Grant Creek Village Residential Development Traffic Impact Study UPDATE

Missoula, Montana

Prepared For:

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Grant Creek Village
Traffic Impact Study UPDATE
Missoula, Montana

A. EXECUTIVE SUMMARY

The Grant Creek Village development is a 44-acre residential project located north of Interstate-90 and west of Grant Creek Road in Missoula, Montana. The development would be constructed in several phases over the next 5-10 years. Phases 1A and 1B would develop 297 units by the end of 2021 and would produce 1,458 new vehicle trips per day. At full buildout the development would include approximately 950 multi-family residential units. The Grant Creek Village would access Grant Creek Road and North Reserve Street using Expo Parkway and Stonebridge Road. As proposed, the Grant Creek Village would not create any new roadway capacity problems in this area. Southbound through-lane improvements are planned for installation by MDT in the fall of 2020 and will increase intersection capacity and prevent excessive vehicle queuing on the north leg of the intersection. Overall, the Grant Creek Village will account for a 13% and 27% percent increase in traffic volumes on Grant Creek Road with Phases 1A and 1B and up to an 87% increase cumulatively at full build. The developers should work with the City of Missoula to implement multi-modal improvements in the area to encourage pedestrian and bicycle access to the site.

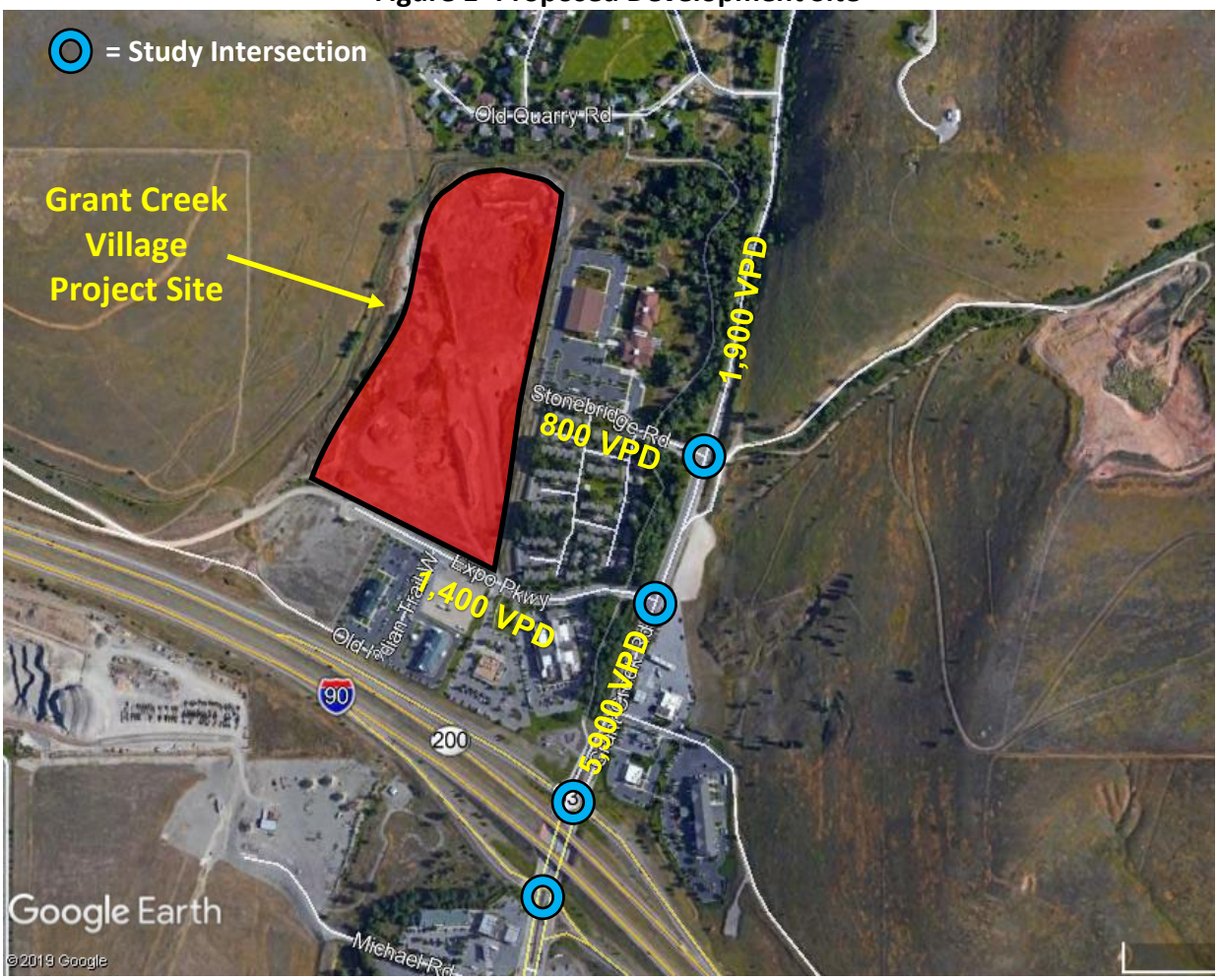
B. PROJECT DESCRIPTION

This document reports the study of the possible effects on the surrounding road system from a proposed residential apartment complex located west of Grant Creek Road within the City of Missoula. The document provides information regarding possible traffic impacts in the area and identifies traffic mitigation efforts that the development may require. The development could ultimately include up to 950 residential apartment units constructed in phases over the next 5-10 years. This report focuses on Phases 1A and Phases 1B which would be completed by 2021 and also provides analysis of the possible full build-out conditions at the site.

C. EXISTING CONDITIONS

The proposed development property currently consists of a 44-acre gravel and rock quarry located north of Expo Parkway at the north end of Reserve Street (Grant Creek Road). The surrounding area is comprised of a mix of residential and commercial areas north of Interstate-90. See **Figure 1** for a location map of the proposed development.

