Satd. Flow (perm)	4337	1268			2687			4219			4506	1383
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	359	14	53	19	73	3	0	903	1	0	2468	509
RTOR Reduction (vph)	0	4	0	0	2	0	0	0	0	0	0	57
Lane Group Flow (vph)	359	63	0	0	93	0	0	904	0	0	2468	452
Confl. Peds. (#/hr)			1	1			4		2	2		4
Heavy Vehicles (%)	5%	9%	19%	7%	5%	0%	40%	10%	0%	0%	3%	3%
Turn Type	Prot	NA		Perm	NA			NA			NA	pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases				8								6
Actuated Green, G (s)	16.1	30.6			8.5			85.5			85.5	101.6
Effective Green, g (s)	16.1	30.6			8.5			85.5			85.5	101.6
Actuated g/C Ratio	0.12	0.24			0.07			0.66			0.66	0.78
Clearance Time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Vehicle Extension (s)	3.0	3.0			3.0			0.2			0.2	3.0
Lane Grp Cap (vph)	537	298			175			2774			2963	1080
v/s Ratio Prot	c0.08	0.05						0.21			c0.55	0.05
v/s Ratio Perm					c0.03							0.27
v/c Ratio	0.67	0.21			0.53			0.33			0.83	0.42
Uniform Delay, d1	54.4	40.0			58.8			9.7			16.8	4.6
Progression Factor	1.00	1.00			1.00			0.99			0.58	0.28
Incremental Delay, d2	3.2	0.4			3.1			0.3			1.0	0.1
Delay (s)	57.6	40.4			61.9			9.9			10.8	1.4
Level of Service	E	D			E			A			B	A
Approach Delay (s)		54.8			61.9			9.9			9.2	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	202	1	1	814	73	2	1	1	21	1	12
Future Volume (vph)	1	202	1	1	814	73	2	1	1	21	1	12
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.93		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1615	1634		1612	1643		804	2988		1538	1428	
Flt Permitted	0.15	1.00		0.61	1.00		1.00	1.00		1.00	1.00	
Satd. Flow (perm)	260	1634		1038	1643		846	2988		1619	1428	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1	235	1	1	947	85	2	1	1	24	1	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	2	0	0	13	0
Lane Group Flow (vph)	1	236	0	1	1030	0	2	0	0	24	2	0
Confl. Peds. (#/hr)			4	4			3					3
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	0%	4%	0%	0%	2%	3%	100%	0%	0%	5%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	55.3	54.6		55.3	54.6		3.9	3.1		4.3	3.3	
Effective Green, g (s)	55.3	54.6		55.3	54.6		3.9	3.1		4.3	3.3	
Actuated g/C Ratio	0.71	0.70		0.71	0.70		0.05	0.04		0.05	0.04	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	195	1137		737	1144		41	118		87	60	
v/s Ratio Prot	c0.00	0.14		0.00	c0.63		0.00	0.00		c0.00	0.00	
v/s Ratio Perm	0.00			0.00			0.00			c0.01		
v/c Ratio	0.01	0.21		0.00	0.90		0.05	0.00		0.28	0.03	
Uniform Delay, d1	7.7	4.2		3.4	9.7		35.5	36.2		35.5	36.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	9.8		0.5	0.0		1.7	0.2	
Delay (s)	7.7	4.3		3.4	19.5		36.0	36.2		37.2	36.2	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s)		4.3			19.5			36.1			36.8	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	19.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Volume (veh/h)	29	183	841	8	162	0	0	172	0	0
Future Volume (Veh/h)	29	183	841	8	162	0	0	172	0	0
Sign Control		Free			Free		Yield		Stop	
Grade		0%			0%		0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	1.00	1.00
Hourly flow rate (vph)	34	213	978	9	188	0	0	200	0	0
Pedestrians									2	
Lane Width (ft)									0.0	
Walking Speed (ft/s)									4.0	
Percent Blockage									0	
Right turn flare (veh)										
Median type		None			None					
Median storage veh)										
Upstream signal (ft)		896			759					
pX, platoon unblocked										
vC, conflicting volume	188			215			489	94	395	489
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	188			215			489	94	395	489
tC, single (s)	4.1			4.1			6.5	6.9	7.5	6.5
tC, 2 stage (s)										
tF (s)	2.2			2.2			4.0	3.3	3.5	4.0
p0 queue free %	98			99			100	79	100	100
cM capacity (veh/h)	1398			1367			468	944	415	463

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	247	978	103	94	200
Volume Left	34	0	9	0	0
Volume Right	0	978	0	0	200
cSH	1398	1700	1367	1700	944
Volume to Capacity	0.02	0.58	0.01	0.06	0.21
Queue Length 95th (ft)	2	0	0	0	20
Control Delay (s)	1.2	0.0	0.7	0.0	9.8
Lane LOS	A		A		A
Approach Delay (s)	0.2		0.4		9.8
Approach LOS					A

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	70.4%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	172	1	7	169	38	1	1	1	2	2	3
Future Volume (Veh/h)	8	172	1	7	169	38	1	1	1	2	2	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	191	1	8	188	42	1	1	1	2	2	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1251			404							
pX, platoon unblocked												
vC, conflicting volume	230			192			324	456	192	436	435	115
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	230			192			324	456	192	436	435	115
tC, single (s)	4.4			4.4			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	100	100	100	100
cM capacity (veh/h)	1252			1276			601	497	824	502	511	922

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	201	102	136	3	7
Volume Left	9	8	0	1	2
Volume Right	1	0	42	1	3
cSH	1252	1276	1700	614	628
Volume to Capacity	0.01	0.01	0.08	0.00	0.01
Queue Length 95th (ft)	1	0	0	0	1
Control Delay (s)	0.4	0.7	0.0	10.9	10.8
Lane LOS	A	A		B	B
Approach Delay (s)	0.4	0.3		10.9	10.8
Approach LOS				B	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	27.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	177	0	0	3	190	904	2	6	2190	7
Future Volume (vph)	0	0	177	0	0	3	190	904	2	6	2190	7
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)			6.2		6.0		6.2	6.0		4.0	6.0	
Lane Util. Factor			1.00		1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes			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	
Frt			0.85		0.86		1.00	1.00		1.00	1.00	
Flt Protected			1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)			1389		1470		2956	4071		1615	4416	
Flt Permitted			1.00		1.00		0.95	1.00		0.25	1.00	
Satd. Flow (perm)			1389		1470		2956	4071		432	4416	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	0	201	0	0	3	216	1027	2	7	2489	8
RTOR Reduction (vph)	0	0	48	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	153	0	0	0	216	1029	0	7	2497	0
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	6%	14%	0%	0%	5%	17%
Turn Type			pm+ov		NA		Prot	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4	8						6		
Actuated Green, G (s)			24.1		1.1		21.0	111.7		89.7	89.7	
Effective Green, g (s)			24.1		1.1		21.0	111.7		89.7	89.7	
Actuated g/C Ratio			0.19		0.01		0.16	0.86		0.69	0.69	
Clearance Time (s)			6.2		6.0		6.2	6.0		4.0	6.0	
Vehicle Extension (s)			3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)			323		12		477	3497		309	3047	
v/s Ratio Prot			c0.08		0.00		0.07	0.25		0.00	c0.57	
v/s Ratio Perm			0.03							0.02		
v/c Ratio			0.47		0.00		0.45	0.29		0.02	0.82	
Uniform Delay, d1			47.3		63.9		49.3	1.7		6.3	14.4	
Progression Factor			1.00		1.00		0.83	0.08		0.12	0.09	
Incremental Delay, d2			1.1		0.1		0.6	0.2		0.0	1.5	
Delay (s)			48.4		64.0		41.4	0.3		0.8	2.7	
Level of Service			D		E		D	A		A	A	
Approach Delay (s)		48.4			64.0			7.5			2.7	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	477	370	1	226	990	203	0	1391	0
Future Volume (vph)	0	0	0	477	370	1	226	990	203	0	1391	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)				6.6	6.6		4.0	6.2	6.2		6.2	
Lane Util. Factor				0.91	0.91		1.00	0.91	1.00		0.91	
Frpb, ped/bikes				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	
Frt				1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected				0.95	0.98		0.95	1.00	1.00		1.00	
Satd. Flow (prot)				1441	2999		1553	4181	1403		4420	
Flt Permitted				0.95	0.98		0.07	1.00	1.00		1.00	
Satd. Flow (perm)				1441	2999		121	4181	1403		4420	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	561	435	1	266	1165	239	0	1636	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	83	0	0	0
Lane Group Flow (vph)	0	0	0	325	672	0	266	1165	156	0	1636	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	0%	0%	2%	1%	0%	4%	11%	3%	0%	5%	2%
Turn Type				Split	NA		pm+pt	NA	Perm		NA	Free
Protected Phases				4	4		5	2			6	
Permitted Phases							2		2			Free
Actuated Green, G (s)				32.6	32.6		84.6	84.6	84.6		62.5	
Effective Green, g (s)				32.6	32.6		84.6	84.6	84.6		62.5	
Actuated g/C Ratio				0.25	0.25		0.65	0.65	0.65		0.48	
Clearance Time (s)				6.6	6.6		4.0	6.2	6.2		6.2	
Vehicle Extension (s)				3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)				361	752		278	2720	913		2125	
v/s Ratio Prot				c0.23	0.22		c0.13	0.28			0.37	
v/s Ratio Perm							c0.49		0.11			
v/c Ratio				0.90	0.89		0.96	0.43	0.17		0.77	
Uniform Delay, d1				47.1	47.0		38.9	11.0	8.9		27.8	
Progression Factor				1.00	1.00		1.16	0.81	0.74		0.61	
Incremental Delay, d2				24.5	13.0		39.6	0.5	0.4		1.8	
Delay (s)				71.6	60.0		84.7	9.3	7.0		18.8	
Level of Service				E	E		F	A	A		B	
Approach Delay (s)		0.0			63.8			21.0			18.8	
Approach LOS		A			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	84	274	1	17	6	102	168	54	293	731	21
Future Volume (vph)	7	84	274	1	17	6	102	168	54	293	731	21
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1619	1445		1576	1314	1615	1700	1445	1615	1692	
Flt Permitted		0.98	1.00		0.99	1.00	0.21	1.00	1.00	0.64	1.00	
Satd. Flow (perm)		1596	1445		1563	1314	359	1700	1445	1082	1692	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	8	97	315	1	20	7	117	193	62	337	840	24
RTOR Reduction (vph)	0	0	163	0	0	6	0	0	21	0	1	0
Lane Group Flow (vph)	0	105	152	0	21	1	117	193	41	337	863	0
Heavy Vehicles (%)	0%	5%	0%	0%	8%	10%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)		19.6	19.6		19.6	19.6	61.6	61.6	61.6	61.6	61.6	
Effective Green, g (s)		19.6	19.6		19.6	19.6	61.6	61.6	61.6	61.6	61.6	
Actuated g/C Ratio		0.21	0.21		0.21	0.21	0.66	0.66	0.66	0.66	0.66	
Clearance Time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		334	303		327	275	236	1121	953	713	1115	
v/s Ratio Prot								0.11			c0.51	
v/s Ratio Perm		0.07	c0.11		0.01	0.00	0.33		0.03	0.31		
v/c Ratio		0.31	0.50		0.06	0.01	0.50	0.17	0.04	0.47	0.77	
Uniform Delay, d1		31.2	32.6		29.6	29.2	8.0	6.1	5.6	7.9	11.1	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5	1.3		0.4	0.0	7.3	0.3	0.1	2.2	5.3	
Delay (s)		31.8	33.9		29.9	29.2	15.3	6.4	5.7	10.1	16.3	
Level of Service		C	C		C	C	B	A	A	B	B	
Approach Delay (s)		33.4			29.8			9.1			14.6	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	12.2
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	473	8	120	0	0	0	0	1030	1	1	1885	0
Future Volume (vph)	473	8	120	0	0	0	0	1030	1	1	1885	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.6	6.6						6.6		6.6	6.6	
Lane Util. Factor	0.86	0.86						0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.94						1.00		1.00	1.00	
Flt Protected	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (prot)	2572	2376						4107		1615	4378	
Flt Permitted	0.95	0.97						1.00		0.20	1.00	
Satd. Flow (perm)	2572	2376						4107		347	4378	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	556	9	141	0	0	0	0	1212	1	1	2218	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	373	327	0	0	0	0	0	1213	0	1	2218	0
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	8%	14%	16%	0%	0%	0%	0%	13%	0%	0%	6%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)	26.4	26.4						90.4		90.4	90.4	
Effective Green, g (s)	26.4	26.4						90.4		90.4	90.4	
Actuated g/C Ratio	0.20	0.20						0.70		0.70	0.70	
Clearance Time (s)	6.6	6.6						6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0						0.2		0.2	0.2	
Lane Grp Cap (vph)	522	482						2855		241	3044	
v/s Ratio Prot								0.30			c0.51	
v/s Ratio Perm	c0.15	0.14								0.00		
v/c Ratio	0.71	0.68						0.42		0.00	0.73	
Uniform Delay, d1	48.3	47.9						8.6		6.0	12.2	
Progression Factor	1.00	1.00						1.00		0.98	0.66	
Incremental Delay, d2	4.6	3.8						0.5		0.0	0.9	
Delay (s)	52.9	51.7						9.0		6.0	9.0	
Level of Service	D	D						A		A	A	
Approach Delay (s)		52.3			0.0			9.0			9.0	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCS7 Two-Way Stop-Control Report

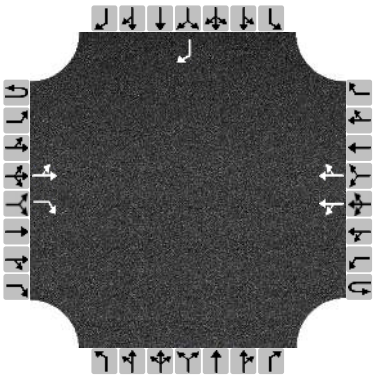
General Information

Analyst	mah
Agency/Co.	KAI
Date Performed	5/9/2018
Analysis Year	2018
Time Analyzed	
Intersection Orientation	East-West
Project Description	21018-112

Site Information

Intersection	Aronson Ave/6thAve Bypass
Jurisdiction	
East/West Street	Aronson Ave
North/South Street	6th Ave Bypass
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	0		0	0	1
Configuration		LT		R		LT		TR								R
Volume, V (veh/h)		29	183	841		8	162	1								172
Percent Heavy Vehicles (%)		0				0										2
Proportion Time Blocked		0.000				0.000										0.300
Percent Grade (%)													0			
Right Turn Channelized		Yes				No				No				Yes		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1										5.2
Critical Headway (sec)		4.10				4.10										5.24
Base Follow-Up Headway (sec)		2.2				2.2										3.2
Follow-Up Headway (sec)		2.20				2.20										3.22

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		29				8										172
Capacity, c (veh/h)		1428				1404										783
v/c Ratio		0.02				0.01										0.22
95% Queue Length, Q_{95} (veh)		0.1				0.0										0.8
Control Delay (s/veh)		7.6				7.6										10.9
Level of Service, LOS		A				A										B
Approach Delay (s/veh)		0.3				0.4								10.9		
Approach LOS														B		

Appendix D
Year 2022 PM Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	35	382	74	39	60	487	2657	55	31	1218	8
Future Volume (veh/h)	22	35	382	74	39	60	487	2657	55	31	1218	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1620	1660	1700	1673	1673	1660	1660	1700	1647	1647
Adj Flow Rate, veh/h	24	38	411	80	42	65	524	2857	59	33	1310	9
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	6	3	0	2	2	3	3	0	4	4
Cap, veh/h	109	155	513	156	254	247	537	3249	67	133	2358	16
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.45	1.00	1.00	0.02	0.51	0.51
Sat Flow, veh/h	504	1038	1373	934	1700	1418	1594	4569	94	1619	4607	32
Grp Volume(v), veh/h	62	0	411	80	42	65	524	1882	1034	33	852	467
Grp Sat Flow(s),veh/h/ln	1542	0	1373	934	1700	1418	1594	1511	1641	1619	1499	1641
Q Serve(g_s), s	1.9	0.0	22.4	12.4	3.2	5.9	29.9	0.0	0.0	1.4	29.1	29.1
Cycle Q Clear(g_c), s	5.1	0.0	22.4	17.5	3.2	5.9	29.9	0.0	0.0	1.4	29.1	29.1
Prop In Lane	0.39		1.00	1.00		1.00	1.00		0.06	1.00		0.02
Lane Grp Cap(c), veh/h	264	0	513	156	254	247	537	2149	1167	133	1534	840
V/C Ratio(X)	0.24	0.00	0.80	0.51	0.17	0.26	0.97	0.88	0.89	0.25	0.56	0.56
Avail Cap(c_a), veh/h	264	0	513	156	254	247	775	2149	1167	212	1534	840
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.29	0.29	0.29	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	0.0	42.0	64.2	55.6	53.6	16.3	0.0	0.0	16.4	25.0	25.0
Incr Delay (d2), s/veh	0.5	0.0	8.9	2.9	0.3	0.6	9.9	1.7	3.3	1.0	1.5	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	15.0	3.1	1.4	2.2	8.5	0.5	1.1	0.6	10.6	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	0.0	50.9	67.1	56.0	54.2	26.1	1.7	3.3	17.4	26.4	27.6
LnGrp LOS	E	A	D	E	E	D	C	A	A	B	C	C
Approach Vol, veh/h		473			187			3440			1352	
Approach Delay, s/veh		51.7			60.1			5.9			26.6	
Approach LOS		D			E			A			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	113.3		29.0	37.6	83.4		29.0				
Change Period (Y+Rc), s	4.0	6.6		6.6	4.0	6.6		6.6				
Max Green Setting (Gmax), s	11.0	99.4		22.4	56.0	54.4		22.4				
Max Q Clear Time (g_c+I1), s	3.4	2.0		19.5	31.9	31.1		24.4				
Green Ext Time (p_c), s	0.0	67.9		0.2	1.7	9.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	881	418	40	38	37
Future Vol, veh/h	37	881	418	40	38	37
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	160	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	4	0	0	4
Mvmt Flow	39	937	445	43	40	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	490	0	-	0	1485	469
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	1016	-
Critical Hdwy	4.1	-	-	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.336
Pot Cap-1 Maneuver	1084	-	-	-	139	590
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	353	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1082	-	-	-	133	589
Mov Cap-2 Maneuver	-	-	-	-	241	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	352	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1082	-	-	-	241	589
HCM Lane V/C Ratio	0.036	-	-	-	0.168	0.067
HCM Control Delay (s)	8.5	-	-	-	22.9	11.5
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Vol, veh/h	822	464	0	410	0	38
Future Vol, veh/h	822	464	0	410	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	4	0	0
Mvmt Flow	893	504	0	446	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	447
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	564
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	564
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	564	-	-	-
HCM Lane V/C Ratio	0.073	-	-	-
HCM Control Delay (s)	11.9	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↰↑↱				↱			↱
Traffic Vol, veh/h	3	846	9	10	381	20	17	2	36	12	1	8
Future Vol, veh/h	3	846	9	10	381	20	17	2	36	12	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	0	2	6	7	0	3	0	0	0
Mvmt Flow	3	900	10	11	405	21	18	2	38	13	1	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	426	0	0	910	0	0	1136	1359	455	895	1354	213
Stage 1	-	-	-	-	-	-	911	911	-	438	438	-
Stage 2	-	-	-	-	-	-	225	448	-	457	916	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.64	6.5	6.96	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.64	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.64	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.57	4	3.33	3.5	4	3.3
Pot Cap-1 Maneuver	1144	-	-	757	-	-	151	150	550	239	151	798
Stage 1	-	-	-	-	-	-	285	356	-	573	582	-
Stage 2	-	-	-	-	-	-	743	576	-	558	354	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1144	-	-	757	-	-	146	146	550	216	147	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	146	146	-	216	147	-
Stage 1	-	-	-	-	-	-	284	354	-	570	571	-
Stage 2	-	-	-	-	-	-	720	565	-	513	352	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	12	9.6
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	550	1144	-	-	757	-	-	798
HCM Lane V/C Ratio	0.07	0.003	-	-	0.014	-	-	0.011
HCM Control Delay (s)	12	8.2	-	-	9.8	0.1	-	9.6
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

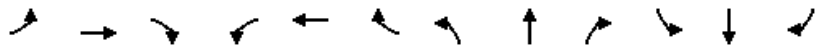
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	707	73	57	17	50	20	0	2384	8	0	1359	351
Future Volume (veh/h)	707	73	57	17	50	20	0	2384	8	0	1359	351
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1660	1673	1673	1700	1700	1700	0	1660	1660	0	1634	1673
Adj Flow Rate, veh/h	752	78	61	18	53	21	0	2536	9	0	1446	373
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	2	0	0	0	0	3	3	0	5	2
Cap, veh/h	827	258	202	37	78	33	0	2837	10	0	2714	1124
Arrive On Green	0.19	0.30	0.30	0.06	0.06	0.06	0.00	0.61	0.61	0.00	1.00	1.00
Sat Flow, veh/h	4459	863	675	0	1212	511	0	4811	17	0	4607	1415
Grp Volume(v), veh/h	752	0	139	33	0	59	0	1643	902	0	1446	373
Grp Sat Flow(s),veh/h/ln	1486	0	1538	282	0	1441	0	1511	1657	0	1487	1415
Q Serve(g_s), s	24.8	0.0	10.5	0.0	0.0	6.0	0.0	70.0	70.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	24.8	0.0	10.5	9.7	0.0	6.0	0.0	70.0	70.1	0.0	0.0	0.0
Prop In Lane	1.00		0.44	0.55		0.35	0.00		0.01	0.00		1.00
Lane Grp Cap(c), veh/h	827	0	459	55	0	93	0	1839	1008	0	2714	1124
V/C Ratio(X)	0.91	0.00	0.30	0.59	0.00	0.64	0.00	0.89	0.89	0.00	0.53	0.33
Avail Cap(c_a), veh/h	892	0	468	55	0	93	0	1839	1008	0	2714	1124
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.74	0.74	0.00	0.73	0.73
Uniform Delay (d), s/veh	59.9	0.0	40.5	70.1	0.0	68.4	0.0	25.2	25.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	12.6	0.0	0.4	15.6	0.0	13.4	0.0	5.5	9.4	0.0	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.0	4.0	1.5	0.0	2.6	0.0	25.2	28.8	0.0	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.5	0.0	40.9	85.7	0.0	81.8	0.0	30.6	34.6	0.0	0.6	0.6
LnGrp LOS	E	A	D	F	A	F	A	C	C	A	A	A
Approach Vol, veh/h		891			92			2545			1819	
Approach Delay, s/veh		67.6			83.2			32.0			0.6	
Approach LOS		E			F			C			A	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	97.9	52.1	97.9	35.1	17.0
Change Period (Y+Rc), s	6.6	7.3	6.6	7.3	* 7.3
Max Green Setting (Gmax), s	90.4	45.7	90.4	30.0	* 9.7
Max Q Clear Time (g_c+I1), s	72.1	12.5	2.0	26.8	11.7
Green Ext Time (p_c), s	4.0	0.7	2.2	1.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	28.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	816	1	3	391	68	3	1	1	95	1	17
Future Volume (veh/h)	11	816	1	3	391	68	3	1	1	95	1	17
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	0.99		0.99	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1673	1673	1700	1660	1660	1262	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	12	859	1	3	412	72	3	1	1	100	1	18
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	3	3	33	0	0	0	0	0
Cap, veh/h	498	977	1	214	792	138	157	63	53	287	8	146
Arrive On Green	0.01	0.58	0.58	0.00	0.58	0.58	0.00	0.04	0.04	0.07	0.11	0.11
Sat Flow, veh/h	1619	1671	2	1619	1376	241	1202	1650	1403	1619	74	1339
Grp Volume(v), veh/h	12	0	860	3	0	484	3	1	1	100	0	19
Grp Sat Flow(s),veh/h/ln	1619	0	1673	1619	0	1617	1202	1615	1439	1619	0	1414
Q Serve(g_s), s	0.2	0.0	27.8	0.0	0.0	11.5	0.2	0.0	0.0	3.6	0.0	0.8
Cycle Q Clear(g_c), s	0.2	0.0	27.8	0.0	0.0	11.5	0.2	0.0	0.0	3.6	0.0	0.8
Prop In Lane	1.00		0.00	1.00		0.15	1.00		0.98	1.00		0.95
Lane Grp Cap(c), veh/h	498	0	978	214	0	931	157	61	55	287	0	154
V/C Ratio(X)	0.02	0.00	0.88	0.01	0.00	0.52	0.02	0.02	0.02	0.35	0.00	0.12
Avail Cap(c_a), veh/h	760	0	1534	490	0	1482	362	536	477	449	0	469
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	0.00	1.00
Uniform Delay (d), s/veh	6.5	0.0	11.2	11.5	0.0	8.1	29.2	29.3	29.3	24.8	0.0	25.5
Incr Delay (d2), s/veh	0.0	0.0	3.9	0.0	0.0	0.5	0.0	0.1	0.1	0.7	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	8.5	0.0	0.0	3.1	0.0	0.0	0.0	1.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.5	0.0	15.1	11.5	0.0	8.6	29.2	29.4	29.4	25.5	0.0	25.8
LnGrp LOS	A	A	B	B	A	A	C	C	C	C	A	C
Approach Vol, veh/h		872			487			5			119	
Approach Delay, s/veh		15.0			8.6			29.3			25.5	
Approach LOS		B			A			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.2	43.0	4.2	11.9	4.8	42.4	8.7	7.4
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	58.0	11.0	21.0	11.0	58.0	11.0	21.0
Max Q Clear Time (g_c+I1), s	2.2	29.8	2.2	2.8	2.2	13.5	5.6	2.0
Green Ext Time (p_c), s	0.0	7.2	0.0	0.0	0.0	3.4	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	13.8
HCM 6th LOS	B

Notes

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕↔			↔			↔	
Traffic Vol, veh/h	11	99	3	40	586	32	6	9	7	8	6	4
Future Vol, veh/h	11	99	3	40	586	32	6	9	7	8	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	9	0	0	1	7	0	0	0	0	0	0
Mvmt Flow	12	108	3	43	637	35	7	10	8	9	7	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	672	0	0	111	0	0	542	892	110	884	876	336
Stage 1	-	-	-	-	-	-	134	134	-	741	741	-
Stage 2	-	-	-	-	-	-	408	758	-	143	135	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.2	7.3	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	928	-	-	1492	-	-	441	283	949	255	290	666
Stage 1	-	-	-	-	-	-	874	789	-	379	426	-
Stage 2	-	-	-	-	-	-	596	418	-	865	789	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	928	-	-	1492	-	-	411	266	949	235	273	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	411	266	-	235	273	-
Stage 1	-	-	-	-	-	-	862	778	-	374	406	-
Stage 2	-	-	-	-	-	-	556	399	-	835	778	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.6	14.7	18.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	394	928	-	-	1492	-	-	290
HCM Lane V/C Ratio	0.061	0.013	-	-	0.029	-	-	0.067
HCM Control Delay (s)	14.7	8.9	0	-	7.5	0.2	-	18.3
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	113	0	0	0	617	2497	7	11	1376	30
Future Volume (veh/h)	0	0	113	0	0	0	617	2497	7	11	1376	30
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1700	1594	1700	1700	1700	1700	1660	1660	1700	1634	1634
Adj Flow Rate, veh/h	0	0	122	0	0	0	663	2685	8	12	1480	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	8	0	0	0	0	3	3	0	5	5
Cap, veh/h	0	56	692	0	56	0	1504	3958	12	79	1635	
Arrive On Green	0.00	0.00	0.03	0.00	0.00	0.00	0.48	0.85	0.85	0.00	0.12	0.00
Sat Flow, veh/h	0	1700	1351	0	1700	0	3141	4665	14	1619	4607	0
Grp Volume(v), veh/h	0	0	122	0	0	0	663	1738	955	12	1480	0
Grp Sat Flow(s),veh/h/ln	0	1700	1351	0	1700	0	1570	1511	1658	1619	1487	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	20.9	30.8	30.9	0.7	49.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	20.9	30.8	30.9	0.7	49.1	0.0
Prop In Lane	0.00		1.00	0.00		0.00	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	0	56	692	0	56	0	1504	2563	1406	79	1635	
V/C Ratio(X)	0.00	0.00	0.18	0.00	0.00	0.00	0.44	0.68	0.68	0.15	0.91	
Avail Cap(c_a), veh/h	0	374	944	0	351	0	1504	2563	1406	180	1635	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.83	0.83	0.00
Uniform Delay (d), s/veh	0.0	0.0	19.6	0.0	0.0	0.0	25.8	4.1	4.1	35.9	63.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	0.0	0.0	0.2	1.5	2.7	0.7	7.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	2.4	0.0	0.0	0.0	7.9	7.1	8.3	0.3	20.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	19.8	0.0	0.0	0.0	26.0	5.5	6.7	36.6	70.8	0.0
LnGrp LOS	A	A	B	A	A	A	C	A	A	D	E	
Approach Vol, veh/h		122			0			3356			1492	A
Approach Delay, s/veh		19.8			0.0			9.9			70.5	
Approach LOS		B						A			E	

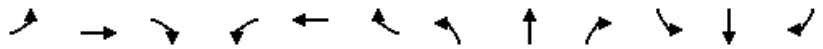
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	133.5		11.0	78.0	61.0		11.0				
Change Period (Y+Rc), s	4.0	* 6.2		* 6	6.2	* 6		6.0				
Max Green Setting (Gmax), s	11.0	* 92		* 33	45.8	* 55		31.0				
Max Q Clear Time (g_c+I1), s	2.7	32.9		2.0	22.9	51.1		0.0				
Green Ext Time (p_c), s	0.0	42.4		0.4	2.5	3.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	39	58	1	61	10	241	776	79	124	160	4
Future Volume (veh/h)	3	39	58	1	61	10	241	776	79	124	160	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1700	1634	1634	1660	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	4	51	75	1	79	13	313	1008	103	161	208	5
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	0	5	5	3	0	0	0	0	0	0
Cap, veh/h	50	125	111	44	131	107	965	1314	1113	314	1277	31
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.77	0.77	0.77	0.77	0.77	0.77
Sat Flow, veh/h	49	1551	1385	7	1624	1333	1187	1700	1441	515	1653	40
Grp Volume(v), veh/h	55	0	75	80	0	13	313	1008	103	161	0	213
Grp Sat Flow(s),veh/h/ln	1600	0	1385	1631	0	1333	1187	1700	1441	515	0	1693
Q Serve(g_s), s	0.0	0.0	4.4	0.0	0.0	0.8	7.7	27.5	1.5	21.1	0.0	2.7
Cycle Q Clear(g_c), s	3.9	0.0	4.4	3.9	0.0	0.8	10.5	27.5	1.5	48.6	0.0	2.7
Prop In Lane	0.07		1.00	0.01		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	175	0	111	175	0	107	965	1314	1113	314	0	1308
V/C Ratio(X)	0.31	0.00	0.67	0.46	0.00	0.12	0.32	0.77	0.09	0.51	0.00	0.16
Avail Cap(c_a), veh/h	410	0	310	408	0	299	965	1314	1113	314	0	1308
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	0.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	37.1	36.9	0.0	35.5	3.8	5.3	2.3	18.8	0.0	2.5
Incr Delay (d2), s/veh	1.0	0.0	6.9	1.9	0.0	0.5	0.9	4.3	0.2	5.9	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.7	1.6	0.0	0.3	1.6	7.4	0.3	2.9	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	0.0	44.0	38.8	0.0	36.0	4.7	9.6	2.5	24.7	0.0	2.7
LnGrp LOS	D	A	D	D	A	D	A	A	A	C	A	A
Approach Vol, veh/h		130			93			1424			374	
Approach Delay, s/veh		41.2			38.4			8.0			12.2	
Approach LOS		D			D			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	70.0	13.1	70.0	13.1
Change Period (Y+Rc), s	* 5.8	* 6.4	* 5.8	* 6.4
Max Green Setting (Gmax), s	* 64	* 19	* 64	* 19
Max Q Clear Time (g_c+I1), s	29.5	6.4	50.6	5.9
Green Ext Time (p_c), s	13.1	0.4	2.6	0.3

Intersection Summary	
HCM 6th Ctrl Delay	12.3
HCM 6th LOS	B

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	35	382	74	39	60	487	2657	55	31	1218	8
Future Volume (vph)	22	35	382	74	39	60	487	2657	55	31	1218	8
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes		1.00	1.00	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	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1668	1363	1568	1700	1417	1583	4491		1615	4458	
Flt Permitted		0.85	1.00	0.72	1.00	1.00	0.13	1.00		0.06	1.00	
Satd. Flow (perm)		1453	1363	1183	1700	1417	210	4491		97	4458	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	24	38	411	80	42	65	524	2857	59	33	1310	9
RTOR Reduction (vph)	0	0	15	0	0	47	0	1	0	0	1	0
Lane Group Flow (vph)	0	62	396	80	42	18	524	2915	0	33	1318	0
Confl. Peds. (#/hr)							1		1	1		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	6%	3%	0%	2%	2%	3%	2%	0%	4%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		8	5		4	1	5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)		15.4	62.6	15.4	15.4	20.5	121.4	112.3		75.3	70.2	
Effective Green, g (s)		15.4	62.6	15.4	15.4	20.5	121.4	112.3		75.3	70.2	
Actuated g/C Ratio		0.10	0.42	0.10	0.10	0.14	0.81	0.75		0.50	0.47	
Clearance Time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		149	568	121	174	193	601	3362		100	2086	
v/s Ratio Prot			c0.22		0.02	0.00	c0.27	0.65		0.01	0.30	
v/s Ratio Perm		0.04	0.07	0.07		0.01	c0.43			0.15		
v/c Ratio		0.42	0.70	0.66	0.24	0.09	0.87	0.87		0.33	0.63	
Uniform Delay, d1		63.1	35.9	64.8	61.9	56.6	33.7	13.5		31.7	30.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.29	0.61		1.00	1.00	
Incremental Delay, d2		1.9	3.7	12.8	0.7	0.2	6.8	1.6		1.9	1.5	
Delay (s)		65.0	39.6	77.5	62.6	56.8	50.2	9.8		33.7	31.6	
Level of Service		E	D	E	E	E	D	A		C	C	
Approach Delay (s)		42.9			67.0			15.9			31.7	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	881	418	40	38	37
Future Volume (Veh/h)	37	881	418	40	38	37
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	39	937	445	43	40	39
Pedestrians			1		2	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (ft)		504				
pX, platoon unblocked					0.58	
vC, conflicting volume	490				1484	468
vC1, stage 1 conf vol					468	
vC2, stage 2 conf vol					1016	
vCu, unblocked vol	490				1473	468
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	96				85	93
cM capacity (veh/h)	1082				261	590

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	39	937	488	40	39
Volume Left	39	0	0	40	0
Volume Right	0	0	43	0	39
cSH	1082	1700	1700	261	590
Volume to Capacity	0.04	0.55	0.29	0.15	0.07
Queue Length 95th (ft)	3	0	0	13	5
Control Delay (s)	8.5	0.0	0.0	21.2	11.5
Lane LOS	A			C	B
Approach Delay (s)	0.3		0.0	16.4	
Approach LOS				C	

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	1284	390	86	0	0
Future Volume (Veh/h)	0	1284	390	86	0	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	1.00	1.00
Hourly flow rate (vph)	0	1396	424	93	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	517				889	212
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517				889	212
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1059				286	790

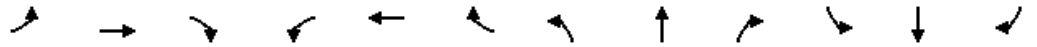
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SE 1
Volume Total	465	465	465	212	212	93	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	93	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.27	0.27	0.27	0.12	0.12	0.05	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	31.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Volume (veh/h)	822	464	0	410	0	38
Future Volume (Veh/h)	822	464	0	410	0	38
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	893	504	0	446	0	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1202		
pX, platoon unblocked						
vC, conflicting volume			1397		1042	446
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1397		1042	446
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	93
cM capacity (veh/h)			496		229	565

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	446	446	504	149	149	149	41
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	504	0	0	0	41
cSH	1700	1700	1700	1700	1700	1700	565
Volume to Capacity	0.26	0.26	0.30	0.09	0.09	0.09	0.07
Queue Length 95th (ft)	0	0	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	11.9
Lane LOS							B
Approach Delay (s)	0.0			0.0			11.9
Approach LOS							B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	846	9	10	381	20	17	2	36	12	1	8
Future Volume (Veh/h)	3	846	9	10	381	20	17	2	36	12	1	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	900	10	11	405	21	18	2	38	13	1	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					728							
pX, platoon unblocked												
vC, conflicting volume	426			910			1145	1359	455	932	1354	213
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	426			910			1145	1359	455	932	1354	213
tC, single (s)	4.1			4.1			7.6	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			88	99	93	94	99	99
cM capacity (veh/h)	1144			757			144	147	550	204	149	798

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	453	460	214	224	58	23
Volume Left	3	0	11	0	18	13
Volume Right	0	10	0	21	38	9
cSH	1144	1700	757	1700	279	281
Volume to Capacity	0.00	0.27	0.01	0.13	0.21	0.08
Queue Length 95th (ft)	0	0	1	0	19	7
Control Delay (s)	0.1	0.0	0.7	0.0	21.2	18.9
Lane LOS	A		A		C	C
Approach Delay (s)	0.0		0.3		21.2	18.9
Approach LOS					C	C