Figure 1- Proposed Development Site



Adjacent Roadways

North Reserve Street (Grant Creek Road) is a north/south principal arterial route that extends through the western side of Missoula. South of the Interstate-90 interchange the roadway has a five lane urban cross-section and a speed limit of 45 MPH. Both interchange ramps with I-90 are currently signalized. North of the interchange the road narrows to a three-lane cross-section and becomes Grant Creek Road. The road has a paved width of 58-feet south of Expo Parkway and narrows to 50 feet at Stonebridge Road. The posted speed limit on Grant Creek Road is 45 MPH. The Grant Creek Trail is located along the western side of the road. The route is characterized by commercial properties adjacent to the roadway which transition to residential land uses north of Expo Parkway. Traffic data available from MDT indicates that the road currently carries over 20,000 VPD south of the I-90 interchange and 1,900 VPD north of Expo Parkway.

Expo Parkway is a two-lane east/west local roadway which extends west from Grant Creek Road and provides access to the commercial and residential properties in this area including hotels, restaurants, and the Cottonwoods Apartments. Expo Parkway has a paved width of 42 feet with on-street parking and sidewalks. Traffic data collected by ATS indicates that the roadway currently carries 1,400 VPD.

Stonebridge Road is a two-lane east/west local route which extends west from Grant Creek Road 600 feet north of Expo Parkway. The road has a paved width of 40 feet with on-street parking and sidewalks along the north side of the road. The road provides access to The Cottonwoods Apartments and the Rocky Mountain Elk Foundation. Traffic data collected by ATS indicates that the Stonebridge Road currently carries 800 VPD.

Traffic Data

In October 2019 Abelin Traffic Services (ATS) collected traffic data at area intersections to evaluate current operation characteristics. These counts included peak-hour turning movement counts at the intersections of Grant Creek Road with Expo Parkways and Stonebridge Road. Peak-hour traffic data for the I-90 interchange ramps was obtained from traffic counts conducted in April 2018 by MDT. ATS also performed 24-hour hose counts on Expo Parkway and Stonebridge Road. The raw traffic data is included in **Appendix A** of this report.

The raw data collected for this project may be adjusted for seasonal variations using data collected from MDT's automatic count stations located on Orange Street Bridge in Missoula (Site #A-037) and on Van Buren Street north of I-90 (Site #A-067). This data indicates traffic counts collected in October are 102% to 104% of the AADT (Average Annual Daily Traffic) volume in this area and traffic data from April is 104% to 106% of the AADT. In this case the raw data could be factored down by 2% to 6% to match the AADT values for this area. However, these factors were <u>not</u> applied to the raw traffic data to provide a slightly more conservative result from the traffic analysis.

Historic Traffic Data

Abelin Traffic Services obtained historic traffic data for the surrounding road network from the Montana DOT. This data is presented in **Table 1**. The traffic data history shows that in general traffic volumes on this section of North Reserve Street and the I-90 interchange have not increased significantly in the last ten years. There was a significant reported traffic volume increase along Grant Creek Road from 2018 to 2019 but it is unclear why this increase occurred as no other roadways which lead into this area reported similar traffic volume increases. The reported 2019 traffic data on Grant Creek Road is similar in magnitude to the reported volumes from 2010 to 2015. It is likely the lower traffic volumes reported on Grant Creek Road from 2016-2018 were an anomaly that may have resulted from the exact placement of the MDT

traffic counters. If the traffic data anomalies on Grant Creek Road are discounted, then the overall traffic volume growth rate for the roads entering this area is near zero. Therefore, no background traffic volume growth rates were used for the short-term traffic projections for this analysis.

Table 1 – Historic Traffic Data

Location	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Grant Creek Rd 0.5 Mi. N of I-90 Intch. #32-3A-137	1,470	1,250	1,240	1,170	1,190	1,220	1,240	1,230	1,248	1,931
Grant Creek Rd N of I-90 Intch. #32-3A-136	5,600	5,580	5,530	5,020	5,110	5,240	2,762	2,740	2,781	5,909
Reserve S of I-90 Intch. #32-3A-006	22,360	20,600	19,820	20,990	19,590	20,330	21,146	20,808	20,532	20,429
I-90 WB Off-ramp at Reserve #32-3-074	--	--	--	4,720	5,150	5,150	5,538	5,449	5,525	5,497
I-90 WB On-ramp at Reserve #32-3-075	--	--	--	--	--	--	4,677	4,602	5,141	5,115
I-90 EB Off-ramp at Reserve #32-3-072	--	--	--	--	--	--	3,721	3,661	3,618	3,600
I-90 EB On-ramp at Reserve #32-3-073	--	--	--	--	--	--	5,721	5,629	5,708	5,679

Planned Roadway Improvements

The Montana Department of Transportation plans to begin construction on roadway improvements at the intersection of Grant Creek Road and the Interstate 90 interchange in the fall of 2020. This project will include roadway widening on Grant Creek Road to the north of the interchange and the development of additional southbound lanes including a new southbound through lane and a dedicated southbound right-turn lane. The improvements will also include updates to the traffic signal controllers. This project is scheduled to be completed in the spring of 2021. For the purposes of this report, it is assumed that these roadway improvements will be in place prior to any development at the Grant Creek Village.

Level of Service

Using the data collected for this project, ATS conducted a Level of Service (LOS) analysis at the study intersections. This evaluation was conducted in accordance with the procedures outlined in the Transportation Research Board's *Highway Capacity Manual (HCM) - Special Report 209* and the Synchro 10 traffic simulation software. The base file used for the Synchro 10 model was produced by MDT in 2018 for the entire Reserve Street Corridor from Interstate 90 to Brooks Street. ATS modified this model to include the study intersections on Grant Creek Road. Intersections are graded from A to F representing the average delay that a vehicle entering an intersection can expect. Typically, a LOS of C or better is considered acceptable for peak-hour conditions.