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	Err%	ICU Level of Service	H	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	707	73	57	17	50	20	0	2384	8	0	1359	351
Future Volume (vph)	707	73	57	17	50	20	0	2384	8	0	1359	351
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Lane Util. Factor	0.94	1.00			0.95			0.91			0.91	1.00
Frpb, ped/bikes	1.00	0.99			1.00			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.93			0.97			1.00			1.00	0.85
Flt Protected	0.95	1.00			0.99			1.00			1.00	1.00
Satd. Flow (prot)	4422	1456			3044			4504			4420	1398
Flt Permitted	0.95	1.00			0.79			1.00			1.00	1.00
Satd. Flow (perm)	4422	1456			2431			4504			4420	1398
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)	752	78	61	18	53	21	0	2536	9	0	1446	373
RTOR Reduction (vph)	0	19	0	0	4	0	0	0	0	0	0	72
Lane Group Flow (vph)	752	120	0	0	88	0	0	2545	0	0	1446	301
Confl. Peds. (#/hr)			5	5			4					4
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	3%	2%	16%	7%	0%	0%	12%	3%	0%	0%	5%	2%
Turn Type	Prot	NA		Perm	NA			NA			NA	pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases				8								6
Actuated Green, G (s)	29.1	44.2			9.1			91.9			91.9	121.0
Effective Green, g (s)	29.1	44.2			9.1			91.9			91.9	121.0
Actuated g/C Ratio	0.19	0.29			0.06			0.61			0.61	0.81
Clearance Time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Vehicle Extension (s)	3.0	3.0			3.0			0.2			0.2	3.0
Lane Grp Cap (vph)	857	429			147			2759			2707	1183
v/s Ratio Prot	c0.17	0.08						c0.57			0.33	0.05
v/s Ratio Perm					c0.04							0.17
v/c Ratio	0.88	0.28			0.60			0.92			0.53	0.25
Uniform Delay, d1	58.7	40.7			68.7			25.9			16.7	3.5
Progression Factor	1.00	1.00			1.00			0.80			0.58	1.42
Incremental Delay, d2	10.1	0.4			6.7			5.2			0.6	0.1
Delay (s)	68.8	41.0			75.4			26.1			10.4	5.1
Level of Service	E	D			E			C			B	A
Approach Delay (s)		64.5			75.4			26.1			9.3	
Approach LOS		E			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	816	1	3	391	68	3	1	1	95	1	17
Future Volume (vph)	11	816	1	3	391	68	3	1	1	95	1	17
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	0.93		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1615	1666		1615	1618		1214	2955		1614	1427	
Flt Permitted	0.44	1.00		0.21	1.00		1.00	1.00		0.54	1.00	
Satd. Flow (perm)	747	1666		354	1618		1278	2955		918	1427	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	12	859	1	3	412	72	3	1	1	100	1	18
RTOR Reduction (vph)	0	0	0	0	4	0	0	2	0	0	16	0
Lane Group Flow (vph)	12	860	0	3	480	0	3	0	0	100	3	0
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	33%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	58.2	57.3		58.0	57.2		4.3	3.4		15.5	10.6	
Effective Green, g (s)	58.2	57.3		58.0	57.2		4.3	3.4		15.5	10.6	
Actuated g/C Ratio	0.66	0.65		0.65	0.65		0.05	0.04		0.17	0.12	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	499	1077		243	1044		61	113		224	170	
v/s Ratio Prot	c0.00	c0.52		0.00	0.30		0.00	0.00		c0.04	0.00	
v/s Ratio Perm	0.02			0.01			0.00			c0.04		
v/c Ratio	0.02	0.80		0.01	0.46		0.05	0.00		0.45	0.02	
Uniform Delay, d1	5.4	11.4		8.2	7.9		40.2	41.0		32.2	34.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	4.2		0.0	0.3		0.3	0.0		1.4	0.0	
Delay (s)	5.5	15.6		8.2	8.2		40.5	41.0		33.6	34.5	
Level of Service	A	B		A	A		D	D		C	C	
Approach Delay (s)		15.5			8.2			40.7			33.8	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	19.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Volume (veh/h)	36	111	222	2	588	2	0	464	0	0
Future Volume (Veh/h)	36	111	222	2	588	2	0	464	0	0
Sign Control		Free			Free		Yield		Stop	
Grade		0%			0%		0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	1.00	1.00
Hourly flow rate (vph)	38	118	236	2	626	2	0	494	0	0
Pedestrians									4	
Lane Width (ft)									0.0	
Walking Speed (ft/s)									4.0	
Percent Blockage									0	
Right turn flare (veh)										
Median type		None			None					
Median storage veh)										
Upstream signal (ft)		940			759					
pX, platoon unblocked										
vC, conflicting volume	628			122			829	314	515	830
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	628			122			829	314	515	830
tC, single (s)	4.1			4.1			6.5	6.9	7.5	6.5
tC, 2 stage (s)										
tF (s)	2.2			2.2			4.0	3.3	3.5	4.0
p0 queue free %	96			100			100	28	100	100
cM capacity (veh/h)	964			1478			296	688	121	292

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	156	236	315	315	494
Volume Left	38	0	2	0	0
Volume Right	0	236	0	2	494
cSH	964	1700	1478	1700	688
Volume to Capacity	0.04	0.14	0.00	0.19	0.72
Queue Length 95th (ft)	3	0	0	0	153
Control Delay (s)	2.5	0.0	0.1	0.0	22.4
Lane LOS	A		A		C
Approach Delay (s)	1.0		0.0		22.4
Approach LOS					C

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	57.1%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	99	3	40	586	32	6	9	7	8	6	4
Future Volume (Veh/h)	11	99	3	40	586	32	6	9	7	8	6	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	12	108	3	43	637	35	7	10	8	9	7	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1295			404							
pX, platoon unblocked												
vC, conflicting volume	672			111			546	892	110	887	876	336
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	672			111			546	892	110	887	876	336
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			98	96	99	96	97	99
cM capacity (veh/h)	928			1492			402	272	930	226	278	666

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	123	362	354	25	20
Volume Left	12	43	0	7	9
Volume Right	3	0	35	8	4
cSH	928	1492	1700	398	281
Volume to Capacity	0.01	0.03	0.21	0.06	0.07
Queue Length 95th (ft)	1	2	0	5	6
Control Delay (s)	1.0	1.1	0.0	14.7	18.8
Lane LOS	A	A		B	C
Approach Delay (s)	1.0	0.6		14.7	18.8
Approach LOS				B	C

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	33.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	113	0	0	0	617	2497	7	11	1376	30
Future Volume (vph)	0	0	113	0	0	0	617	2497	7	11	1376	30
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)			6.2				6.2	6.0		4.0	6.0	
Lane Util. Factor			1.00				0.97	0.91		1.00	0.91	
Frpb, ped/bikes			1.00				1.00	1.00		1.00	1.00	
Flpb, ped/bikes			1.00				1.00	1.00		1.00	1.00	
Frt			0.85				1.00	1.00		1.00	1.00	
Flt Protected			1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)			1338				3133	4504		1615	4408	
Flt Permitted			1.00				0.95	1.00		0.05	1.00	
Satd. Flow (perm)			1338				3133	4504		78	4408	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	122	0	0	0	663	2685	8	12	1480	32
RTOR Reduction (vph)	0	0	35	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	87	0	0	0	663	2693	0	12	1511	0
Confl. Peds. (#/hr)							6					6
Heavy Vehicles (%)	0%	0%	8%	0%	0%	0%	0%	3%	0%	0%	5%	0%
Turn Type			pm+ov				Prot	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4	8						6		
Actuated Green, G (s)			48.2				48.2	137.4		89.6	89.6	
Effective Green, g (s)			48.2				48.2	137.4		89.6	89.6	
Actuated g/C Ratio			0.32				0.32	0.92		0.60	0.60	
Clearance Time (s)			6.2				6.2	6.0		4.0	6.0	
Vehicle Extension (s)			3.0				3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)			429				1006	4125		73	2633	
v/s Ratio Prot			0.07				0.21	c0.60		0.00	c0.34	
v/s Ratio Perm										0.09		
v/c Ratio			0.20				0.66	0.65		0.16	0.57	
Uniform Delay, d1			37.0				43.8	1.3		12.9	18.5	
Progression Factor			1.00				1.01	0.05		0.52	0.33	
Incremental Delay, d2			0.2				1.0	0.5		0.9	0.8	
Delay (s)			37.2				45.4	0.6		7.7	7.0	
Level of Service			D				D	A		A	A	
Approach Delay (s)		37.2			0.0			9.4			7.0	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	262	173	3	98	2443	798	0	957	0
Future Volume (vph)	0	0	0	262	173	3	98	2443	798	0	957	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)				6.0	6.0		4.0	6.2	6.2		6.2	
Lane Util. Factor				0.91	0.91		1.00	0.91	1.00		0.91	
Frt				1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected				0.95	0.98		0.95	1.00	1.00		1.00	
Satd. Flow (prot)				1427	2975		1599	4506	1417		4463	
Flt Permitted				0.95	0.98		0.21	1.00	1.00		1.00	
Satd. Flow (perm)				1427	2975		346	4506	1417		4463	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	0	0	316	208	4	118	2943	961	0	1153	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	233	0	0	0
Lane Group Flow (vph)	0	0	0	174	353	0	118	2943	728	0	1153	0
Heavy Vehicles (%)	0%	0%	0%	3%	1%	0%	1%	3%	2%	0%	4%	3%
Turn Type				Split	NA		pm+pt	NA	Perm		NA	Free
Protected Phases				4	4		5	2			6	
Permitted Phases							2		2			Free
Actuated Green, G (s)				24.2	24.2		113.6	113.6	113.6		101.2	
Effective Green, g (s)				24.2	24.2		113.6	113.6	113.6		101.2	
Actuated g/C Ratio				0.16	0.16		0.76	0.76	0.76		0.67	
Clearance Time (s)				6.0	6.0		4.0	6.2	6.2		6.2	
Vehicle Extension (s)				3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)				230	479		332	3412	1073		3011	
v/s Ratio Prot				c0.12	0.12		0.02	c0.65			0.26	
v/s Ratio Perm							0.25		0.51			
v/c Ratio				0.76	0.74		0.36	0.86	0.68		0.38	
Uniform Delay, d1				60.1	59.9		5.5	12.7	9.1		10.7	
Progression Factor				1.00	1.00		1.03	0.99	1.21		0.80	
Incremental Delay, d2				13.2	5.8		0.1	0.3	0.3		0.3	
Delay (s)				73.3	65.7		5.7	12.9	11.3		8.9	
Level of Service				E	E		A	B	B		A	
Approach Delay (s)		0.0			68.2			12.3			8.9	
Approach LOS		A			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	39	58	1	61	10	241	776	79	124	160	4
Future Volume (vph)	3	39	58	1	61	10	241	776	79	124	160	4
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00	0.96		1.00	0.95	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	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1663	1394		1619	1337	1615	1700	1445	1615	1693	
Flt Permitted		0.97	1.00		1.00	1.00	0.62	1.00	1.00	0.21	1.00	
Satd. Flow (perm)		1614	1394		1612	1337	1062	1700	1445	354	1693	
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	4	51	75	1	79	13	313	1008	103	161	208	5
RTOR Reduction (vph)	0	0	68	0	0	12	0	0	24	0	1	0
Lane Group Flow (vph)	0	55	7	0	80	1	313	1008	79	161	212	0
Confl. Bikes (#/hr)			4			7						
Heavy Vehicles (%)	0%	2%	0%	0%	5%	3%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)		8.4	8.4		8.4	8.4	67.3	67.3	67.3	67.3	67.3	
Effective Green, g (s)		8.4	8.4		8.4	8.4	67.3	67.3	67.3	67.3	67.3	
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.77	0.77	0.77	0.77	0.77	
Clearance Time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		154	133		154	127	813	1301	1106	271	1296	
v/s Ratio Prot								c0.59			0.13	
v/s Ratio Perm		0.03	0.01		c0.05	0.00	0.29		0.05	0.45		
v/c Ratio		0.36	0.05		0.52	0.01	0.38	0.77	0.07	0.59	0.16	
Uniform Delay, d1		37.2	36.1		37.8	36.0	3.4	5.9	2.6	4.4	2.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.4	0.2		2.9	0.0	1.4	4.6	0.1	9.3	0.3	
Delay (s)		38.6	36.3		40.8	36.0	4.8	10.5	2.7	13.7	3.0	
Level of Service		D	D		D	D	A	B	A	B	A	
Approach Delay (s)		37.3			40.1			8.7			7.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	12.2
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1671	7	196	0	0	0	0	2266	7	3	1221	0
Future Volume (vph)	1671	7	196	0	0	0	0	2266	7	3	1221	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.6	6.6						6.6		6.6	6.6	
Lane Util. Factor	0.86	0.86						0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.96						1.00		1.00	1.00	
Flt Protected	0.95	0.96						1.00		0.95	1.00	
Satd. Flow (prot)	2750	2649						4461		1615	4420	
Flt Permitted	0.95	0.96						1.00		0.05	1.00	
Satd. Flow (perm)	2750	2649						4461		89	4420	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1816	8	213	0	0	0	0	2463	8	3	1327	0
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1217	801	0	0	0	0	0	2471	0	3	1327	0
Confl. Peds. (#/hr)			3	3			1					1
Heavy Vehicles (%)	1%	17%	4%	0%	0%	0%	0%	4%	0%	0%	5%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)	60.4	60.4						76.4		76.4	76.4	
Effective Green, g (s)	60.4	60.4						76.4		76.4	76.4	
Actuated g/C Ratio	0.40	0.40						0.51		0.51	0.51	
Clearance Time (s)	6.6	6.6						6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0						0.2		0.2	0.2	
Lane Grp Cap (vph)	1107	1066						2272		45	2251	
v/s Ratio Prot								c0.55			0.30	
v/s Ratio Perm	c0.44	0.30								0.03		
v/c Ratio	1.10	1.00dl						1.09		0.07	0.59	
Uniform Delay, d1	44.8	38.4						36.8		18.7	25.8	
Progression Factor	1.00	1.00						1.00		0.96	0.86	
Incremental Delay, d2	58.5	3.0						47.6		2.6	1.1	
Delay (s)	103.3	41.4						84.4		20.5	23.2	
Level of Service	F	D						F		C	C	
Approach Delay (s)		78.4			0.0			84.4			23.2	
Approach LOS		E			A			F			C	

Intersection Summary			
HCM 2000 Control Delay	68.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCS7 Two-Way Stop-Control Report

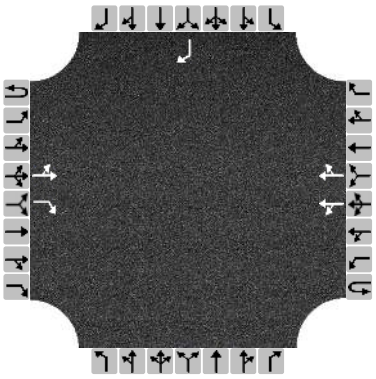
General Information

Analyst	mah
Agency/Co.	KAI
Date Performed	5/9/2018
Analysis Year	2018
Time Analyzed	
Intersection Orientation	East-West
Project Description	21018-112

Site Information

Intersection	Aronson Ave/6thAve Bypass
Jurisdiction	
East/West Street	Aronson Ave
North/South Street	6th Ave Bypass
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	0		0	0	1
Configuration		LT		R		LT		TR								R
Volume, V (veh/h)		36	111	222		2	588	2								464
Percent Heavy Vehicles (%)		0				0										2
Proportion Time Blocked		0.000	0.000	0.000		0.000	0.000	0.000								0.400
Percent Grade (%)														0		
Right Turn Channelized		Yes				No				No				Yes		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		36				2										464
Capacity, c (veh/h)		996				1492										671
v/c Ratio		0.04				0.00										0.69
95% Queue Length, Q_{95} (veh)		0.1				0.0										6.3
Control Delay (s/veh)		8.8				7.4										22.2
Level of Service, LOS		A				A										C
Approach Delay (s/veh)		1.0				0.0								22.2		
Approach LOS														C		

Appendix E
Year 2040 AM Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	29	848	66	16	29	114	1160	59	62	2427	2
Future Volume (veh/h)	3	29	848	66	16	29	114	1160	59	62	2427	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1607	1607	1647	1700	1620	1700	1607	1541	1541	1620	1647	1647
Adj Flow Rate, veh/h	3	29	848	66	16	29	114	1160	59	62	2427	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	7	7	4	0	6	0	7	12	12	6	4	4
Cap, veh/h	41	307	453	168	328	336	239	2669	136	250	2518	2
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.12	0.65	0.65	0.03	0.54	0.54
Sat Flow, veh/h	75	1515	1392	642	1620	1436	1531	4094	208	1543	4640	4
Grp Volume(v), veh/h	32	0	848	66	16	29	114	794	425	62	1568	861
Grp Sat Flow(s),veh/h/ln	1590	0	1392	642	1620	1436	1531	1402	1498	1543	1499	1646
Q Serve(g_s), s	0.0	0.0	30.4	14.0	1.2	2.4	5.1	20.6	20.7	3.0	75.2	75.3
Cycle Q Clear(g_c), s	2.4	0.0	30.4	16.4	1.2	2.4	5.1	20.6	20.7	3.0	75.2	75.3
Prop In Lane	0.09		1.00	1.00		1.00	1.00		0.14	1.00		0.00
Lane Grp Cap(c), veh/h	348	0	453	168	328	336	239	1828	976	250	1627	893
V/C Ratio(X)	0.09	0.00	1.87	0.39	0.05	0.09	0.48	0.43	0.43	0.25	0.96	0.96
Avail Cap(c_a), veh/h	348	0	453	168	328	336	266	1828	976	315	1627	893
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	0.0	50.6	55.3	48.2	45.0	58.7	12.7	12.7	19.3	32.9	32.9
Incr Delay (d2), s/veh	0.1	0.0	400.3	1.5	0.1	0.1	1.2	0.6	1.2	0.5	15.2	22.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	60.3	2.3	0.5	0.9	3.9	6.5	7.1	1.1	29.6	34.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	0.0	450.9	56.8	48.2	45.1	60.0	13.3	13.9	19.8	48.1	55.5
LnGrp LOS	D	A	F	E	D	D	E	B	B	B	D	E
Approach Vol, veh/h		880			111			1333			2491	
Approach Delay, s/veh		436.3			52.5			17.5			50.0	
Approach LOS		F			D			B			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	104.4		37.0	25.0	88.0		37.0				
Change Period (Y+Rc), s	4.0	6.6		6.6	6.6	* 6.6		6.6				
Max Green Setting (Gmax), s	11.0	91.4		30.4	21.0	* 81		30.4				
Max Q Clear Time (g_c+I1), s	5.0	22.7		18.4	7.1	77.3		32.4				
Green Ext Time (p_c), s	0.0	11.2		0.4	0.2	3.9		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		111.6
HCM 6th LOS		F

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	262	1316	90	45	108
Future Vol, veh/h	21	262	1316	90	45	108
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	160	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	5	0	0	25	0
Mvmt Flow	21	262	1316	90	45	108

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1406	0	-	0	1665	1361
Stage 1	-	-	-	-	1361	-
Stage 2	-	-	-	-	304	-
Critical Hdwy	4.1	-	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.2	-	-	-	3.725	3.3
Pot Cap-1 Maneuver	492	-	-	-	94	183
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	492	-	-	-	90	183
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	699	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	45
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	492	-	-	-	169	183
HCM Lane V/C Ratio	0.043	-	-	-	0.266	0.59
HCM Control Delay (s)	12.6	-	-	-	33.9	49.6
HCM Lane LOS	B	-	-	-	D	E
HCM 95th %tile Q(veh)	0.1	-	-	-	1	3.2

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Vol, veh/h	552	316	0	683	0	26
Future Vol, veh/h	552	316	0	683	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	2	0	8	0	0
Mvmt Flow	552	316	0	683	0	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	276
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	727
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	727
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)	727	-	-	-
HCM Lane V/C Ratio	0.036	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑↱				↱			↱
Traffic Vol, veh/h	0	562	16	0	669	26	0	0	27	0	0	14
Future Vol, veh/h	0	562	16	0	669	26	0	0	27	0	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	5	0	0	5	0	0	0	8	50	0	0
Mvmt Flow	0	661	19	0	787	31	0	0	32	0	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	340	-	-	409
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.06	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.38	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	639	0	0	597
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	639	-	-	597
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