Table 2 – Existing Level of Service Summary

Grant Creek Road (Reserve Street) Intersection	AM Peak Hour		PM Peak Hour	
	Delay (Sec.)	LOS	Delay (Sec.)	LOS
Stonebridge Road*	10.4	B	9.7	A
Expo Parkway*	10.5/13.3	B/B	10.6/14.3	B/B
I-90 Westbound Ramps**	34.6	C	25.1	C
I-90 Eastbound Ramps	11.7	B	16.6	B

*Eastbound/Westbound LOS & Delay.
**With planned MDT intersection improvements.

Table 2 shows the existing 2019 LOS at the study intersections. The analysis shows that with the planned MDT improvements at the Grant Creek Road and I-90 interchange, all intersections in this area will function at LOS C or better under existing traffic volume conditions. The LOS calculations are included in **Appendix C**.

Area Crash Data

ATS obtained crash data from the MDT vehicle crash database for the section of Grant Creek Road from the I-90 interchange to Stonebridge Road. The data included all reported crashes which occur on this segment of road over the past ten years. The MDT database indicates that 28 vehicle crashes occurred along this section. Most of these crashes were rear-end (6) and sideswipe collisions (7). A total of 24 of the crashes were multi-vehicle collisions and most occurred on dry roadways and in daylight conditions. Seven injury collisions were reported. These types and numbers of crashes are typical for urban roadway segments. No specific crash trends or crash locations were identified.

D. PROPOSED DEVELOPMENT

The development to be constructed on this site includes 44 acres of land located north of Expo Parkway which would be developed into a residential apartment complex. The total developable area of the property is 28.5 acres. Access to the Grant Creek Apartments would be provided through new connections onto Expo Parkway and Stonebridge Road. The project would be constructed in several phases over the next 5-10 years. Phase 1A would include 140 apartment units, a clubhouse, and a gym for residents to be constructed in 2020. Phase 1B would include 156 units and would be constructed in 2021. The remaining potential 654 units would be constructed over the next 5-10 years depending on market demand. At full buildout the property could include up to 950 residential dwelling units. Apartment buildings would have up to four floors, being classified as mid-rise apartments. The full future build-out plans of the property have not yet been finalized. The Grant Creek Village development plan is shown in **Figure 2**.

E. TRIP GENERATION AND ASSIGNMENT

ATS performed a trip generation analysis to determine the anticipated future traffic volumes from the proposed development phases using the trip generation rates contained in *Trip Generation* (Institute of Transportation Engineers, Tenth Edition). These rates are the national standard and are based on the most current information available to planners. A vehicle "trip" is defined as any trip that either begins or ends at the development site. ATS determined that the critical traffic impacts on the intersections and roadways would occur during the weekday morning and evening peak hours. According to the ITE trip generation rates, Phase 1A of the development would produce 762 daily trips and Phase 1B would produce 849 daily trips. At full build-out, the maximum potential development could produce 341 AM peak hour trips, 419 PM peak hour trips, and 5,168 daily trips. See **Table 3** for detailed trip generation information.

Table 3 - Trip Generation Rates

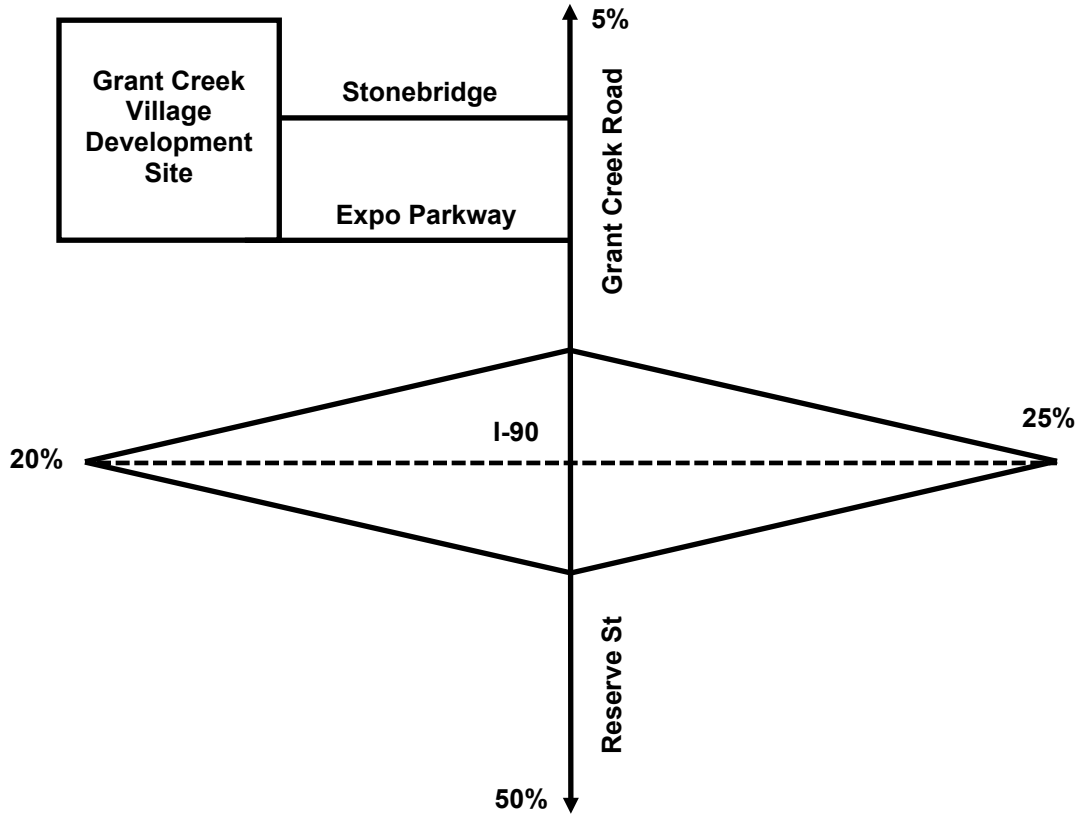
Land Use ITE #221	Dwelling Units	AM Peak Hour Trip Ends per Unit	Total AM Peak Hour Trip Ends	PM Peak Hour Trip Ends per Unit	Total PM Peak Hour Trip Ends	Weekday Trip Ends per Unit	Total Weekday Trip Ends
Phase 1A Apartments	140	0.36	50 13in/37out	0.44	62 38in/24out	5.44	**762**
Phase 1B Apartments	156	0.36	56 15in/41out	0.44	69 42in/27out	5.44	**849**
Future Phase Apartments	654	0.36	235 61in/174out	0.44	288 176in/112out	5.44	**3,558**
TOTAL	**950**		**341** **89in/252out**		**419** **256in/163out**		**5,169**