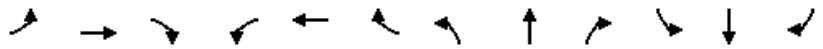
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.9	11.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	639	-	-	-	-	597
HCM Lane V/C Ratio	0.05	-	-	-	-	0.028
HCM Control Delay (s)	10.9	-	-	-	-	11.2
HCM Lane LOS	B	-	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	426	58	105	45	166	7	0	900	1	1	2812	529
Future Volume (veh/h)	426	58	105	45	166	7	0	900	1	1	2812	529
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1581	1581	1634	1634	1634	0	1567	1567	1660	1660	1660
Adj Flow Rate, veh/h	426	58	105	45	166	7	0	900	1	1	2812	529
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	9	9	5	5	5	0	10	10	3	3	3
Cap, veh/h	468	116	211	76	196	9	0	2984	3	24	2981	1099
Arrive On Green	0.11	0.23	0.23	0.08	0.08	0.08	0.00	1.00	1.00	0.45	0.45	0.45
Sat Flow, veh/h	4388	504	912	500	2315	101	0	4555	5	0	4409	1404
Grp Volume(v), veh/h	426	0	163	117	0	101	0	582	319	1059	1754	529
Grp Sat Flow(s),veh/h/ln	1463	0	1415	1448	0	1468	0	1426	1567	1660	1375	1404
Q Serve(g_s), s	14.4	0.0	15.0	10.9	0.0	10.2	0.0	0.0	0.0	0.8	91.4	27.7
Cycle Q Clear(g_c), s	14.4	0.0	15.0	12.0	0.0	10.2	0.0	0.0	0.0	91.4	91.4	27.7
Prop In Lane	1.00		0.64	0.39		0.07	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	468	0	327	156	0	124	0	1928	1059	1146	1859	1099
V/C Ratio(X)	0.91	0.00	0.50	0.75	0.00	0.81	0.00	0.30	0.30	0.92	0.94	0.48
Avail Cap(c_a), veh/h	468	0	327	156	0	124	0	1928	1059	1146	1859	1099
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.98	0.98	0.09	0.09	0.09
Uniform Delay (d), s/veh	66.3	0.0	50.1	68.3	0.0	67.5	0.0	0.0	0.0	38.3	38.3	11.1
Incr Delay (d2), s/veh	21.8	0.0	1.2	18.0	0.0	32.5	0.0	0.4	0.7	1.6	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	5.3	5.3	0.0	5.0	0.0	0.1	0.2	38.8	32.1	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.1	0.0	51.3	86.3	0.0	100.0	0.0	0.4	0.7	39.9	39.7	11.2
LnGrp LOS	F	A	D	F	A	F	A	A	A	D	D	B
Approach Vol, veh/h		589			218			901			3342	
Approach Delay, s/veh		77.9			92.7			0.5			35.3	
Approach LOS		E			F			A			D	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	108.0	42.0	108.0	22.0	20.0
Change Period (Y+Rc), s	6.6	7.3	6.6	6.0	7.3
Max Green Setting (Gmax), s	101.4	34.7	101.4	16.0	12.7
Max Q Clear Time (g_c+I1), s	2.0	17.0	93.4	16.4	14.0
Green Ext Time (p_c), s	1.1	0.7	3.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	36.5
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	240	0	0	1224	200	2	0	0	43	0	15
Future Volume (veh/h)	18	240	0	0	1224	200	2	0	0	43	0	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.94		1.00	0.96		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1647	1647	1700	1673	1673	374	1700	1700	1634	1700	1700
Adj Flow Rate, veh/h	18	240	0	0	1224	200	2	0	0	43	0	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	4	0	2	2	100	0	0	5	0	0
Cap, veh/h	103	1290	0	917	1014	166	85	80	0	160	0	77
Arrive On Green	0.02	0.78	0.00	0.00	0.72	0.72	0.00	0.00	0.00	0.03	0.00	0.05
Sat Flow, veh/h	1619	1647	0	1619	1400	229	356	3315	0	1556	0	1407
Grp Volume(v), veh/h	18	240	0	0	0	1424	2	0	0	43	0	15
Grp Sat Flow(s),veh/h/ln	1619	1647	0	1619	0	1628	356	1615	0	1556	0	1407
Q Serve(g_s), s	0.3	3.5	0.0	0.0	0.0	68.0	0.2	0.0	0.0	2.5	0.0	1.0
Cycle Q Clear(g_c), s	0.3	3.5	0.0	0.0	0.0	68.0	0.2	0.0	0.0	2.5	0.0	1.0
Prop In Lane	1.00		0.00	1.00		0.14	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	103	1290	0	917	0	1180	85	80	0	160	0	77
V/C Ratio(X)	0.18	0.19	0.00	0.00	0.00	1.21	0.02	0.00	0.00	0.27	0.00	0.19
Avail Cap(c_a), veh/h	266	1290	0	1105	0	1180	126	379	0	292	0	165
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.8	2.6	0.0	0.0	0.0	12.9	44.7	0.0	0.0	42.1	0.0	42.4
Incr Delay (d2), s/veh	0.8	0.1	0.0	0.0	0.0	101.4	0.1	0.0	0.0	0.9	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.7	0.0	0.0	0.0	50.7	0.0	0.0	0.0	1.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.6	2.7	0.0	0.0	0.0	114.3	44.8	0.0	0.0	43.0	0.0	43.6
LnGrp LOS	C	A	A	A	A	F	D	A	A	D	A	D
Approach Vol, veh/h		258			1424			2			58	
Approach Delay, s/veh		4.5			114.3			44.8			43.1	
Approach LOS		A			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	79.5	4.2	10.2	5.5	74.0	7.0	7.3
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	68.0	11.0	11.0	11.0	68.0	11.0	11.0
Max Q Clear Time (g_c+I1), s	10.0	5.5	2.2	3.0	2.3	70.0	4.5	0.0
Green Ext Time (p_c), s	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	95.6
HCM 6th LOS	F

Notes

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕			↔			↔	
Traffic Vol, veh/h	21	225	0	56	420	3	0	3	3	2	9	5
Future Vol, veh/h	21	225	0	56	420	3	0	3	3	2	9	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	14	5	0	17	8	6	0	0	0	0	0	0
Mvmt Flow	21	225	0	56	420	3	0	3	3	2	9	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	423	0	0	225	0	0	594	802	225	804	801	212
Stage 1	-	-	-	-	-	-	267	267	-	534	534	-
Stage 2	-	-	-	-	-	-	327	535	-	270	267	-
Critical Hdwy	4.31	-	-	4.355	-	-	7.3	6.5	6.2	7.3	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.333	-	-	2.3615	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1063	-	-	1249	-	-	406	320	819	290	320	800
Stage 1	-	-	-	-	-	-	743	692	-	503	528	-
Stage 2	-	-	-	-	-	-	665	527	-	740	692	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1063	-	-	1249	-	-	370	294	819	269	294	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	370	294	-	269	294	-
Stage 1	-	-	-	-	-	-	726	676	-	491	497	-
Stage 2	-	-	-	-	-	-	611	496	-	717	676	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	1.1	13.4	15.4
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	433	1063	-	-	1249	-	-	361
HCM Lane V/C Ratio	0.014	0.02	-	-	0.045	-	-	0.044
HCM Control Delay (s)	13.4	8.5	0	-	8	0.2	-	15.4
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0.1	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	230	1	1	1	457	900	3	1	2940	22
Future Volume (veh/h)	0	0	230	1	1	1	457	900	3	1	2940	22
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1700	1647	1700	1700	1700	1620	1514	1514	1700	1634	1634
Adj Flow Rate, veh/h	0	0	230	1	1	1	457	900	3	1	2940	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	4	0	0	0	6	14	14	0	5	5
Cap, veh/h	0	57	398	40	25	17	754	3648	12	380	2646	
Arrive On Green	0.00	0.00	0.03	0.03	0.03	0.03	0.25	0.86	0.86	0.00	0.79	0.00
Sat Flow, veh/h	0	1700	1396	239	762	500	2994	4254	14	1619	4607	0
Grp Volume(v), veh/h	0	0	230	3	0	0	457	583	320	1	2940	0
Grp Sat Flow(s),veh/h/ln	0	1700	1396	1501	0	0	1497	1378	1512	1619	1487	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	20.2	5.7	5.7	0.0	89.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.3	0.0	0.0	20.2	5.7	5.7	0.0	89.0	0.0
Prop In Lane	0.00		1.00	0.33		0.33	1.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	0	57	398	82	0	0	754	2364	1296	380	2646	
V/C Ratio(X)	0.00	0.00	0.58	0.04	0.00	0.00	0.61	0.25	0.25	0.00	1.11	
Avail Cap(c_a), veh/h	0	181	501	166	0	0	754	2364	1296	497	2646	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.13	0.13	0.00
Uniform Delay (d), s/veh	0.0	0.0	45.9	70.2	0.0	0.0	49.5	1.9	1.9	13.4	15.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	1.3	0.2	0.0	0.0	1.4	0.2	0.5	0.0	50.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	7.5	0.1	0.0	0.0	7.7	1.1	1.3	0.0	31.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	47.2	70.4	0.0	0.0	50.9	2.2	2.4	13.4	66.6	0.0
LnGrp LOS	A	A	D	E	A	A	D	A	A	B	F	
Approach Vol, veh/h		230			3			1360			2941	A
Approach Delay, s/veh		47.2			70.4			18.6			66.6	
Approach LOS		D			E			B			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.2	134.8		11.0	44.0	95.0		11.0				
Change Period (Y+Rc), s	4.0	* 6.2		* 6	6.2	* 6		6.0				
Max Green Setting (Gmax), s	11.0	* 1.1E2		* 16	28.8	* 89		14.0				
Max Q Clear Time (g_c+I1), s	2.0	7.7		2.0	22.2	91.0		2.3				
Green Ext Time (p_c), s	0.0	7.2		0.6	1.0	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	51.2
HCM 6th LOS	D

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	140	462	4	17	79	205	461	60	403	936	17
Future Volume (veh/h)	6	140	462	4	17	79	205	461	60	403	936	17
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1700	1594	1594	1567	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	6	140	462	4	17	79	205	461	60	403	936	17
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	5	0	8	8	10	0	0	0	0	0	0
Cap, veh/h	37	274	353	61	201	227	250	951	806	621	1017	18
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.07	0.56	0.56	0.13	0.61	0.61
Sat Flow, veh/h	22	1605	1441	133	1177	1328	1619	1700	1441	1619	1664	30
Grp Volume(v), veh/h	146	0	462	21	0	79	205	461	60	403	0	953
Grp Sat Flow(s),veh/h/ln	1627	0	1441	1309	0	1328	1619	1700	1441	1619	0	1695
Q Serve(g_s), s	0.0	0.0	19.2	0.0	0.0	5.9	6.0	18.4	2.2	11.1	0.0	56.2
Cycle Q Clear(g_c), s	9.1	0.0	19.2	9.2	0.0	5.9	6.0	18.4	2.2	11.1	0.0	56.2
Prop In Lane	0.04		1.00	0.19		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	312	0	353	262	0	227	250	951	806	621	0	1035
V/C Ratio(X)	0.47	0.00	1.31	0.08	0.00	0.35	0.82	0.48	0.07	0.65	0.00	0.92
Avail Cap(c_a), veh/h	312	0	353	262	0	227	361	951	806	778	0	1035
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	0.00	1.00
Uniform Delay (d), s/veh	42.4	0.0	42.4	39.1	0.0	41.0	24.2	15.0	11.4	10.0	0.0	19.4
Incr Delay (d2), s/veh	1.1	0.0	158.2	0.6	0.0	4.2	9.5	1.8	0.2	1.3	0.0	14.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	25.2	0.5	0.0	0.3	3.6	7.3	0.7	3.6	0.0	24.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.5	0.0	200.6	39.7	0.0	45.2	33.7	16.7	11.6	11.3	0.0	33.8
LnGrp LOS	D	A	F	D	A	D	C	B	B	B	A	C
Approach Vol, veh/h		608			100			726			1356	
Approach Delay, s/veh		162.9			44.1			21.1			27.1	
Approach LOS		F			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.1	68.6		25.6	12.3	74.4		25.6				
Change Period (Y+Rc), s	4.0	* 5.8		* 6.4	4.0	* 5.8		* 6.4				
Max Green Setting (Gmax), s	25.0	* 60		* 19	16.0	* 69		* 19				
Max Q Clear Time (g_c+I1), s	13.1	20.4		21.2	8.0	58.2		11.2				
Green Ext Time (p_c), s	1.0	3.5		0.0	0.3	5.3		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	55.7
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	29	848	66	16	29	114	1160	59	62	2427	2
Future Volume (vph)	3	29	848	66	16	29	114	1160	59	62	2427	2
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.99	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	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1591	1389	1615	1604	1431	1509	4131		1524	4462	
Flt Permitted		0.97	1.00	0.74	1.00	1.00	0.04	1.00		0.20	1.00	
Satd. Flow (perm)		1554	1389	1252	1604	1431	67	4131		316	4462	
Peak-hour factor, PHF	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. Flow (vph)	3	29	848	66	16	29	114	1160	59	62	2427	2
RTOR Reduction (vph)	0	0	43	0	0	25	0	2	0	0	0	0
Lane Group Flow (vph)	0	32	805	66	16	4	114	1217	0	62	2429	0
Confl. Peds. (#/hr)	2					2	1					1
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	0%	7%	4%	0%	6%	0%	7%	12%	0%	6%	4%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		8	5		4	1	5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)		11.8	33.6	11.8	11.8	18.3	117.1	114.5		99.2	99.2	
Effective Green, g (s)		11.8	33.6	11.8	11.8	18.3	117.1	114.5		99.2	99.2	
Actuated g/C Ratio		0.08	0.22	0.08	0.08	0.12	0.78	0.76		0.66	0.66	
Clearance Time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		122	348	98	126	174	261	3153		261	2950	
v/s Ratio Prot			c0.34		0.01	0.00	0.06	0.29		0.01	c0.54	
v/s Ratio Perm		0.02	0.24	0.05		0.00	0.28			0.15		
v/c Ratio		0.26	2.31	0.67	0.13	0.02	0.44	0.39		0.24	0.82	
Uniform Delay, d1		65.0	58.2	67.2	64.3	58.0	29.6	6.0		9.3	18.9	
Progression Factor		1.00	1.00	1.00	1.00	1.00	0.59	0.43		1.00	1.00	
Incremental Delay, d2		1.2	600.3	16.7	0.5	0.0	1.0	0.3		0.5	2.7	
Delay (s)		66.2	658.5	84.0	64.8	58.0	18.5	2.9		9.8	21.6	
Level of Service		E	F	F	E	E	B	A		A	C	
Approach Delay (s)		637.0			74.4			4.2			21.3	
Approach LOS		F			E			A			C	

Intersection Summary			
HCM 2000 Control Delay	130.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	131.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	262	1316	90	45	108
Future Volume (Veh/h)	21	262	1316	90	45	108
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	262	1316	90	45	108
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (ft)		504				
pX, platoon unblocked					0.99	
vC, conflicting volume	1406				1665	1361
vC1, stage 1 conf vol					1361	
vC2, stage 2 conf vol					304	
vCu, unblocked vol	1406				1666	1361
tC, single (s)	4.1				6.6	6.2
tC, 2 stage (s)					5.6	
tF (s)	2.2				3.7	3.3
p0 queue free %	96				78	41
cM capacity (veh/h)	492				203	183

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	21	262	1406	45	108
Volume Left	21	0	0	45	0
Volume Right	0	0	90	0	108
cSH	492	1700	1700	203	183
Volume to Capacity	0.04	0.15	0.83	0.22	0.59
Queue Length 95th (ft)	3	0	0	20	80
Control Delay (s)	12.6	0.0	0.0	27.7	49.5
Lane LOS	B			D	E
Approach Delay (s)	0.9		0.0	43.1	
Approach LOS				E	

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	97.6%	ICU Level of Service	F	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	868	583	100	0	603
Future Volume (Veh/h)	0	868	583	100	0	603
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	868	583	100	0	603
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	683				872	292
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	683				872	292
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	15
cM capacity (veh/h)	919				294	711

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	289	289	289	292	292	100	603
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	100	603
cSH	1700	1700	1700	1700	1700	1700	711
Volume to Capacity	0.17	0.17	0.17	0.17	0.17	0.06	0.85
Queue Length 95th (ft)	0	0	0	0	0	0	243
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	31.6
Lane LOS							D
Approach Delay (s)	0.0			0.0			31.6
Approach LOS							D

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Volume (veh/h)	552	316	0	683	0	26
Future Volume (Veh/h)	552	316	0	683	0	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	552	316	0	683	0	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1202		
pX, platoon unblocked						
vC, conflicting volume			868		780	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			868		780	276
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			785		336	727

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	276	276	316	228	228	228	26
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	316	0	0	0	26
cSH	1700	1700	1700	1700	1700	1700	727
Volume to Capacity	0.16	0.16	0.19	0.13	0.13	0.13	0.04
Queue Length 95th (ft)	0	0	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.1
Lane LOS							B
Approach Delay (s)	0.0			0.0			10.1
Approach LOS							B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	562	16	0	669	26	0	0	27	0	0	14
Future Volume (Veh/h)	0	562	16	0	669	26	0	0	27	0	0	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	661	19	0	787	31	0	0	32	0	0	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					728							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	818			680			1080	1488	340	1165	1482	409
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	745			680			1016	1438	340	1104	1432	322
tC, single (s)	4.1			4.1			7.5	6.5	7.1	8.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	4.0	4.0	3.3
p0 queue free %	100			100			100	100	95	100	100	98
cM capacity (veh/h)	844			922			184	130	639	106	131	657

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	441	239	525	293	32	16
Volume Left	0	0	0	0	0	0
Volume Right	0	19	0	31	32	16
cSH	1700	1700	1700	1700	639	657
Volume to Capacity	0.26	0.14	0.31	0.17	0.05	0.02
Queue Length 95th (ft)	0	0	0	0	4	2
Control Delay (s)	0.0	0.0	0.0	0.0	10.9	10.6
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		10.9	10.6
Approach LOS					B	B