Figure 2 – Proposed Grant Creek Village Development

F. TRIP DISTRIBUTION

The traffic distribution and assignment for the proposed subdivision was based upon the existing ADT volumes along the adjacent roadways and peak-hour traffic volumes. Drivers are expected to distribute onto the surrounding road network as shown on **Figure 3**. The 5% of traffic distributed to the north on Grant Creek Road closely matches the existing traffic volume distributions at Expo Parkway and Stonebridge. While it is true that only a small portion of the residents may have business to the north on Grant Creek Road, the overall trip generation numbers from a development also include delivery vehicles, mail carries, and service vehicles which may use the Grant Creek Village as one stop along Grant Creek Road. Therefore the 5% of total traffic distribution to the north is reasonable.

Figure 3 – Peak-Hour Trip Distribution



G. TRAFFIC IMPACTS OUTSIDE OF THE DEVELOPMENT

Using the trip generation and trip distribution rates, ATS determined the future Level of Service for the area intersections for Phases, 1A, 1B and full potential buildout of the development. The anticipated intersection LOS with the proposed development is shown in **Tables 4 and 5**. The LOS calculations are included in **Appendix C** of this report. The tables indicate that the construction of Phases 1A of the Grant Creek Village will not cause any new roadway capacity problems in this area and the total vehicle delay will increase only slightly at the study intersections.

The planned roadway improvements along Grant Creek Road will significantly increase the capacity of the signalized intersections at the I-90 interchange. By Phase 1B, the total vehicle delay at the intersection of the I-90 westbound ramps will increase slightly (less than one second per vehicle) and the LOS will fall to D during the AM peak hour. At full build-out of the project this the average vehicle delay at this intersection will increase by 2-3 seconds from the current traffic conditions. The average vehicle delay and overall LOS at this intersection is heavily influenced by the existing required cycle length at the traffic signals. The 130-second cycle provides high intersection capacity at the interchange and is necessary due to the signal phasing plan and roadway geometries. Generally the delay and LOS at a traffic signal can be improved with lower cycle lengths, but this would be difficult to implement with the geometry and traffic patterns at this location. However, this traffic signal timing can handle a wide range of traffic volumes without significantly changing the overall intersection delay.

Table 4 – Level of Service Summary AM Peak Period

Grant Creek Road (Reserve Street) Intersection	Existing		Phase 1		Phase2		Full-Build	
	Delay (Sec.)	LOS	Delay (Sec.)	LOS	Delay (Sec.)	LOS	Delay (Sec.)	LOS
Stonebridge Road*	10.4	B	10.4	B	10.5	B	11.3	B
Expo Parkway*	10.5/13.3	B/B	10.8/14.7	B/B	11.2/15.9	B/B	13.8/24.8	B/C
I-90 WB Ramps	**34.6**	**C**	**35.0**	**D**	**35.3**	**D**	**37.3**	**D**
WB Approach	49.2	D	50.2	D	51.4	D	54.1	D
NB Approach	0.7	A	0.8	A	0.8	A	1.1	A
SB Approach	39.5	D	40.8	D	40.7	D	43.6	D
I-90 EB Ramps	**11.7**	**B**	**12.1**	**B**	**12.5**	**B**	**14.4**	**B**
EB Approach	10.1	B	10.7	B	11.2	B	14.5	B
NB Approach	34.5	C	35.7	D	37.2	D	43.6	D
SB Approach	0.7	A	0.7	A	0.7	A	0.8	A

*Eastbound/Westbound LOS & Delay for Unsignalized Intersections.

Table 5 – Level of Service Summary PM Peak Period

Grant Creek Road (Reserve Street) Intersection	Existing		Phase 1		Phase2		Full-Build	
	Delay (Sec.)	LOS	Delay (Sec.)	LOS	Delay (Sec.)	LOS	Delay (Sec.)	LOS
Stonebridge Road*	9.7	A	9.7	A	9.8	A	10.3	B
Expo Parkway*	10.6/14.3	B/B	10.7/15.6	B/C	11.0/17.5	B/C	13.0/29.8	B/D
I-90 WB Ramps	**25.1**	**C**	**25.9**	**C**	**26.2**	**C**	**27.3**	**C**
WB Approach	41.4	D	42.8	D	43.4	D	43.9	D
NB Approach	3.3	A	3.8	A	3.6	A	3.1	A
SB Approach	39.1	D	39.8	D	40.9	D	46.9	D
I-90 EB Ramps	**16.6**	**B**	**17.9**	**B**	**18.9**	**B**	**22.4**	**C**
EB Approach	18.9	B	21.6	C	24.2	C	30.7	C
NB Approach	26.9	C	28.7	C	31.17	C	35.5	D
SB Approach	1.3	A	1.3	A	1.3	A	1.4	A

*Eastbound/Westbound LOS & Delay for Unsignalized Intersections.

The traffic analysis also suggests the eastern approach onto Grant Creek Road at Expo Parkway may experience LOS D conditions by full-buildout of the project. However, the future operations at this intersection will largely be controlled by the potential commercial development plans along this section of Grant Creek Road through 2030. The Grant Creek Village will likely account for the majority of development in this area over the next ten years.