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	31.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	426	58	105	45	166	7	0	900	1	1	2812	529
Future Volume (vph)	426	58	105	45	166	7	0	900	1	1	2812	529
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Lane Util. Factor	0.94	1.00			0.95			0.91			0.91	1.00
Frpb, ped/bikes	1.00	0.99			1.00			1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.90			1.00			1.00			1.00	0.85
Flt Protected	0.95	1.00			0.99			1.00			1.00	1.00
Satd. Flow (prot)	4337	1319			3022			4219			4506	1381
Flt Permitted	0.95	1.00			0.85			1.00			0.94	1.00
Satd. Flow (perm)	4337	1319			2592			4219			4235	1381
Peak-hour factor, PHF	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. Flow (vph)	426	58	105	45	166	7	0	900	1	1	2812	529
RTOR Reduction (vph)	0	2	0	0	2	0	0	0	0	0	0	17
Lane Group Flow (vph)	426	161	0	0	216	0	0	901	0	0	2813	512
Confl. Peds. (#/hr)			1	1			4		2	2		4
Heavy Vehicles (%)	5%	9%	19%	7%	5%	0%	40%	10%	0%	0%	3%	3%
Turn Type	Prot	NA		Perm	NA			NA		Perm	NA	pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases				8						6		6
Actuated Green, G (s)	16.0	34.7			12.7			101.4			101.4	117.4
Effective Green, g (s)	16.0	34.7			12.7			101.4			101.4	117.4
Actuated g/C Ratio	0.11	0.23			0.08			0.68			0.68	0.78
Clearance Time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Vehicle Extension (s)	3.0	3.0			3.0			0.2			0.2	3.0
Lane Grp Cap (vph)	462	305			219			2852			2862	1080
v/s Ratio Prot	c0.10	0.12						0.21				0.05
v/s Ratio Perm					c0.08						c0.66	0.32
v/c Ratio	0.92	0.53			0.99			0.32			0.98	0.47
Uniform Delay, d1	66.4	50.5			68.6			10.0			23.5	5.6
Progression Factor	1.00	1.00			1.00			0.94			0.73	0.46
Incremental Delay, d2	23.9	1.6			56.6			0.3			2.5	0.0
Delay (s)	90.3	52.1			125.2			9.7			19.6	2.6
Level of Service	F	D			F			A			B	A
Approach Delay (s)		79.7			125.2			9.7			16.9	
Approach LOS		E			F			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	240	0	0	1224	200	2	0	0	43	0	15
Future Volume (vph)	18	240	0	0	1224	200	2	0	0	43	0	15
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	6.0			6.0		4.0			4.0	5.0	
Lane Util. Factor	1.00	1.00			1.00		1.00			1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00		1.00			1.00	0.97	
Flpb, ped/bikes	1.00	1.00			1.00		0.99			1.00	1.00	
Frt	1.00	1.00			0.98		1.00			1.00	0.85	
Flt Protected	0.95	1.00			1.00		0.95			0.95	1.00	
Satd. Flow (prot)	1615	1635			1626		803			1538	1408	
Flt Permitted	0.05	1.00			1.00		1.00			0.53	1.00	
Satd. Flow (perm)	90	1635			1626		845			863	1408	
Peak-hour factor, PHF	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. Flow (vph)	18	240	0	0	1224	200	2	0	0	43	0	15
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	14	0
Lane Group Flow (vph)	18	240	0	0	1421	0	2	0	0	43	1	0
Confl. Peds. (#/hr)			4	4			3					3
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	0%	4%	0%	0%	2%	3%	100%	0%	0%	5%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt			pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	77.7	77.7			71.2		4.5			12.5	7.5	
Effective Green, g (s)	77.7	77.7			71.2		4.5			12.5	7.5	
Actuated g/C Ratio	0.77	0.77			0.70		0.04			0.12	0.07	
Clearance Time (s)	4.0	6.0			6.0		4.0			4.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	106	1255			1143		37			139	104	
v/s Ratio Prot	0.00	c0.15			c0.87		0.00			c0.02	0.00	
v/s Ratio Perm	0.12						0.00			c0.02		
v/c Ratio	0.17	0.19			1.24		0.05			0.31	0.01	
Uniform Delay, d1	28.1	3.2			15.0		46.3			40.1	43.4	
Progression Factor	1.00	1.00			1.00		1.00			1.00	1.00	
Incremental Delay, d2	0.8	0.1			116.9		0.6			1.3	0.0	
Delay (s)	28.8	3.3			131.9		46.9			41.3	43.5	
Level of Service	C	A			F		D			D	D	
Approach Delay (s)		5.1			131.9			46.9			41.9	
Approach LOS		A			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	110.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	101.2	Sum of lost time (s)	19.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Volume (veh/h)	26	246	1130	15	410	0	0	316	0	0
Future Volume (Veh/h)	26	246	1130	15	410	0	0	316	0	0
Sign Control		Free			Free		Yield		Stop	
Grade		0%			0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	26	246	1130	15	410	0	0	316	0	0
Pedestrians									2	
Lane Width (ft)									0.0	
Walking Speed (ft/s)									4.0	
Percent Blockage									0	
Right turn flare (veh)										
Median type		None			None					
Median storage veh)										
Upstream signal (ft)		896			759					
pX, platoon unblocked										
vC, conflicting volume	410			248			740	205	535	740
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	410			248			740	205	535	740
tC, single (s)	4.1			4.1			6.5	6.9	7.5	6.5
tC, 2 stage (s)										
tF (s)	2.2			2.2			4.0	3.3	3.5	4.0
p0 queue free %	98			99			100	61	100	100
cM capacity (veh/h)	1160			1330			335	802	253	332

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	272	1130	220	205	316
Volume Left	26	0	15	0	0
Volume Right	0	1130	0	0	316
cSH	1160	1700	1330	1700	802
Volume to Capacity	0.02	0.66	0.01	0.12	0.39
Queue Length 95th (ft)	2	0	1	0	47
Control Delay (s)	1.0	0.0	0.6	0.0	12.4
Lane LOS	A		A		B
Approach Delay (s)	0.2		0.3		12.4
Approach LOS					B

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	98.2%	ICU Level of Service		F
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	225	0	56	420	3	0	3	3	2	9	5
Future Volume (Veh/h)	21	225	0	56	420	3	0	3	3	2	9	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	225	0	56	420	3	0	3	3	2	9	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1251			404							
pX, platoon unblocked												
vC, conflicting volume	423			225			598	802	225	805	800	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	423			225			598	802	225	805	800	212
tC, single (s)	4.4			4.4			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			95			100	99	100	99	97	99
cM capacity (veh/h)	1052			1238			360	299	784	261	300	800

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	246	266	213	6	16
Volume Left	21	56	0	0	2
Volume Right	0	0	3	3	5
cSH	1052	1238	1700	433	364
Volume to Capacity	0.02	0.05	0.13	0.01	0.04
Queue Length 95th (ft)	2	4	0	1	3
Control Delay (s)	0.9	2.0	0.0	13.4	15.3
Lane LOS	A	A		B	C
Approach Delay (s)	0.9	1.1		13.4	15.3
Approach LOS				B	C

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	42.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	230	1	1	1	457	900	3	1	2940	22
Future Volume (vph)	0	0	230	1	1	1	457	900	3	1	2940	22
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)			6.2		6.0		6.2	6.0		4.0	6.0	
Lane Util. Factor			1.00		1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes			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	
Frt			0.85		0.95		1.00	1.00		1.00	1.00	
Flt Protected			1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)			1389		1597		2956	4071		1615	4411	
Flt Permitted			1.00		1.00		0.95	1.00		0.29	1.00	
Satd. Flow (perm)			1389		1624		2956	4071		495	4411	
Peak-hour factor, PHF	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. Flow (vph)	0	0	230	1	1	1	457	900	3	1	2940	22
RTOR Reduction (vph)	0	0	39	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	191	0	2	0	457	903	0	1	2962	0
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	6%	14%	0%	0%	5%	17%
Turn Type			pm+ov	Perm	NA		Prot	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4	8						6		
Actuated Green, G (s)			35.2		1.3		31.9	131.6		98.6	98.6	
Effective Green, g (s)			35.2		1.3		31.9	131.6		98.6	98.6	
Actuated g/C Ratio			0.23		0.01		0.21	0.88		0.66	0.66	
Clearance Time (s)			6.2		6.0		6.2	6.0		4.0	6.0	
Vehicle Extension (s)			3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)			383		14		628	3571		333	2899	
v/s Ratio Prot			c0.11				c0.15	0.22		0.00	c0.67	
v/s Ratio Perm			0.03		0.00					0.00		
v/c Ratio			0.50		0.14		0.73	0.25		0.00	1.02	
Uniform Delay, d1			49.8		73.8		55.0	1.5		8.9	25.7	
Progression Factor			1.00		1.00		0.92	0.00		0.16	0.13	
Incremental Delay, d2			1.0		4.7		3.7	0.1		0.0	15.2	
Delay (s)			50.8		78.5		54.0	0.1		1.4	18.5	
Level of Service			D		E		D	A		A	B	
Approach Delay (s)		50.8			78.5			18.3			18.5	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	99.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	795	447	4	130	1356	256	0	2210	0
Future Volume (vph)	0	0	0	795	447	4	130	1356	256	0	2210	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)				6.6	6.6		4.0	6.2	6.2		6.2	
Lane Util. Factor				0.91	0.91		1.00	0.91	1.00		0.91	
Frpb, ped/bikes				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	
Frt				1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected				0.95	0.98		0.95	1.00	1.00		1.00	
Satd. Flow (prot)				1441	2978		1553	4181	1403		4420	
Flt Permitted				0.95	0.98		0.05	1.00	1.00		1.00	
Satd. Flow (perm)				1441	2978		79	4181	1403		4420	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	795	447	4	130	1356	256	0	2210	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	96	0	0	0
Lane Group Flow (vph)	0	0	0	405	841	0	130	1356	160	0	2210	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	0%	0%	2%	1%	0%	4%	11%	3%	0%	5%	2%
Turn Type				Split	NA		pm+pt	NA	Perm		NA	Free
Protected Phases				4	4		5	2			6	
Permitted Phases							2		2			Free
Actuated Green, G (s)				43.4	43.4		93.8	93.8	93.8		79.2	
Effective Green, g (s)				43.4	43.4		93.8	93.8	93.8		79.2	
Actuated g/C Ratio				0.29	0.29		0.63	0.63	0.63		0.53	
Clearance Time (s)				6.6	6.6		4.0	6.2	6.2		6.2	
Vehicle Extension (s)				3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)				416	861		153	2614	877		2333	
v/s Ratio Prot				0.28	c0.28		c0.06	0.32			c0.50	
v/s Ratio Perm							0.47		0.11			
v/c Ratio				0.97	0.98		0.85	0.52	0.18		0.95	
Uniform Delay, d1				52.7	52.8		43.7	15.6	11.9		33.4	
Progression Factor				1.00	1.00		1.27	0.77	0.30		0.74	
Incremental Delay, d2				36.9	24.8		30.8	0.7	0.4		4.3	
Delay (s)				89.7	77.6		86.6	12.7	4.0		29.1	
Level of Service				F	E		F	B	A		C	
Approach Delay (s)		0.0			81.5			17.0			29.1	
Approach LOS		A			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	140	462	4	17	79	205	461	60	403	936	17
Future Volume (vph)	6	140	462	4	17	79	205	461	60	403	936	17
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.4	4.0		6.4	6.4	4.0	5.8	5.8	4.0	5.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00		0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1619	1445		1582	1314	1615	1700	1445	1615	1695	
Flt Permitted		0.99	1.00		0.94	1.00	0.09	1.00	1.00	0.40	1.00	
Satd. Flow (perm)		1606	1445		1507	1314	159	1700	1445	673	1695	
Peak-hour factor, PHF	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. Flow (vph)	6	140	462	4	17	79	205	461	60	403	936	17
RTOR Reduction (vph)	0	0	90	0	0	66	0	0	26	0	0	0
Lane Group Flow (vph)	0	146	372	0	21	13	205	461	34	403	953	0
Heavy Vehicles (%)	0%	5%	0%	0%	8%	10%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)		19.2	32.4		19.2	19.2	79.5	66.3	66.3	84.1	68.6	
Effective Green, g (s)		19.2	32.4		19.2	19.2	79.5	66.3	66.3	84.1	68.6	
Actuated g/C Ratio		0.16	0.28		0.16	0.16	0.68	0.57	0.57	0.72	0.59	
Clearance Time (s)		6.4	4.0		6.4	6.4	4.0	5.8	5.8	4.0	5.8	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		263	399		246	215	271	961	817	607	992	
v/s Ratio Prot			c0.10				0.08	0.27		c0.09	c0.56	
v/s Ratio Perm		0.09	0.15		0.01	0.01	0.43		0.02	0.39		
v/c Ratio		0.56	0.93		0.09	0.06	0.76	0.48	0.04	0.66	0.96	
Uniform Delay, d1		45.1	41.3		41.6	41.4	27.0	15.2	11.3	7.8	23.0	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		2.5	28.3		0.7	0.5	11.4	1.7	0.1	2.7	20.5	
Delay (s)		47.6	69.6		42.2	41.9	38.4	16.9	11.4	10.6	43.5	
Level of Service		D	E		D	D	D	B	B	B	D	
Approach Delay (s)		64.3			42.0			22.5			33.7	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	117.2	Sum of lost time (s)	16.2
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	304	11	180	0	0	0	0	1438	4	5	3000	0
Future Volume (vph)	304	11	180	0	0	0	0	1438	4	5	3000	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.6	6.6						6.6		6.6	6.6	
Lane Util. Factor	0.86	0.86						0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.89						1.00		1.00	1.00	
Flt Protected	0.95	0.99						1.00		0.95	1.00	
Satd. Flow (prot)	2572	2221						4107		1615	4378	
Flt Permitted	0.95	0.99						1.00		0.16	1.00	
Satd. Flow (perm)	2572	2221						4107		271	4378	
Peak-hour factor, PHF	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. Flow (vph)	304	11	180	0	0	0	0	1438	4	5	3000	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	258	235	0	0	0	0	0	1442	0	5	3000	0
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	8%	14%	16%	0%	0%	0%	0%	13%	0%	0%	6%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)	23.3	23.3						113.5		113.5	113.5	
Effective Green, g (s)	23.3	23.3						113.5		113.5	113.5	
Actuated g/C Ratio	0.16	0.16						0.76		0.76	0.76	
Clearance Time (s)	6.6	6.6						6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0						0.2		0.2	0.2	
Lane Grp Cap (vph)	399	344						3107		205	3312	
v/s Ratio Prot								0.35			c0.69	
v/s Ratio Perm	0.10	0.11								0.02		
v/c Ratio	0.65	1.03dr						0.46		0.02	0.91	
Uniform Delay, d1	59.5	59.9						6.8		4.5	14.1	
Progression Factor	1.00	1.00						1.00		0.85	0.63	
Incremental Delay, d2	3.6	5.5						0.5		0.1	1.6	
Delay (s)	63.1	65.4						7.3		3.9	10.5	
Level of Service	E	E						A		A	B	
Approach Delay (s)		64.2			0.0			7.3			10.5	
Approach LOS		E			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCS7 Two-Way Stop-Control Report

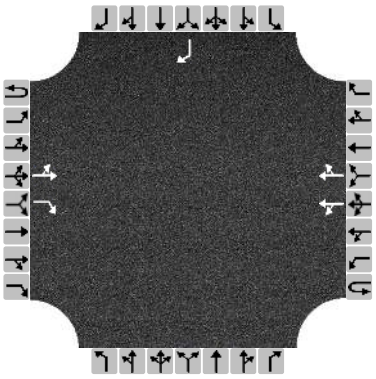
General Information

Analyst	mah
Agency/Co.	KAI
Date Performed	5/9/2018
Analysis Year	2018
Time Analyzed	
Intersection Orientation	East-West
Project Description	21018-112

Site Information

Intersection	Aronson Ave/6thAve Bypass
Jurisdiction	
East/West Street	Aronson Ave
North/South Street	6th Ave Bypass
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	0		0	0	1
Configuration		LT		R		LT		TR								R
Volume, V (veh/h)		26	246	1130		15	410	1								316
Percent Heavy Vehicles (%)		0				0										2
Proportion Time Blocked		0.000	0.000	0.000		0.000	0.000	0.000								0.300
Percent Grade (%)														0		
Right Turn Channelized		Yes				No				No				Yes		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1										5.2
Critical Headway (sec)		4.10				4.10										5.24
Base Follow-Up Headway (sec)		2.2				2.2										3.2
Follow-Up Headway (sec)		2.20				2.20										3.22

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		26				15										316
Capacity, c (veh/h)		1159				1332										783
v/c Ratio		0.02				0.01										0.40
95% Queue Length, Q_{95} (veh)		0.1				0.0										2.0
Control Delay (s/veh)		8.2				7.7										12.7
Level of Service, LOS		A				A										B
Approach Delay (s/veh)		0.4				0.3								12.7		
Approach LOS														B		

Appendix F
Year 2040 PM Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	56	462	127	88	97	641	3140	101	82	1306	11
Future Volume (veh/h)	24	56	462	127	88	97	641	3140	101	82	1306	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1607	1607	1647	1700	1620	1700	1607	1541	1541	1620	1647	1647
Adj Flow Rate, veh/h	24	56	462	127	88	97	641	3140	101	82	1306	11
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	7	7	4	0	6	0	7	12	12	6	4	4
Cap, veh/h	41	52	723	48	123	180	757	3181	101	140	1606	14
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.89	1.00	1.00	0.05	0.35	0.35
Sat Flow, veh/h	130	686	1385	896	1620	1429	1531	4185	133	1543	4598	39
Grp Volume(v), veh/h	80	0	462	127	88	97	641	2092	1149	82	851	466
Grp Sat Flow(s),veh/h/ln	816	0	1385	896	1620	1429	1531	1402	1514	1543	1499	1639
Q Serve(g_s), s	3.4	0.0	0.0	0.0	8.0	9.6	0.0	0.0	0.1	5.6	38.7	38.7
Cycle Q Clear(g_c), s	11.4	0.0	0.0	11.4	8.0	9.6	0.0	0.0	0.1	5.6	38.7	38.7
Prop In Lane	0.30		1.00	1.00		1.00	1.00		0.09	1.00		0.02
Lane Grp Cap(c), veh/h	93	0	723	48	123	180	757	2132	1150	140	1047	573
V/C Ratio(X)	0.86	0.00	0.64	2.65	0.71	0.54	0.85	0.98	1.00	0.58	0.81	0.81
Avail Cap(c_a), veh/h	93	0	723	48	123	180	783	2132	1150	178	1047	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.6	0.0	26.0	75.0	67.7	61.6	4.5	0.0	0.0	37.0	44.4	44.4
Incr Delay (d2), s/veh	50.6	0.0	1.9	796.7	17.8	3.2	0.8	2.9	7.7	3.8	6.9	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	12.4	12.5	3.9	3.7	2.8	0.9	2.5	2.3	15.3	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.2	0.0	27.9	871.7	85.5	64.8	5.3	2.9	7.7	40.8	51.3	56.3
LnGrp LOS	F	A	C	F	F	E	A	A	A	D	D	E
Approach Vol, veh/h		542			312			3882			1399	
Approach Delay, s/veh		41.6			399.1			4.8			52.3	
Approach LOS		D			F			A			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.4	120.6		18.0	73.0	59.0		18.0				
Change Period (Y+Rc), s	4.0	6.6		6.6	6.6	* 6.6		6.6				
Max Green Setting (Gmax), s	11.0	110.4		11.4	69.0	* 52		11.4				
Max Q Clear Time (g_c+I1), s	7.6	2.1		13.4	2.0	40.7		13.4				
Green Ext Time (p_c), s	0.0	87.4		0.0	2.3	6.5		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		38.9
HCM 6th LOS		D

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	62	1280	720	53	79	70
Future Vol, veh/h	62	1280	720	53	79	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	160	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	5	0	0	25	0
Mvmt Flow	62	1280	720	53	79	70