The Grant Creek Village project would increase traffic volumes by 760 VPD (13%) on Grant Creek Road in Phase 1A and by 850 VPD (27%) with Phase IA and Phase 1B cumulatively. Ultimately, the development may increase traffic volumes on Grant Creek Road by 5,000 (87%) and 2,600 VPD North Reserve Street by (13%) at full potential build-out of the project.

ATS used the Synchro traffic data simulation software to identify the average and maximum vehicle queuing lengths that can be expected at the study intersections with the development of the Grant Creek Village. The results of this analysis are shown in **Table 6**. Under the existing roadway configuration, vehicles on Grant Creek Road regularly queue back from the I-90 interchange signal 500 feet, near Expo Parkway during the morning peak traffic periods. The development of the new southbound lanes at this intersection will significantly decrease the peak-hour queue lengths at this location and provide additional roadway capacity for future development. The table shows that the current and future queue lengths at this location will be less than 300 feet and will not affect the operations at the adjacent intersections.

Table 6 – Vehicle Queuing Analysis: Existing 2020*

Grant Creek Road (Reserve Street) Intersection	AM Peak Hour		PM Peak Hour	
	Average Queue (ft)	95% Queue (ft)	Average Queue (ft)	95% Queue (ft)
I-90 Westbound Ramps NB	8	27	12	39
I-90 Westbound Ramps WB	125	197	103	169
I-90 Westbound Ramps SB	154	225	94	155
I-90 Eastbound Ramps NB	43	96	62	121
I-90 Eastbound Ramps EB	125	192	56	107
I-90 Eastbound Ramps SB	9	30	24	61

*Will Planned MDT Roadway Improvements.

Table 7 – Vehicle Queuing Analysis: Full-Buildout

Grant Creek Road (Reserve Street) Intersection	AM Peak Hour		PM Peak Hour	
	Average Queue (ft)	95% Queue (ft)	Average Queue (ft)	95% Queue (ft)
I-90 Westbound Ramps NB	13	39	23	62
I-90 Westbound Ramps WB	151	230	108	164
I-90 Westbound Ramps SB	199	283	120	193
I-90 Eastbound Ramps NB	59	100	92	151
I-90 Eastbound Ramps EB	121	192	71	133
I-90 Eastbound Ramps SB	14	39	25	57

Multi-Modal Considerations and Recommendations

To decrease the overall traffic impacts from the Grant Creek Village development, additional modes of transportation should be encouraged by developing pedestrian/bicycle access to the site as well as transit service if possible. The Missoula Mountain Line Bus does not currently provide any routes along the north end of Reserve Street/Grant Creek Road. The nearest bus routes are one mile to the south along Express Way. As residential and commercial properties in this portion of Missoula continue to develop, it is encouraged that bus routes to serve the Grant Creek area be created. Providing space for a future bus pull-out along Expo Parkway or Grant Creek Road should be a part of future development plans in this area.

The *North Reserve Scott Street Master Plan* provides recommendations for improvements to the trail systems in this portion of Missoula. The plan recommends the development of a multi-use path connection under I-90 at Grant Creek that would be separated from vehicle traffic. This bike/pedestrian route would provide improved connectivity between the residential and commercial areas in this portion of Missoula. The project would require coordination with MDT & FHWA and is currently considered a low priority. The estimated cost of this pedestrian

underpass is $2 million. The existing underpass at Reserve Street currently has pedestrian facilities and sidewalks on both sides of the road.

Additional planned and recommended improvements to the pedestrian/bike facilities in this area include upgrading the Grant Creek Trail between Expo Parkway and Stonebridge Road. Expo Parkway has a missing sidewalk link along the north side of the roadway near the Grant Creek Village development adjacent to the Cottonwood Apartments. This section of sidewalk should be connected with the Grant Creek Village development to provide a continuous pedestrian link to Grant Creek Road.

H. IMPACT SUMMARY & RECOMMENDATIONS

As proposed, the Grant Creek Village would not create any new roadway capacity problems with the planned MDT modifications in the area. Southbound through-lane improvements are planned for installation by MDT in the fall of 2020 and will increase intersection capacity and prevent excessive vehicle queuing on the north leg of the intersection. Overall, the Grant Creek Village will account for a 13% and 27% percent increase in traffic volumes on Grant Creek Road with Phases 1A and 1B cumulatively and up to 87% increase cumulatively at full build. The developers should work with the City of Missoula to implement multi-modal improvements in the area to encourage pedestrian and bicycle access to the site.

APPENDIX A

Traffic Data

Abelin Traffic Services

130 S. Howie Street
Helena, MT 59601

File Name : StoneBridge
Site Code : 00000000
Start Date : 10/23/2019
Page No : 1

Groups Printed- Class 1

	Grant Creek Southbound					Stonebridge Westbound					Grant Creek Northbound					Stonebridge Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:30 AM	0	91	0	0	91	0	0	0	0	0	0	20	5	0	25	6	0	0	0	6	122
07:45 AM	0	71	0	0	71	0	0	0	0	0	0	45	22	0	67	11	0	0	0	11	149
Total	0	162	0	0	162	0	0	0	0	0	0	65	27	0	92	17	0	0	0	17	271
08:00 AM	0	77	0	0	77	0	0	0	0	0	0	25	12	0	37	10	0	0	0	10	124
*** BREAK ***																					
Total	0	77	0	0	77	0	0	0	0	0	0	25	12	0	37	10	0	0	0	10	124
*** BREAK ***																					
04:30 PM	0	43	0	0	43	0	0	0	0	0	0	55	2	0	57	7	0	1	0	8	108
04:45 PM	0	66	0	0	66	0	0	0	0	0	0	39	5	0	44	33	0	0	0	33	143
Total	0	109	0	0	109	0	0	0	0	0	0	94	7	0	101	40	0	1	0	41	251
05:00 PM	0	46	0	0	46	0	0	0	0	0	0	70	3	0	73	10	0	1	0	11	130
05:15 PM	0	45	0	0	45	0	0	0	0	0	0	80	7	0	87	12	0	0	0	12	144
Grand Total	0	439	0	0	439	0	0	0	0	0	0	334	56	0	390	89	0	2	0	91	920
Apprch %	0	100	0	0		0	0	0	0		0	85.6	14.4	0		97.8	0	2.2	0		
Total %	0	47.7	0	0	47.7	0	0	0	0	0	0	36.3	6.1	0	42.4	9.7	0	0.2	0	9.9	

Abelin Traffic Services

130 S. Howie Street
Helena, MT 59601

File Name : Not Named 1
Site Code : 00000000
Start Date : 10/23/2019
Page No : 1

Groups Printed- Class 1 - New Group

	Grant Creek Southbound					Expo Westbound					Grant Creek Northbound					Expo Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:30 AM	0	89	2	0	91	3	0	7	0	10	1	17	7	0	25	16	0	0	0	16	142
07:45 AM	0	69	2	0	71	2	0	7	0	9	0	43	7	0	50	15	0	0	0	15	145
Total	0	158	4	0	162	5	0	14	0	19	1	60	14	0	75	31	0	0	0	31	287
08:00 AM	0	75	2	0	77	0	0	5	0	5	0	25	5	0	30	5	0	0	0	5	117
*** BREAK ***																					
Total	0	75	2	0	77	0	0	5	0	5	0	25	5	0	30	5	0	0	0	5	117
*** BREAK ***																					
04:30 PM	0	41	2	0	43	4	1	1	0	6	0	51	11	0	62	10	0	0	0	10	121
04:45 PM	0	62	4	0	66	6	0	9	0	15	1	33	18	0	52	5	0	0	1	6	139
Total	0	103	6	0	109	10	1	10	0	21	1	84	29	0	114	15	0	0	1	16	260
05:00 PM	0	44	2	0	46	2	0	10	0	12	0	68	14	0	82	9	4	0	1	14	154
05:15 PM	0	43	2	0	45	3	0	2	0	5	0	77	19	0	96	12	0	0	0	12	158
Grand Total	0	423	16	0	439	20	1	41	0	62	2	314	81	0	397	72	4	0	2	78	976
Apprch %	0	96.4	3.6	0		32.3	1.6	66.1	0		0.5	79.1	20.4	0		92.3	5.1	0	2.6		
Total %	0	43.3	1.6	0	45	2	0.1	4.2	0	6.4	0.2	32.2	8.3	0	40.7	7.4	0.4	0	0.2	8	
Class 1	0	419	16	0	435	18	1	41	0	60	1	313	80	0	394	71	4	0	2	77	966
% Class 1	0	99.1	100	0	99.1	90	100	100	0	96.8	50	99.7	98.8	0	99.2	98.6	100	0	100	98.7	99
New Group																					
% New Group	0	0.9	0	0	0.9	10	0	0	0	3.2	50	0.3	1.2	0	0.8	1.4	0	0	0	1.3	1

Basic Volume Report: EXPO

Station ID : EXPO
Info Line 1 : ATS
Info Line 2 : Unicorn #3
GPS Lat/Lon :
DB File : EXPO.DB

Last Connected Device Type : Unic-L
Version Number : 1.41
Serial Number :

Number of Lanes : 1
Posted Speed Limit : 0.0 mph

Lane #3 Configuration

#	Dir.	Information	Volume Mode	Volume Sensors	Divide By 2	Comment
3.		E/W	Normal	Axle	Yes	

Lane #3 Basic Volume Data From: 15:00 - 10/23/2019 To: 14:59 - 10/24/2019

Date	DW	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total
102319	W																65	106	99	105	71	60	35	21	7	569
102419	T	4	3	3	3	9	13	53	75	106	69	77	117	105	133	85										855
Month Total :		4	3	3	3	9	13	53	75	106	69	77	117	105	133	85	65	106	99	105	71	60	35	21	7	1424
Percent :		0%	0%	0%	0%	1%	1%	4%	5%	7%	5%	5%	8%	7%	9%	6%	5%	7%	7%	7%	5%	4%	2%	1%	0%	
ADT :		4	3	3	3	9	13	53	75	106	69	77	117	105	133	85	65	106	99	105	71	60	35	21	7	1424

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
DW Totals :	0	0	0	569	855	0	0
# Days :	0.0	0.0	0.0	0.4	0.6	0.0	0.0
ADT :	0	0	0	1517	1368	0	0
Percent :	0%	0%	0%	40%	60%	0%	0%

	Total	Percent
Weekday (Mon-Fri) :	1424	100%
ADT :	1424	
Weekend (Sat-Sun) :	0	0%
ADT :	0	

Basic Volume Report: STONEB

Station ID : STONEB
Info Line 1 : ATS
Info Line 2 : Unicorn # 2
GPS Lat/Lon :
DB File : STONEB.DB

Last Connected Device Type : Unic-L
Version Number : 1.41
Serial Number : 91434

Number of Lanes : 1
Posted Speed Limit : 0.0 mph

Lane #3 Configuration

#	Dir.	Information	Volume Mode	Volume Sensors	Divide By 2	Comment
3.		WB	Normal	Axle	Yes	

Lane #3 Basic Volume Data From: 15:00 - 10/23/2019 To: 14:59 - 10/24/2019

Date	DW	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total
102319	W																65	56	84	45	24	22	11	7	8	322
102419	T	7	1	2	4	1	0	11	66	68	40	36	61	62	58	53										470
Month Total :		7	1	2	4	1	0	11	66	68	40	36	61	62	58	53	65	56	84	45	24	22	11	7	8	792
Percent :		1%	0%	0%	1%	0%	0%	1%	8%	9%	5%	5%	8%	8%	7%	7%	8%	7%	11%	6%	3%	3%	1%	1%	1%	
ADT :		7	1	2	4	1	0	11	66	68	40	36	61	62	58	53	65	56	84	45	24	22	11	7	8	792