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	773	0	-	0	2151	747
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	1404	-
Critical Hdwy	4.1	-	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.2	-	-	-	3.725	3.3
Pot Cap-1 Maneuver	851	-	-	-	~ 45	416
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	202	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	851	-	-	-	~ 42	416
Mov Cap-2 Maneuver	-	-	-	-	109	-
Stage 1	-	-	-	-	399	-
Stage 2	-	-	-	-	202	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	58.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	851	-	-	-	109	416
HCM Lane V/C Ratio	0.073	-	-	-	0.725	0.168
HCM Control Delay (s)	9.6	-	-	-	97	15.4
HCM Lane LOS	A	-	-	-	F	C
HCM 95th %tile Q(veh)	0.2	-	-	-	3.9	0.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Vol, veh/h	1106	625	0	547	0	35
Future Vol, veh/h	1106	625	0	547	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	2	0	8	0	0
Mvmt Flow	1106	625	0	547	0	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	553
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	482
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	482
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	482	-	-	-
HCM Lane V/C Ratio	0.073	-	-	-
HCM Control Delay (s)	13.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↰↑↱				↱			↱
Traffic Vol, veh/h	0	1181	24	0	511	33	0	0	39	0	0	36
Future Vol, veh/h	0	1181	24	0	511	33	0	0	39	0	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	5	0	0	5	0	0	0	8	50	0	0
Mvmt Flow	0	1181	24	0	511	33	0	0	39	0	0	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1205	0	0	-	-	603	-	-	272
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.1	-	-	-	-	7.06	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	-	3.38	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	586	-	-	0	0	428	0	0	732
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	586	-	-	-	-	428	-	-	732
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	14.3	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	428	-	-	586	-	-	732
HCM Lane V/C Ratio	0.091	-	-	-	-	-	0.049
HCM Control Delay (s)	14.3	-	-	0	-	-	10.2
HCM Lane LOS	B	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	0	-	-	0.2

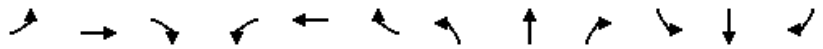
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	870	221	80	40	129	42	0	2972	24	0	1480	415
Future Volume (veh/h)	870	221	80	40	129	42	0	2972	24	0	1480	415
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1581	1581	1634	1634	1634	0	1567	1567	0	1660	1660
Adj Flow Rate, veh/h	870	221	80	40	129	42	0	2972	24	0	1480	415
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	9	9	5	5	5	0	10	10	0	3	3
Cap, veh/h	907	406	147	36	128	50	0	3657	29	0	3786	1464
Arrive On Green	0.21	0.37	0.37	0.11	0.11	0.11	0.00	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	4388	1107	401	0	1147	445	0	4519	35	0	4682	1405
Grp Volume(v), veh/h	870	0	301	78	0	133	0	1934	1062	0	1480	415
Grp Sat Flow(s),veh/h/ln	1463	0	1508	187	0	1405	0	1426	1561	0	1511	1405
Q Serve(g_s), s	29.4	0.0	23.7	0.0	0.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	29.4	0.0	23.7	16.7	0.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.27	0.51		0.32	0.00		0.02	0.00		1.00
Lane Grp Cap(c), veh/h	907	0	553	57	0	156	0	2383	1304	0	3786	1464
V/C Ratio(X)	0.96	0.00	0.54	1.37	0.00	0.85	0.00	0.81	0.81	0.00	0.39	0.28
Avail Cap(c_a), veh/h	907	0	553	57	0	156	0	2383	1304	0	3786	1464
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.57	0.57	0.00	0.48	0.48
Uniform Delay (d), s/veh	58.9	0.0	37.6	69.3	0.0	65.4	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	20.6	0.0	1.1	246.4	0.0	33.0	0.0	1.8	3.3	0.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	0.0	8.7	6.1	0.0	6.4	0.0	0.6	1.2	0.0	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.5	0.0	38.7	315.7	0.0	98.5	0.0	1.8	3.3	0.0	0.1	0.2
LnGrp LOS	E	A	D	F	A	F	A	A	A	A	A	A
Approach Vol, veh/h		1171			211			2996			1895	
Approach Delay, s/veh		69.0			179.1			2.4			0.2	
Approach LOS		E			F			A			A	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	133.2	62.3	133.2	38.3	24.0
Change Period (Y+Rc), s	6.6	7.3	6.6	7.3	* 7.3
Max Green Setting (Gmax), s	82.4	53.7	82.4	31.0	* 17
Max Q Clear Time (g_c+I1), s	2.0	25.7	2.0	31.4	18.7
Green Ext Time (p_c), s	6.0	1.7	2.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	20.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1110	0	5	589	171	4	2	2	222	0	23
Future Volume (veh/h)	30	1110	0	5	589	171	4	2	2	222	0	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.96		0.97	0.98		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1647	1647	1700	1673	1673	374	1700	1700	1634	1700	1700
Adj Flow Rate, veh/h	30	1110	0	5	589	171	4	2	2	222	0	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	4	0	2	2	100	0	0	5	0	0
Cap, veh/h	339	1091	0	79	801	233	84	67	56	289	0	204
Arrive On Green	0.02	0.66	0.00	0.01	0.65	0.65	0.00	0.04	0.04	0.11	0.00	0.14
Sat Flow, veh/h	1619	1647	0	1619	1242	361	356	1649	1376	1556	0	1426
Grp Volume(v), veh/h	30	1110	0	5	0	760	4	2	2	222	0	23
Grp Sat Flow(s),veh/h/ln	1619	1647	0	1619	0	1602	356	1615	1410	1556	0	1426
Q Serve(g_s), s	0.6	68.0	0.0	0.1	0.0	32.9	0.4	0.1	0.1	11.0	0.0	1.4
Cycle Q Clear(g_c), s	0.6	68.0	0.0	0.1	0.0	32.9	0.4	0.1	0.1	11.0	0.0	1.4
Prop In Lane	1.00		0.00	1.00		0.22	1.00		0.98	1.00		1.00
Lane Grp Cap(c), veh/h	339	1091	0	79	0	1034	84	65	57	289	0	204
V/C Ratio(X)	0.09	1.02	0.00	0.06	0.00	0.74	0.05	0.03	0.04	0.77	0.00	0.11
Avail Cap(c_a), veh/h	476	1091	0	244	0	1061	120	173	151	289	0	204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	17.3	0.0	27.7	0.0	12.3	47.4	47.3	47.3	42.1	0.0	38.3
Incr Delay (d2), s/veh	0.1	31.8	0.0	0.3	0.0	2.6	0.2	0.2	0.3	11.7	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	30.7	0.0	0.1	0.0	10.9	0.1	0.1	0.1	6.5	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	49.1	0.0	28.0	0.0	14.9	47.7	47.5	47.6	53.8	0.0	38.5
LnGrp LOS	B	F	A	C	A	B	D	D	D	D	A	D
Approach Vol, veh/h		1140			765			8			245	
Approach Delay, s/veh		48.1			15.0			47.6			52.4	
Approach LOS		D			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.5	74.0	4.4	19.7	6.3	72.2	15.0	9.1
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	68.0	11.0	11.0	11.0	68.0	11.0	11.0
Max Q Clear Time (g_c+I1), s	2.1	70.0	2.4	3.4	2.6	34.9	13.0	2.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	36.9
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	35.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	30	150	261	0	847	30	0	625	0	0
Future Vol, veh/h	30	150	261	0	847	30	0	625	0	0
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	Stop	-	-
Storage Length	-	-	400	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-	16965	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	4	1	0	7	0	0	2	2	2
Mvmt Flow	30	150	261	0	847	30	0	625	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	877	0	-	152	0	0	-	439
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	-	3.319
Pot Cap-1 Maneuver	779	-	0	1441	-	-	0	~ 567
Stage 1	-	-	0	-	-	-	0	-
Stage 2	-	-	0	-	-	-	0	-
Platoon blocked, %		-			-	-		
Mov Cap-1 Maneuver	779	-	-	1441	-	-	-	~ 567
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	95
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	779	-	1441	-	-	567
HCM Lane V/C Ratio	0.039	-	-	-	-	1.102
HCM Control Delay (s)	9.8	0	0	-	-	95
HCM Lane LOS	A	A	A	-	-	F
HCM 95th %tile Q(veh)	0.1	-	0	-	-	19.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕↔			↔			↔	
Traffic Vol, veh/h	16	132	7	59	836	3	8	18	48	10	9	5
Future Vol, veh/h	16	132	7	59	836	3	8	18	48	10	9	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	14	5	0	17	8	6	0	0	0	0	0	0
Mvmt Flow	16	132	7	59	836	3	8	18	48	10	9	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	839	0	0	139	0	0	709	1125	136	1157	1127	420
Stage 1	-	-	-	-	-	-	168	168	-	956	956	-
Stage 2	-	-	-	-	-	-	541	957	-	201	171	-
Critical Hdwy	4.31	-	-	4.355	-	-	7.3	6.5	6.2	7.3	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.333	-	-	2.3615	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	733	-	-	1348	-	-	338	207	918	164	206	588
Stage 1	-	-	-	-	-	-	839	763	-	281	339	-
Stage 2	-	-	-	-	-	-	498	339	-	805	761	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	733	-	-	1348	-	-	297	185	918	133	185	588
Mov Cap-2 Maneuver	-	-	-	-	-	-	297	185	-	133	185	-
Stage 1	-	-	-	-	-	-	819	745	-	274	311	-
Stage 2	-	-	-	-	-	-	440	311	-	727	743	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.8	15.4	27.9
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	419	733	-	-	1348	-	-	181
HCM Lane V/C Ratio	0.177	0.022	-	-	0.044	-	-	0.133
HCM Control Delay (s)	15.4	10	0	-	7.8	0.3	-	27.9
HCM Lane LOS	C	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0.1	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	200	1	1	1	863	2996	1	0	1555	45
Future Volume (veh/h)	0	0	200	1	1	1	863	2996	1	0	1555	45
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1700	1647	1700	1700	1700	1620	1514	1514	1700	1634	1634
Adj Flow Rate, veh/h	0	0	200	1	1	1	863	2996	1	0	1555	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	4	0	0	0	6	14	14	0	5	5
Cap, veh/h	0	57	659	40	25	17	1313	3779	1	60	1814	
Arrive On Green	0.00	0.00	0.03	0.03	0.03	0.03	0.44	0.89	0.89	0.00	0.81	0.00
Sat Flow, veh/h	0	1700	1396	241	765	503	2994	4269	1	1619	4607	0
Grp Volume(v), veh/h	0	0	200	3	0	0	863	1934	1063	0	1555	0
Grp Sat Flow(s),veh/h/ln	0	1700	1396	1509	0	0	1497	1378	1514	1619	1487	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	34.1	40.5	40.5	0.0	32.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.3	0.0	0.0	34.1	40.5	40.5	0.0	32.3	0.0
Prop In Lane	0.00		1.00	0.33		0.33	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	57	659	82	0	0	1313	2440	1340	60	1814	
V/C Ratio(X)	0.00	0.00	0.30	0.04	0.00	0.00	0.66	0.79	0.79	0.00	0.86	
Avail Cap(c_a), veh/h	0	136	724	130	0	0	1313	2440	1340	178	1814	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.77	0.00
Uniform Delay (d), s/veh	0.0	0.0	24.4	70.2	0.0	0.0	33.2	3.3	3.3	0.0	11.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.2	0.0	0.0	1.2	2.7	4.9	0.0	4.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	4.5	0.1	0.0	0.0	12.5	6.3	7.8	0.0	4.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	24.7	70.4	0.0	0.0	34.4	6.0	8.2	0.0	15.6	0.0
LnGrp LOS	A	A	C	E	A	A	C	A	A	A	B	
Approach Vol, veh/h		200			3			3860			1555	A
Approach Delay, s/veh		24.7			70.4			13.0			15.6	
Approach LOS		C			E			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	139.0		11.0	72.0	67.0		11.0				
Change Period (Y+Rc), s	4.0	* 6.2		* 6	6.2	* 6		6.0				
Max Green Setting (Gmax), s	11.0	* 1.1E2		* 12	60.8	* 61		10.0				
Max Q Clear Time (g_c+I1), s	0.0	42.5		2.0	36.1	34.3		2.3				
Green Ext Time (p_c), s	0.0	56.2		0.4	3.5	13.3		0.0				

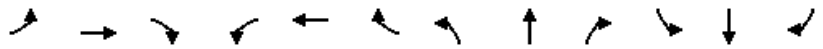
Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	48	72	0	76	12	298	958	117	153	197	6
Future Volume (veh/h)	4	48	72	0	76	12	298	958	117	153	197	6
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1700	1594	1594	1567	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	4	48	72	0	76	12	298	958	117	153	197	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	5	0	8	8	10	0	0	0	0	0	0
Cap, veh/h	51	111	110	0	121	101	980	1320	1118	347	1274	39
Arrive On Green	0.08	0.08	0.08	0.00	0.08	0.08	0.78	0.78	0.78	0.78	0.78	0.78
Sat Flow, veh/h	48	1454	1441	0	1594	1328	1198	1700	1441	533	1641	50
Grp Volume(v), veh/h	52	0	72	0	76	12	298	958	117	153	0	203
Grp Sat Flow(s),veh/h/ln	1502	0	1441	0	1594	1328	1198	1700	1441	533	0	1691
Q Serve(g_s), s	0.0	0.0	4.0	0.0	3.8	0.7	7.0	23.9	1.6	17.1	0.0	2.5
Cycle Q Clear(g_c), s	3.8	0.0	4.0	0.0	3.8	0.7	9.5	23.9	1.6	40.9	0.0	2.5
Prop In Lane	0.08		1.00	0.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	161	0	110	0	121	101	980	1320	1118	347	0	1313
V/C Ratio(X)	0.32	0.00	0.66	0.00	0.63	0.12	0.30	0.73	0.10	0.44	0.00	0.15
Avail Cap(c_a), veh/h	399	0	324	0	358	299	980	1320	1118	347	0	1313
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.5	0.0	37.1	0.0	37.1	35.6	3.6	4.7	2.3	15.2	0.0	2.4
Incr Delay (d2), s/veh	1.1	0.0	6.5	0.0	5.2	0.5	0.8	3.5	0.2	4.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	1.6	0.0	1.6	0.2	1.4	6.2	0.3	2.3	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.6	0.0	43.6	0.0	42.3	36.1	4.4	8.3	2.4	19.3	0.0	2.6
LnGrp LOS	D	A	D	A	D	D	A	A	A	B	A	A
Approach Vol, veh/h		124			88			1373			356	
Approach Delay, s/veh		41.1			41.4			6.9			9.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	70.0	12.7	70.0	12.7
Change Period (Y+Rc), s	* 5.8	* 6.4	* 5.8	* 6.4
Max Green Setting (Gmax), s	* 64	* 19	* 64	* 19
Max Q Clear Time (g_c+I1), s	25.9	6.0	42.9	5.8
Green Ext Time (p_c), s	12.3	0.3	3.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	56	462	127	88	97	641	3140	101	82	1306	11
Future Volume (vph)	24	56	462	127	88	97	641	3140	101	82	1306	11
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.99	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	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1595	1389	1615	1604	1432	1509	4136		1524	4457	
Flt Permitted		0.83	1.00	0.70	1.00	1.00	0.13	1.00		0.09	1.00	
Satd. Flow (perm)		1339	1389	1198	1604	1432	207	4136		151	4457	
Peak-hour factor, PHF	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. Flow (vph)	24	56	462	127	88	97	641	3140	101	82	1306	11
RTOR Reduction (vph)	0	0	26	0	0	64	0	2	0	0	1	0
Lane Group Flow (vph)	0	80	436	127	88	33	641	3239	0	82	1316	0
Confl. Peds. (#/hr)	2					2	1					1
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	0%	7%	4%	0%	6%	0%	7%	12%	0%	6%	4%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		8	5		4	1	5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)		11.4	80.4	11.4	11.4	21.2	114.2	111.6		52.4	52.4	
Effective Green, g (s)		11.4	80.4	11.4	11.4	21.2	114.2	111.6		52.4	52.4	
Actuated g/C Ratio		0.08	0.54	0.08	0.08	0.14	0.76	0.74		0.35	0.35	
Clearance Time (s)		6.6	4.0	6.6	6.6	4.0	4.0	6.6		4.0	6.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		101	781	91	121	202	756	3077		142	1556	
v/s Ratio Prot			0.26		0.05	0.01	0.39	c0.78		0.04	c0.30	
v/s Ratio Perm		0.06	0.06	c0.11		0.01	0.26			0.16		
v/c Ratio		0.79	0.56	1.40	0.73	0.17	0.85	1.05		0.58	0.85	
Uniform Delay, d1		68.1	23.1	69.3	67.8	56.6	24.8	19.2		38.8	45.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.30	1.45		1.00	1.00	
Incremental Delay, d2		33.3	0.9	231.6	19.4	0.4	0.9	24.7		5.6	5.9	
Delay (s)		101.5	23.9	300.9	87.2	57.0	33.1	52.6		44.4	50.9	
Level of Service		F	C	F	F	E	C	D		D	D	
Approach Delay (s)		35.4			164.8			49.4			50.5	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	54.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	62	1280	720	53	79	70
Future Volume (Veh/h)	62	1280	720	53	79	70
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	62	1280	720	53	79	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (ft)		504				
pX, platoon unblocked					0.24	
vC, conflicting volume	773				2150	746
vC1, stage 1 conf vol					746	
vC2, stage 2 conf vol					1404	
vCu, unblocked vol	773				4245	746
tC, single (s)	4.1				6.6	6.2
tC, 2 stage (s)					5.6	
tF (s)	2.2				3.7	3.3
p0 queue free %	93				0	83
cM capacity (veh/h)	851				61	416

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	62	1280	773	79	70
Volume Left	62	0	0	79	0
Volume Right	0	0	53	0	70
cSH	851	1700	1700	61	416
Volume to Capacity	0.07	0.75	0.45	1.30	0.17
Queue Length 95th (ft)	6	0	0	167	15
Control Delay (s)	9.6	0.0	0.0	327.5	15.4
Lane LOS	A			F	C
Approach Delay (s)	0.4		0.0	180.8	
Approach LOS				F	

Intersection Summary			
Average Delay	12.2		
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑	↑↑	↱		↱
Traffic Volume (veh/h)	0	1731	457	90	0	0
Future Volume (Veh/h)	0	1731	457	90	0	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1731	457	90	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	547				1034	228
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	547				1034	228
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1033				231	771

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SE 1
Volume Total	577	577	577	228	228	90	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	90	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.34	0.34	0.34	0.13	0.13	0.05	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	40.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑		↱
Traffic Volume (veh/h)	1106	625	0	547	0	35
Future Volume (Veh/h)	1106	625	0	547	0	35
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1106	625	0	547	0	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1202		
pX, platoon unblocked						
vC, conflicting volume			1731		1288	553
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1731		1288	553
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	93
cM capacity (veh/h)			369		158	482

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	553	553	625	182	182	182	35
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	625	0	0	0	35
cSH	1700	1700	1700	1700	1700	1700	482
Volume to Capacity	0.33	0.33	0.37	0.11	0.11	0.11	0.07
Queue Length 95th (ft)	0	0	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	13.1
Lane LOS							B
Approach Delay (s)	0.0			0.0			13.1
Approach LOS							B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1181	24	0	511	33	0	0	39	0	0	36
Future Volume (Veh/h)	0	1181	24	0	511	33	0	0	39	0	0	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1181	24	0	511	33	0	0	39	0	0	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					728							
pX, platoon unblocked												
vC, conflicting volume	544			1205			1484	1737	602	1157	1732	272
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	544			1205			1484	1737	602	1157	1732	272
tC, single (s)	4.1			4.1			7.5	6.5	7.1	8.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	4.0	4.0	3.3
p0 queue free %	100			100			100	100	91	100	100	95
cM capacity (veh/h)	1035			586			84	88	428	95	89	732