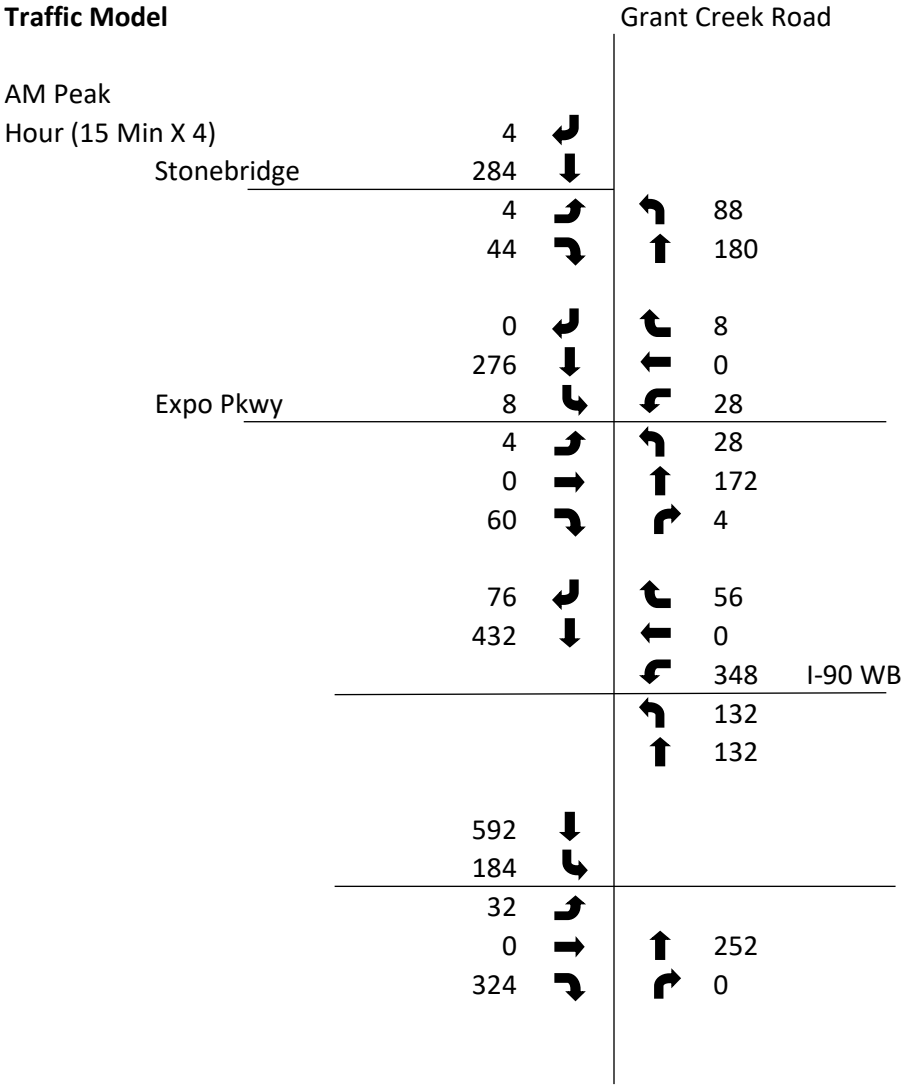
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
DW Totals :	0	0	0	322	470	0	0
# Days :	0.0	0.0	0.0	0.4	0.6	0.0	0.0
ADT :	0	0	0	859	752	0	0
Percent :	0%	0%	0%	41%	59%	0%	0%

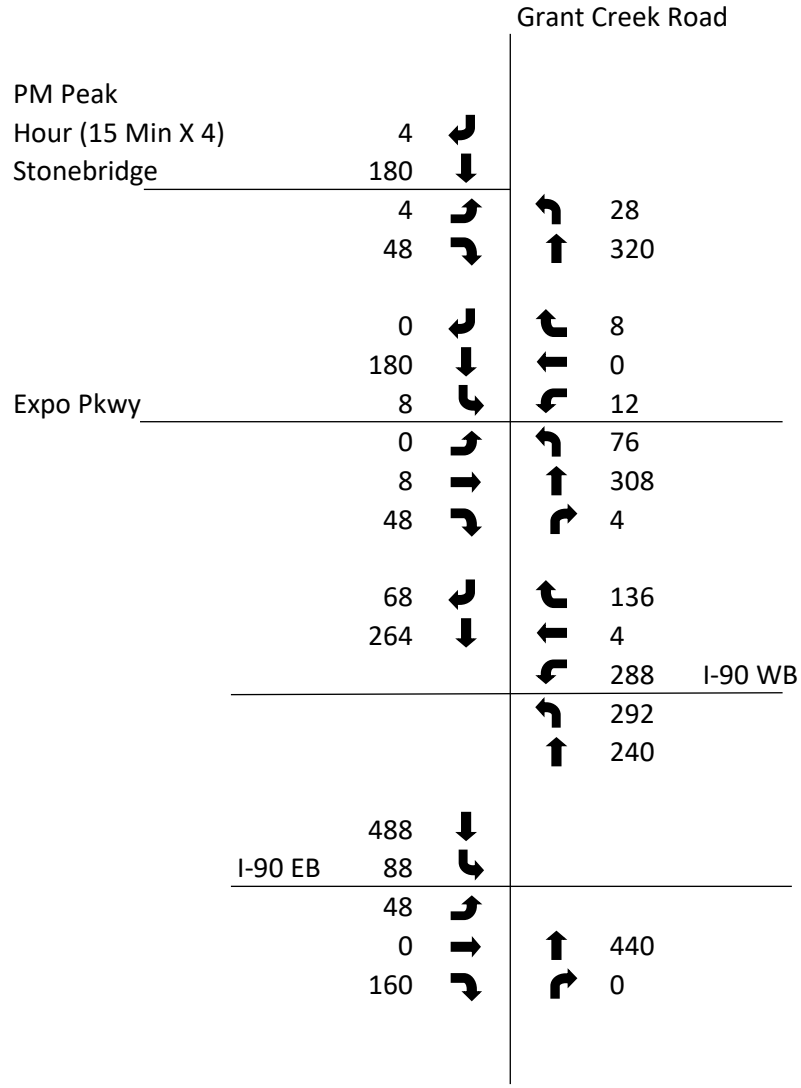
	Total	Percent
Weekday (Mon-Fri) :	792	100%
ADT :	792	
Weekend (Sat-Sun) :	0	0%
ADT :	0	