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	787	418	256	288	39	36
Volume Left	0	0	0	0	0	0
Volume Right	0	24	0	33	39	36
cSH	1700	1700	586	1700	428	732
Volume to Capacity	0.46	0.25	0.00	0.17	0.09	0.05
Queue Length 95th (ft)	0	0	0	0	7	4
Control Delay (s)	0.0	0.0	0.0	0.0	14.3	10.2
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		14.3	10.2
Approach LOS					B	B

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	47.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	870	221	80	40	129	42	0	2972	24	0	1480	415
Future Volume (vph)	870	221	80	40	129	42	0	2972	24	0	1480	415
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Lane Util. Factor	0.94	1.00			0.95			0.91			0.91	1.00
Frpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.96			0.97			1.00			1.00	0.85
Flt Protected	0.95	1.00			0.99			1.00			1.00	1.00
Satd. Flow (prot)	4337	1457			2973			4216			4506	1385
Flt Permitted	0.95	1.00			0.55			1.00			1.00	1.00
Satd. Flow (perm)	4337	1457			1664			4216			4506	1385
Peak-hour factor, PHF	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. Flow (vph)	870	221	80	40	129	42	0	2972	24	0	1480	415
RTOR Reduction (vph)	0	9	0	0	1	0	0	0	0	0	0	59
Lane Group Flow (vph)	870	292	0	0	210	0	0	2996	0	0	1480	356
Confl. Peds. (#/hr)			1	1			4		2	2		4
Heavy Vehicles (%)	5%	9%	19%	7%	5%	0%	40%	10%	0%	0%	3%	3%
Turn Type	Prot	NA		Perm	NA			NA			NA	pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases				8								6
Actuated Green, G (s)	31.0	53.7			16.7			82.4			82.4	113.4
Effective Green, g (s)	31.0	53.7			16.7			82.4			82.4	113.4
Actuated g/C Ratio	0.21	0.36			0.11			0.55			0.55	0.76
Clearance Time (s)	6.0	7.3			7.3			6.6			6.6	6.0
Vehicle Extension (s)	3.0	3.0			3.0			0.2			0.2	3.0
Lane Grp Cap (vph)	896	521			185			2315			2475	1102
v/s Ratio Prot	c0.20	0.20						c0.71			0.33	0.07
v/s Ratio Perm					c0.13							0.19
v/c Ratio	0.97	0.56			1.14			1.29			0.60	0.32
Uniform Delay, d1	59.1	38.7			66.7			33.8			22.7	5.9
Progression Factor	1.00	1.00			1.00			0.94			0.36	0.20
Incremental Delay, d2	23.1	1.4			107.4			134.4			0.6	0.1
Delay (s)	82.2	40.1			174.0			166.0			8.8	1.3
Level of Service	F	D			F			F			A	A
Approach Delay (s)		71.3			174.0			166.0			7.2	
Approach LOS		E			F			F			A	

Intersection Summary			
HCM 2000 Control Delay	100.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	1110	0	5	589	171	4	2	2	222	0	23
Future Volume (vph)	30	1110	0	5	589	171	4	2	2	222	0	23
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	0.93		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1615	1635		1615	1602		803	2988		1538	1407	
Flt Permitted	0.24	1.00		0.08	1.00		1.00	1.00		0.52	1.00	
Satd. Flow (perm)	416	1635		136	1602		845	2988		841	1407	
Peak-hour factor, PHF	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. Flow (vph)	30	1110	0	5	589	171	4	2	2	222	0	23
RTOR Reduction (vph)	0	0	0	0	7	0	0	4	0	0	20	0
Lane Group Flow (vph)	30	1110	0	5	753	0	4	0	0	222	3	0
Confl. Peds. (#/hr)			4	4			3					3
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	0%	4%	0%	0%	2%	3%	100%	0%	0%	5%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	73.6	69.8		67.8	66.9		4.8	3.7		19.0	13.9	
Effective Green, g (s)	73.6	69.8		67.8	66.9		4.8	3.7		19.0	13.9	
Actuated g/C Ratio	0.70	0.67		0.65	0.64		0.05	0.04		0.18	0.13	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	335	1090		100	1023		38	105		227	186	
v/s Ratio Prot	c0.00	c0.68		0.00	0.47		0.00	0.00		c0.11	0.00	
v/s Ratio Perm	0.06			0.03			0.00			c0.07		
v/c Ratio	0.09	1.02		0.05	0.74		0.11	0.00		0.98	0.02	
Uniform Delay, d1	7.7	17.5		17.3	12.9		47.9	48.7		41.8	39.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	31.9		0.2	2.8		1.2	0.0		52.9	0.0	
Delay (s)	7.8	49.4		17.5	15.7		49.1	48.7		94.7	39.5	
Level of Service	A	D		B	B		D	D		F	D	
Approach Delay (s)		48.3			15.7			48.9			89.5	
Approach LOS		D			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	41.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	104.7	Sum of lost time (s)	19.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Volume (veh/h)	30	150	261	0	847	30	0	625	0	0
Future Volume (Veh/h)	30	150	261	0	847	30	0	625	0	0
Sign Control		Free			Free		Stop		Stop	
Grade		0%			0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	150	261	0	847	30	0	625	0	0
Pedestrians									2	
Lane Width (ft)									0.0	
Walking Speed (ft/s)									4.0	
Percent Blockage									0	
Right turn flare (veh)										
Median type		None			None					
Median storage veh)										
Upstream signal (ft)		940			759					
pX, platoon unblocked										
vC, conflicting volume	877			152			1074	438	636	1089
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	877			152			1074	438	636	1089
tC, single (s)	4.1			4.1			6.5	6.9	7.5	6.5
tC, 2 stage (s)										
tF (s)	2.2			2.2			4.0	3.3	3.5	4.0
p0 queue free %	96			100			100	0	0	100
cM capacity (veh/h)	779			1441			213	566	0	206

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	180	261	424	454	625
Volume Left	30	0	0	0	0
Volume Right	0	261	0	30	625
cSH	779	1700	1441	1700	566
Volume to Capacity	0.04	0.15	0.00	0.27	1.10
Queue Length 95th (ft)	3	0	0	0	486
Control Delay (s)	2.0	0.0	0.0	0.0	95.7
Lane LOS	A				F
Approach Delay (s)	0.8		0.0		95.7
Approach LOS					F

Intersection Summary				
Average Delay	31.0			
Intersection Capacity Utilization	77.2%	ICU Level of Service		D
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	132	7	59	836	3	8	18	48	10	9	5
Future Volume (Veh/h)	16	132	7	59	836	3	8	18	48	10	9	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	132	7	59	836	3	8	18	48	10	9	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1295			404							
pX, platoon unblocked												
vC, conflicting volume	839			139			713	1124	136	1180	1126	420
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	839			139			713	1124	136	1180	1126	420
tC, single (s)	4.4			4.4			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			97	91	95	92	95	99
cM capacity (veh/h)	719			1339			293	193	895	124	193	588

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	155	477	421	74	24
Volume Left	16	59	0	8	10
Volume Right	7	0	3	48	5
cSH	719	1339	1700	425	176
Volume to Capacity	0.02	0.04	0.25	0.17	0.14
Queue Length 95th (ft)	2	3	0	16	12
Control Delay (s)	1.3	1.4	0.0	15.2	28.6
Lane LOS	A	A		C	D
Approach Delay (s)	1.3	0.7		15.2	28.6
Approach LOS				C	D

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	44.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	200	1	1	1	863	2996	1	0	1555	45
Future Volume (vph)	0	0	200	1	1	1	863	2996	1	0	1555	45
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)			6.2		6.0		6.2	6.0			6.0	
Lane Util. Factor			1.00		1.00		0.97	0.91			0.91	
Frpb, ped/bikes			1.00		1.00		1.00	1.00			1.00	
Flpb, ped/bikes			1.00		1.00		1.00	1.00			1.00	
Frt			0.85		0.95		1.00	1.00			1.00	
Flt Protected			1.00		0.98		0.95	1.00			1.00	
Satd. Flow (prot)			1389		1597		2956	4071			4385	
Flt Permitted			1.00		1.00		0.95	1.00			1.00	
Satd. Flow (perm)			1389		1624		2956	4071			4385	
Peak-hour factor, PHF	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. Flow (vph)	0	0	200	1	1	1	863	2996	1	0	1555	45
RTOR Reduction (vph)	0	0	29	0	1	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	171	0	2	0	863	2997	0	0	1598	0
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	6%	14%	0%	0%	5%	17%
Turn Type			pm+ov	Perm	NA		Prot	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4	8						6		
Actuated Green, G (s)			64.1		1.3		60.8	136.7			69.7	
Effective Green, g (s)			64.1		1.3		60.8	136.7			69.7	
Actuated g/C Ratio			0.43		0.01		0.41	0.91			0.46	
Clearance Time (s)			6.2		6.0		6.2	6.0			6.0	
Vehicle Extension (s)			3.0		3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)			650		14		1198	3710			2037	
v/s Ratio Prot			c0.11				0.29	c0.74			0.36	
v/s Ratio Perm			0.02		0.00							
v/c Ratio			0.26		0.14		0.72	0.81			0.78	
Uniform Delay, d1			27.7		73.8		37.5	2.2			33.8	
Progression Factor			1.00		1.00		1.27	2.62			0.32	
Incremental Delay, d2			0.2		4.7		0.2	0.2			2.5	
Delay (s)			27.9		78.5		47.8	6.0			13.4	
Level of Service			C		E		D	A			B	
Approach Delay (s)		27.9			78.5			15.4			13.4	
Approach LOS		C			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	462	130	19	106	3846	1131	0	1064	0
Future Volume (vph)	0	0	0	462	130	19	106	3846	1131	0	1064	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)				6.0	6.0		4.0	6.2	6.2		6.2	
Lane Util. Factor				0.91	0.91		1.00	0.91	1.00		0.91	
Frpb, ped/bikes				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	
Frt				1.00	0.99		1.00	1.00	0.85		1.00	
Flt Protected				0.95	0.97		0.95	1.00	1.00		1.00	
Satd. Flow (prot)				1441	2934		1553	4181	1403		4420	
Flt Permitted				0.95	0.97		0.23	1.00	1.00		1.00	
Satd. Flow (perm)				1441	2934		379	4181	1403		4420	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	462	130	19	106	3846	1131	0	1064	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	249	0	0	0
Lane Group Flow (vph)	0	0	0	231	379	0	106	3846	882	0	1064	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	0%	0%	2%	1%	0%	4%	11%	3%	0%	5%	2%
Turn Type				Split	NA		pm+pt	NA	Perm		NA	Free
Protected Phases				4	4		5	2			6	
Permitted Phases							2		2			Free
Actuated Green, G (s)				22.0	22.0		115.8	115.8	115.8		104.0	
Effective Green, g (s)				22.0	22.0		115.8	115.8	115.8		104.0	
Actuated g/C Ratio				0.15	0.15		0.77	0.77	0.77		0.69	
Clearance Time (s)				6.0	6.0		4.0	6.2	6.2		6.2	
Vehicle Extension (s)				3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)				211	430		353	3227	1083		3064	
v/s Ratio Prot				c0.16	0.13		0.02	c0.92			0.24	
v/s Ratio Perm							0.22		0.63			
v/c Ratio				1.09	1.05dl		0.30	1.19	0.81		0.35	
Uniform Delay, d1				64.0	62.7		4.7	17.1	10.5		9.3	
Progression Factor				1.00	1.00		0.92	0.97	1.00		0.62	
Incremental Delay, d2				89.6	18.7		0.0	86.6	0.7		0.2	
Delay (s)				153.6	81.4		4.3	103.2	11.2		6.0	
Level of Service				F	F		A	F	B		A	
Approach Delay (s)		0.0			108.7			80.6			6.0	
Approach LOS		A			F			F			A	

Intersection Summary			
HCM 2000 Control Delay	71.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	48	72	0	76	12	298	958	117	153	197	6
Future Volume (vph)	4	48	72	0	76	12	298	958	117	153	197	6
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1619	1445		1574	1314	1615	1700	1445	1615	1692	
Flt Permitted		0.97	1.00		1.00	1.00	0.63	1.00	1.00	0.23	1.00	
Satd. Flow (perm)		1569	1445		1574	1314	1072	1700	1445	394	1692	
Peak-hour factor, PHF	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. Flow (vph)	4	48	72	0	76	12	298	958	117	153	197	6
RTOR Reduction (vph)	0	0	65	0	0	11	0	0	27	0	1	0
Lane Group Flow (vph)	0	52	7	0	76	1	298	958	90	153	202	0
Heavy Vehicles (%)	0%	5%	0%	0%	8%	10%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA	Perm		NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)		8.3	8.3		8.3	8.3	67.3	67.3	67.3	67.3	67.3	
Effective Green, g (s)		8.3	8.3		8.3	8.3	67.3	67.3	67.3	67.3	67.3	
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.77	0.77	0.77	0.77	0.77	
Clearance Time (s)		6.4	6.4		6.4	6.4	5.8	5.8	5.8	5.8	5.8	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		148	136		148	124	821	1303	1107	302	1296	
v/s Ratio Prot					c0.05			c0.56			0.12	
v/s Ratio Perm		0.03	0.00			0.00	0.28		0.06	0.39		
v/c Ratio		0.35	0.05		0.51	0.01	0.36	0.74	0.08	0.51	0.16	
Uniform Delay, d1		37.2	36.2		37.8	36.0	3.3	5.5	2.6	3.9	2.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.4	0.2		3.0	0.0	1.2	3.7	0.1	6.0	0.3	
Delay (s)		38.7	36.3		40.8	36.1	4.6	9.2	2.7	9.9	3.0	
Level of Service		D	D		D	D	A	A	A	A	A	
Approach Delay (s)		37.3			40.2			7.6			5.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	87.8	Sum of lost time (s)	12.2
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2148	9	362	0	0	0	0	2935	15	4	1499	0
Future Volume (vph)	2148	9	362	0	0	0	0	2935	15	4	1499	0
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	6.6	6.6						6.6		6.6	6.6	
Lane Util. Factor	0.86	0.86						0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00						1.00		1.00	1.00	
Frt	1.00	0.95						1.00		1.00	1.00	
Flt Protected	0.95	0.97						1.00		0.95	1.00	
Satd. Flow (prot)	2572	2417						4106		1615	4378	
Flt Permitted	0.95	0.97						1.00		0.05	1.00	
Satd. Flow (perm)	2572	2417						4106		89	4378	
Peak-hour factor, PHF	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. Flow (vph)	2148	9	362	0	0	0	0	2935	15	4	1499	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1439	1068	0	0	0	0	0	2950	0	4	1499	0
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	8%	14%	16%	0%	0%	0%	0%	13%	0%	0%	6%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)	60.4	60.4						76.4		76.4	76.4	
Effective Green, g (s)	60.4	60.4						76.4		76.4	76.4	
Actuated g/C Ratio	0.40	0.40						0.51		0.51	0.51	
Clearance Time (s)	6.6	6.6						6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0						0.2		0.2	0.2	
Lane Grp Cap (vph)	1035	973						2091		45	2229	
v/s Ratio Prot								c0.72			0.34	
v/s Ratio Perm	c0.56	0.44								0.04		
v/c Ratio	1.39	1.27dl						1.41		0.09	0.67	
Uniform Delay, d1	44.8	44.8						36.8		18.9	27.5	
Progression Factor	1.00	1.00						1.00		1.03	1.32	
Incremental Delay, d2	181.6	59.4						187.7		3.3	1.4	
Delay (s)	226.4	104.2						224.5		22.8	37.6	
Level of Service	F	F						F		C	D	
Approach Delay (s)		174.0			0.0			224.5			37.6	
Approach LOS		F			A			F			D	

Intersection Summary			
HCM 2000 Control Delay	165.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	120.4%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCS7 Two-Way Stop-Control Report

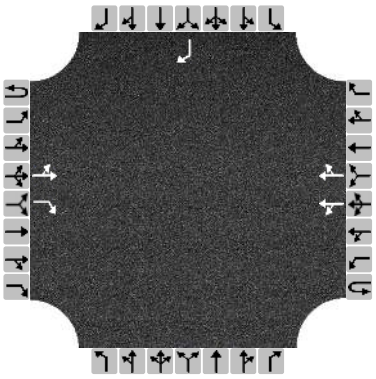
General Information

Analyst	mah
Agency/Co.	KAI
Date Performed	5/9/2018
Analysis Year	2018
Time Analyzed	
Intersection Orientation	East-West
Project Description	21018-112

Site Information

Intersection	Aronson Ave/6thAve Bypass
Jurisdiction	
East/West Street	Aronson Ave
North/South Street	6th Ave Bypass
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	0		0	0	1
Configuration		LT		R		LT		TR								R
Volume, V (veh/h)		30	150	261		1	847	30								625
Percent Heavy Vehicles (%)		0				0										2
Proportion Time Blocked		0.000				0.000										0.380
Percent Grade (%)													0			
Right Turn Channelized		Yes				No				No				Yes		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1										5.2
Critical Headway (sec)		4.10				4.10										5.24
Base Follow-Up Headway (sec)		2.2				2.2										3.3
Follow-Up Headway (sec)		2.20				2.20										3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		30				1										625
Capacity, c (veh/h)		779				1444										672
v/c Ratio		0.04				0.00										0.93
95% Queue Length, Q_{95} (veh)		0.1				0.0										21.0
Control Delay (s/veh)		9.8				7.5										60.9
Level of Service, LOS		A				A										F
Approach Delay (s/veh)		0.8				0.0								60.9		
Approach LOS														F		

Appendix G
NCHRP Auxiliary Lane Calculations

NCHRP 3-98 GUIDELINES FOR AUXILIARY THROUGH LANES AT SIGNALIZED INTERSECTIONS
COMP ENGINE FOR ESTIMATING ATL UTILIZATION AND LENGTH FOR 1- AND 2-CTL APPROACHES

Northbound Left Auxiliary Lane Analysis
INTERSECTION: Lake Elmo Drive & Main Street

I. GEOMETRIC CONFIGURATION AND SIGNAL TIMING

		1B Scenario 1	1B Scenario 2
1	Number of CTLs (1 OR 2)	1	1
2	ATL (Y/N)?	Y	Y
3	Exclusive right-turn lane (Y/N)?	N	N
4	Effective green time for through movement(s) (sec)=	44	44
5	Cycle length (sec) =	150	150

II. APPROACH CHARACTERISTICS

		User Input (Applies to Both Scenarios)	Comment
6	Total approach through volume (vph) =	641	
7	Total saturation flow rate for CTL(s) (vph) =	1700	Add sat flow across both lanes for 2 CTL approaches
8	Right-turn volume (vph) =	0	
9	Right-turn lane saturation flow rate (vph) =	1550	
10	Prevailing approach speed (mph) =	55	Speed at which vehicles approach intersection during green phase
11	Average vehicle spacing at stop bar (ft) =	25	Default value = 25 ft
12	Average acceleration rate from stop bar (ft/sec/sec) =	10	Default value = 10.0 ft/sec/sec
13	Intersection width measured from stop bar to far curb (ft) =	130	
14	Critical gap in adjacent CTL (sec) =	6	Default value = 6.0 seconds
15	Driver reaction time (sec) =	1	Default value = 1.0 seconds
16	Confidence level for calculation of downstream length =	0.85	Express as decimal between .85 and .95

III. LANE-BY-LANE RESULTS

Lane	Configuration	TH Vol (vph)	RT Vol (vph)	TH + RT Vol (vph)	XALL	Avg. Delay (sec/veh)	LOS	95th % Queue (ft)
Scenario 1								
1	CTL	418	0	418	0.84	**65.1**	**E**	600
2	SHARED ATL	223	0	223	0.45	**46.0**	**D**	300
3								
4								
TOTAL		641	0	641				
Scenario 2								
1								
2								
3								
4								
TOTAL		0	0	0				

IV. APPROACH RESULTS

	Avg. Delay (sec/veh)	LOS	ATL Utilization (ATL TH/Total TH)	Estimated Min. ATL Length: Upstream ATL (ft)	Estimated Min. ATL Length: Downstream ATL (ft)	
Scenario 1	**58.45**	**E**	0.347893916	**NA**	**930**	Assumed roadway taper length of 300 ft
Scenario 2						

Appendix H
MetraPark Event Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	33	272	80	30	45	268	1245	64	290	918	2
Future Volume (veh/h)	21	33	272	80	30	45	268	1245	64	290	918	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1620	1660	1700	1673	1673	1660	1660	1700	1647	1647
Adj Flow Rate, veh/h	23	35	292	86	32	48	288	1339	69	312	987	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	6	3	0	2	2	3	3	0	4	4
Cap, veh/h	112	154	324	171	254	316	502	2921	151	419	3008	6
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.17	1.00	1.00	0.07	0.65	0.65
Sat Flow, veh/h	527	1032	1373	1045	1700	1418	1594	4408	227	1619	4633	9
Grp Volume(v), veh/h	58	0	292	86	32	48	288	918	490	312	639	350
Grp Sat Flow(s),veh/h/ln	1558	0	1373	1045	1700	1418	1594	1511	1614	1619	1499	1645
Q Serve(g_s), s	1.6	0.0	22.4	11.9	2.4	4.1	10.1	0.0	0.0	9.9	14.2	14.2
Cycle Q Clear(g_c), s	4.7	0.0	22.4	16.5	2.4	4.1	10.1	0.0	0.0	9.9	14.2	14.2
Prop In Lane	0.40		1.00	1.00		1.00	1.00		0.14	1.00		0.01
Lane Grp Cap(c), veh/h	266	0	324	171	254	316	502	2002	1069	419	1946	1068
V/C Ratio(X)	0.22	0.00	0.90	0.50	0.13	0.15	0.57	0.46	0.46	0.74	0.33	0.33
Avail Cap(c_a), veh/h	266	0	324	171	254	316	958	2002	1069	419	1946	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.2	0.0	55.6	63.6	55.3	46.9	7.1	0.0	0.0	7.2	11.7	11.7
Incr Delay (d2), s/veh	0.4	0.0	26.6	2.3	0.2	0.2	1.0	0.7	1.3	7.1	0.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	13.2	3.3	1.1	1.5	2.6	0.2	0.4	4.1	4.8	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.6	0.0	82.2	65.8	55.5	47.1	8.0	0.7	1.3	14.2	12.2	12.5
LnGrp LOS	E	A	F	E	E	D	A	A	A	B	B	B
Approach Vol, veh/h		350			166			1696			1301	
Approach Delay, s/veh		78.0			58.4			2.1			12.8	
Approach LOS		E			E			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	106.0		29.0	17.0	104.0		29.0				
Change Period (Y+Rc), s	4.0	6.6		6.6	4.0	6.6		6.6				
Max Green Setting (Gmax), s	11.0	99.4		22.4	56.0	54.4		22.4				
Max Q Clear Time (g_c+I1), s	11.9	2.0		18.5	12.1	16.2		24.4				
Green Ext Time (p_c), s	0.0	14.2		0.2	0.9	7.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			16.3									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	320	364	49	47	248
Future Vol, veh/h	21	320	364	49	47	248
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	160	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	4	0	0	4
Mvmt Flow	22	340	387	52	50	264

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	441	0	-	0	800	415
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	385	-
Critical Hdwy	4.1	-	-	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.336
Pot Cap-1 Maneuver	1130	-	-	-	357	633
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	692	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1128	-	-	-	348	632
Mov Cap-2 Maneuver	-	-	-	-	461	-
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	691	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1128	-	-	-	461	632
HCM Lane V/C Ratio	0.02	-	-	-	0.108	0.417
HCM Control Delay (s)	8.3	-	-	-	13.8	14.7
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	2.1

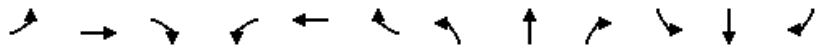
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	184	45	23	23	41	0	1176	43	0	946	192
Future Volume (veh/h)	171	184	45	23	23	41	0	1176	43	0	946	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1660	1673	1673	1700	1700	1700	0	1660	1660	0	1634	1673
Adj Flow Rate, veh/h	182	196	48	24	24	44	0	1251	46	0	1006	204
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	2	0	0	0	0	3	3	0	5	2
Cap, veh/h	250	348	85	74	78	163	0	2861	105	0	2846	983
Arrive On Green	0.06	0.27	0.27	0.16	0.16	0.16	0.00	1.00	1.00	0.00	0.21	0.21
Sat Flow, veh/h	4459	1293	317	195	474	989	0	4633	165	0	4607	1416
Grp Volume(v), veh/h	182	0	244	32	0	60	0	843	454	0	1006	204
Grp Sat Flow(s),veh/h/ln	1486	0	1610	300	0	1358	0	1511	1626	0	1487	1416
Q Serve(g_s), s	6.0	0.0	19.6	2.9	0.0	5.8	0.0	0.0	0.0	0.0	28.9	9.1
Cycle Q Clear(g_c), s	6.0	0.0	19.6	22.5	0.0	5.8	0.0	0.0	0.0	0.0	28.9	9.1
Prop In Lane	1.00		0.20	0.76		0.73	0.00		0.10	0.00		1.00
Lane Grp Cap(c), veh/h	250	0	433	92	0	223	0	1928	1038	0	2846	983
V/C Ratio(X)	0.73	0.00	0.56	0.34	0.00	0.27	0.00	0.44	0.44	0.00	0.35	0.21
Avail Cap(c_a), veh/h	535	0	587	142	0	278	0	1928	1038	0	2846	983
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.77	0.77	0.00	0.89	0.89
Uniform Delay (d), s/veh	69.7	0.0	47.2	66.7	0.0	54.8	0.0	0.0	0.0	0.0	32.8	21.6
Incr Delay (d2), s/veh	4.0	0.0	1.2	2.2	0.0	0.6	0.0	0.6	1.0	0.0	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	7.9	1.3	0.0	2.1	0.0	0.1	0.3	0.0	11.6	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.7	0.0	48.4	68.9	0.0	55.5	0.0	0.6	1.0	0.0	33.1	22.0
LnGrp LOS	E	A	D	E	A	E	A	A	A	A	C	C
Approach Vol, veh/h		426			92			1297			1210	
Approach Delay, s/veh		59.2			60.1			0.7			31.2	
Approach LOS		E			E			A			C	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	102.3	47.7	102.3	15.7	32.0
Change Period (Y+Rc), s	6.6	7.3	6.6	7.3	* 7.3
Max Green Setting (Gmax), s	81.4	54.7	81.4	18.0	* 31
Max Q Clear Time (g_c+I1), s	2.0	21.6	30.9	8.0	24.5
Green Ext Time (p_c), s	1.6	1.3	1.4	0.4	0.2

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	263	15	385	289	35	7	13	3	74	109	49
Future Volume (veh/h)	17	263	15	385	289	35	7	13	3	74	109	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1673	1673	1700	1660	1660	1262	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	18	277	16	405	304	37	7	14	3	78	115	52
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	3	3	33	0	0	0	0	0
Cap, veh/h	548	608	35	667	783	95	159	253	52	328	158	71
Arrive On Green	0.02	0.39	0.39	0.17	0.54	0.54	0.01	0.09	0.09	0.06	0.14	0.14
Sat Flow, veh/h	1619	1567	90	1619	1452	177	1202	2662	550	1619	1098	497
Grp Volume(v), veh/h	18	0	293	405	0	341	7	8	9	78	0	167
Grp Sat Flow(s),veh/h/ln	1619	0	1657	1619	0	1628	1202	1615	1598	1619	0	1595
Q Serve(g_s), s	0.4	0.0	8.5	8.9	0.0	7.9	0.3	0.3	0.3	2.7	0.0	6.5
Cycle Q Clear(g_c), s	0.4	0.0	8.5	8.9	0.0	7.9	0.3	0.3	0.3	2.7	0.0	6.5
Prop In Lane	1.00		0.05	1.00		0.11	1.00		0.34	1.00		0.31
Lane Grp Cap(c), veh/h	548	0	643	667	0	878	159	153	152	328	0	229
V/C Ratio(X)	0.03	0.00	0.46	0.61	0.00	0.39	0.04	0.05	0.06	0.24	0.00	0.73
Avail Cap(c_a), veh/h	795	0	1481	668	0	1456	354	523	517	513	0	516
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	0.00	1.00
Uniform Delay (d), s/veh	11.6	0.0	14.8	8.7	0.0	8.7	26.4	26.7	26.7	23.6	0.0	26.6
Incr Delay (d2), s/veh	0.0	0.0	0.5	1.6	0.0	0.3	0.1	0.1	0.2	0.4	0.0	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	2.9	2.6	0.0	2.3	0.1	0.1	0.1	1.0	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.6	0.0	15.3	10.3	0.0	9.0	26.5	26.9	26.9	24.0	0.0	31.0
LnGrp LOS	B	A	B	B	A	A	C	C	C	C	A	C
Approach Vol, veh/h		311			746			24			245	
Approach Delay, s/veh		15.1			9.7			26.8			28.8	
Approach LOS		B			A			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	31.2	4.5	14.3	5.1	41.0	7.6	11.2
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	58.0	11.0	21.0	11.0	58.0	11.0	21.0
Max Q Clear Time (g_c+I1), s	10.9	10.5	2.3	8.5	2.4	9.9	4.7	2.3
Green Ext Time (p_c), s	0.0	1.8	0.0	0.7	0.0	2.2	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	33	359	69	37	57	457	2494	51	29	1143	7
Future Volume (veh/h)	21	33	359	69	37	57	457	2494	51	29	1143	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1620	1660	1700	1673	1673	1660	1660	1700	1647	1647
Adj Flow Rate, veh/h	23	35	386	74	40	61	491	2682	55	31	1229	8
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	6	3	0	2	2	3	3	0	4	4
Cap, veh/h	111	153	459	161	254	246	518	3253	66	118	2539	17
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.19	0.71	0.71	0.02	0.55	0.55
Sat Flow, veh/h	521	1023	1373	958	1700	1418	1594	4570	93	1619	4609	30
Grp Volume(v), veh/h	58	0	386	74	40	61	491	1768	969	31	799	438
Grp Sat Flow(s),veh/h/ln	1544	0	1373	958	1700	1418	1594	1511	1641	1619	1499	1642
Q Serve(g_s), s	1.7	0.0	22.4	11.1	3.1	5.6	24.2	61.0	62.3	1.2	24.5	24.5
Cycle Q Clear(g_c), s	4.7	0.0	22.4	15.8	3.1	5.6	24.2	61.0	62.3	1.2	24.5	24.5
Prop In Lane	0.40		1.00	1.00		1.00	1.00		0.06	1.00		0.02
Lane Grp Cap(c), veh/h	264	0	459	161	254	246	518	2151	1168	118	1651	904
V/C Ratio(X)	0.22	0.00	0.84	0.46	0.16	0.25	0.95	0.82	0.83	0.26	0.48	0.48
Avail Cap(c_a), veh/h	264	0	459	161	254	246	817	2151	1168	198	1651	904
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.2	0.0	46.2	63.3	55.6	53.5	26.8	15.0	15.2	20.7	20.6	20.6
Incr Delay (d2), s/veh	0.4	0.0	13.1	2.0	0.3	0.5	12.9	3.1	5.8	1.2	1.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	15.1	2.8	1.4	2.1	19.6	19.9	23.0	0.5	8.7	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.6	0.0	59.3	65.3	55.9	54.1	39.8	18.1	21.1	21.9	21.7	22.5
LnGrp LOS	E	A	E	E	E	D	D	B	C	C	C	C
Approach Vol, veh/h		444			175			3228			1268	
Approach Delay, s/veh		58.9			59.2			22.3			21.9	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	113.4		29.0	31.8	89.2		29.0				
Change Period (Y+Rc), s	4.0	6.6		6.6	4.0	6.6		6.6				
Max Green Setting (Gmax), s	11.0	99.4		22.4	56.0	54.4		22.4				
Max Q Clear Time (g_c+I1), s	3.2	64.3		17.8	26.2	26.5		24.4				
Green Ext Time (p_c), s	0.0	28.9		0.3	1.6	9.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		26.7	
HCM 6th LOS		C	

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	826	392	38	36	35
Future Vol, veh/h	35	826	392	38	36	35
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	160	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	4	0	0	4
Mvmt Flow	37	879	417	40	38	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	459	0	-	0	1393	439
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	954	-
Critical Hdwy	4.1	-	-	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.336
Pot Cap-1 Maneuver	1113	-	-	-	158	614
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	377	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1111	-	-	-	152	613
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1111	-	-	-	262	613
HCM Lane V/C Ratio	0.034	-	-	-	0.146	0.061
HCM Control Delay (s)	8.4	-	-	-	21.1	11.3
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	34	18	257	166	211	0	590	9	0	590	158
Future Volume (veh/h)	171	34	18	257	166	211	0	590	9	0	590	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1660	1673	1673	1700	1700	1700	0	1660	1660	0	1634	1673
Adj Flow Rate, veh/h	182	36	19	273	177	224	0	628	10	0	628	168
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	2	0	0	0	0	3	3	0	5	2
Cap, veh/h	972	223	118	469	317	420	0	1176	19	0	1142	361
Arrive On Green	0.22	0.22	0.22	0.38	0.38	0.38	0.00	0.08	0.08	0.00	0.08	0.08
Sat Flow, veh/h	4459	1023	540	1221	825	1092	0	4743	73	0	4607	1412
Grp Volume(v), veh/h	182	0	55	367	0	307	0	413	225	0	628	168
Grp Sat Flow(s),veh/h/ln	1486	0	1563	1639	0	1498	0	1511	1645	0	1487	1412
Q Serve(g_s), s	5.0	0.0	4.3	26.6	0.0	23.8	0.0	19.6	19.7	0.0	20.3	17.0
Cycle Q Clear(g_c), s	5.0	0.0	4.3	26.6	0.0	23.8	0.0	19.6	19.7	0.0	20.3	17.0
Prop In Lane	1.00		0.35	0.74		0.73	0.00		0.04	0.00		1.00
Lane Grp Cap(c), veh/h	972	0	341	630	0	576	0	774	421	0	1142	361
V/C Ratio(X)	0.19	0.00	0.16	0.58	0.00	0.53	0.00	0.53	0.54	0.00	0.55	0.46
Avail Cap(c_a), veh/h	972	0	341	630	0	576	0	774	421	0	1142	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	1.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	0.93	0.00	0.93	0.00	0.77	0.77	0.00	0.79	0.79
Uniform Delay (d), s/veh	47.8	0.0	47.5	36.6	0.0	35.7	0.0	60.1	60.1	0.0	60.4	58.9
Incr Delay (d2), s/veh	0.1	0.0	0.2	3.6	0.0	3.3	0.0	2.0	3.7	0.0	1.5	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	1.7	11.4	0.0	9.3	0.0	8.2	9.2	0.0	8.3	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	0.0	47.8	40.2	0.0	39.0	0.0	62.1	63.8	0.0	61.9	62.2
LnGrp LOS	D	A	D	D	A	D	A	E	E	A	E	E
Approach Vol, veh/h		237			674			638			796	
Approach Delay, s/veh		47.9			39.7			62.7			62.0	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	45.0	40.0	45.0	65.0
Change Period (Y+Rc), s	6.6	7.3	6.6	7.3
Max Green Setting (Gmax), s	38.4	32.7	38.4	57.7
Max Q Clear Time (g_c+I1), s	21.7	7.0	22.3	28.6
Green Ext Time (p_c), s	0.7	0.9	0.8	4.8

Intersection Summary	
HCM 6th Ctrl Delay	54.3
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	221	0	4	116	30	317	466	187	29	2	12
Future Volume (veh/h)	127	221	0	4	116	30	317	466	187	29	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1673	1673	1700	1660	1660	1262	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	134	233	0	4	122	32	334	491	197	31	2	13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	3	3	33	0	0	0	0	0
Cap, veh/h	278	409	0	197	214	56	739	1364	544	349	68	440
Arrive On Green	0.08	0.24	0.00	0.00	0.17	0.17	0.27	0.61	0.61	0.02	0.35	0.35
Sat Flow, veh/h	1619	1673	0	1619	1267	332	1202	2253	899	1619	192	1249
Grp Volume(v), veh/h	134	233	0	4	0	154	334	351	337	31	0	15
Grp Sat Flow(s),veh/h/ln	1619	1673	0	1619	0	1600	1202	1615	1537	1619	0	1441
Q Serve(g_s), s	10.0	18.3	0.0	0.3	0.0	13.3	20.9	16.4	16.6	1.8	0.0	1.0
Cycle Q Clear(g_c), s	10.0	18.3	0.0	0.3	0.0	13.3	20.9	16.4	16.6	1.8	0.0	1.0
Prop In Lane	1.00		0.00	1.00		0.21	1.00		0.58	1.00		0.87
Lane Grp Cap(c), veh/h	278	409	0	197	0	271	739	977	930	349	0	508
V/C Ratio(X)	0.48	0.57	0.00	0.02	0.00	0.57	0.45	0.36	0.36	0.09	0.00	0.03
Avail Cap(c_a), veh/h	278	547	0	234	0	437	837	977	930	361	0	508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.95	0.00	0.95
Uniform Delay (d), s/veh	45.4	49.7	0.0	51.6	0.0	57.3	13.7	14.9	15.0	30.2	0.0	31.8
Incr Delay (d2), s/veh	1.3	1.2	0.0	0.0	0.0	1.9	0.4	1.0	1.1	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	7.8	0.0	0.1	0.0	5.5	5.7	6.4	6.1	0.7	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.7	51.0	0.0	51.6	0.0	59.2	14.1	16.0	16.1	30.3	0.0	31.8
LnGrp LOS	D	D	A	D	A	E	B	B	B	C	A	C
Approach Vol, veh/h		367			158			1022			46	
Approach Delay, s/veh		49.4			59.0			15.4			30.8	
Approach LOS		D			E			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.6	42.7	44.8	57.9	15.9	31.4	6.9	95.8
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	4.6	49.0	53.0	25.0	12.0	41.0	4.0	74.0
Max Q Clear Time (g_c+I1), s	2.3	20.3	22.9	3.0	12.0	15.3	3.8	18.6
Green Ext Time (p_c), s	0.0	1.3	1.1	0.0	0.0	0.8	0.0	5.2

Intersection Summary	
HCM 6th Ctrl Delay	28.0
HCM 6th LOS	C

Notes

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