APPENDIX B

Traffic Model

Grant Creek Village
Traffic Model





Grant Creek Village

Traffic Model

Phase 1A

AM Peak

Site Generated Traffic

					Grant Creek Road		
			0				
Stonebridge		3	1				
	20%	7	0			2	
			7			1	
IN	13						
OUT	37		1				
			7				
Expo Pkwy		10					
	80%	30	1			10	
						2	
			28				
			7			3	
			28				
							I-90 WB
						9	
			19				
	I-90 EB		9				
			3				
						7	

Phase 1A

PM Peak

Site Generated Traffic

					Grant Creek Road		
			0				
Stonebridge		8	2				
	20%	5	0			7	
			5			1	
IN	38						
OUT	24		2				
			5				
Expo Pkwy		30					
	80%	19	1			29	
						7	
			18				
			5			9	
			18				
							I-90 WB
						27	
			13				
	I-90 EB		6				
			7				
						20	

Grant Creek Village

Traffic Model

Phase 1B

AM Peak

Site Generated Traffic

			0				
Stonebridge		5	1				
	30%	12	1			4	
			12			1	
IN	15						
OUT	41		1				
			12				
Expo Pkwy		11					
	70%	29	1			10	
						4	
			27				
			8			4	
			31				
							I-90 WB
						11	
			22				
	I-90 EB		10				
			3				
						8	

Grant Creek Road

Phase 1B

PM Peak

Site Generated Traffic

			1				
Stonebridge		13	1				
	30%	8	0			12	
			8			1	
IN	42						
OUT	27		1				
			8				
Expo Pkwy		29					
	70%	19	1			28	
						12	
			18				
			5			10	
			21				
							I-90 WB
						30	
			14				
	I-90 EB		6				
			8				
						22	

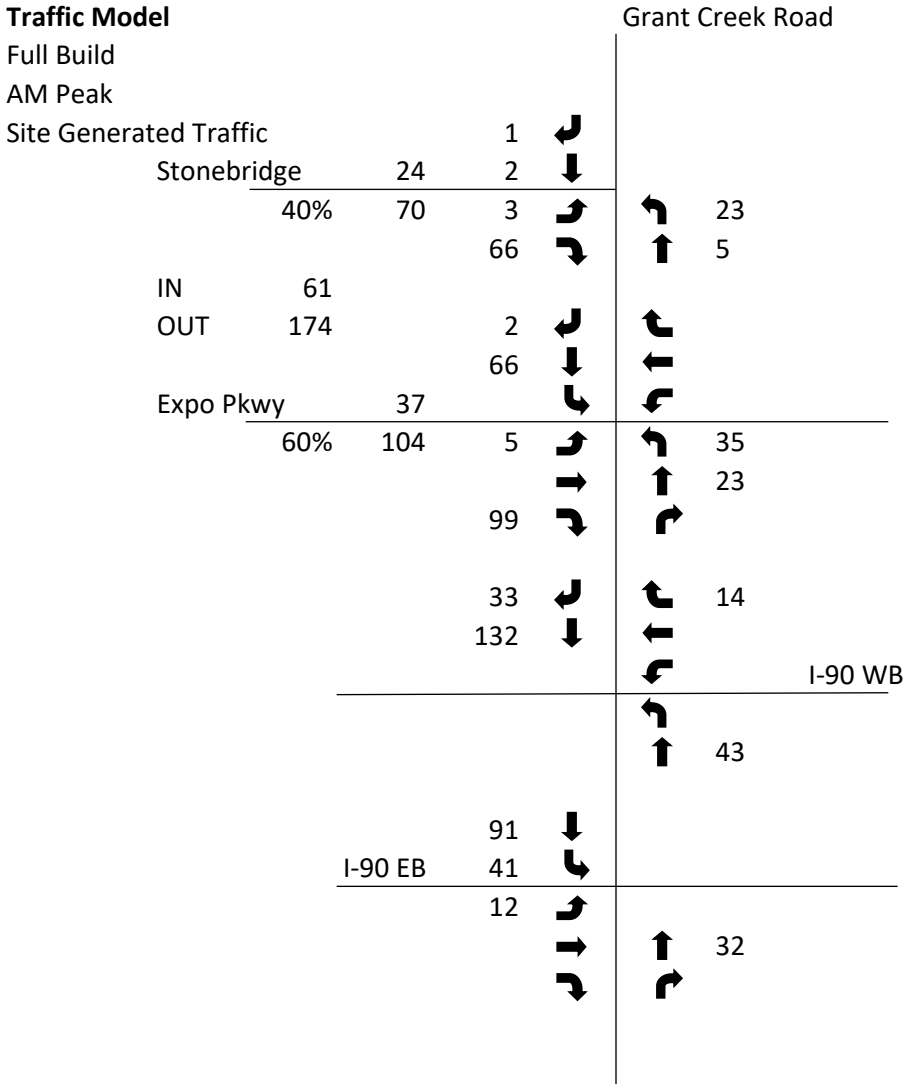
Grant Creek Road

Grant Creek Village

Traffic Model

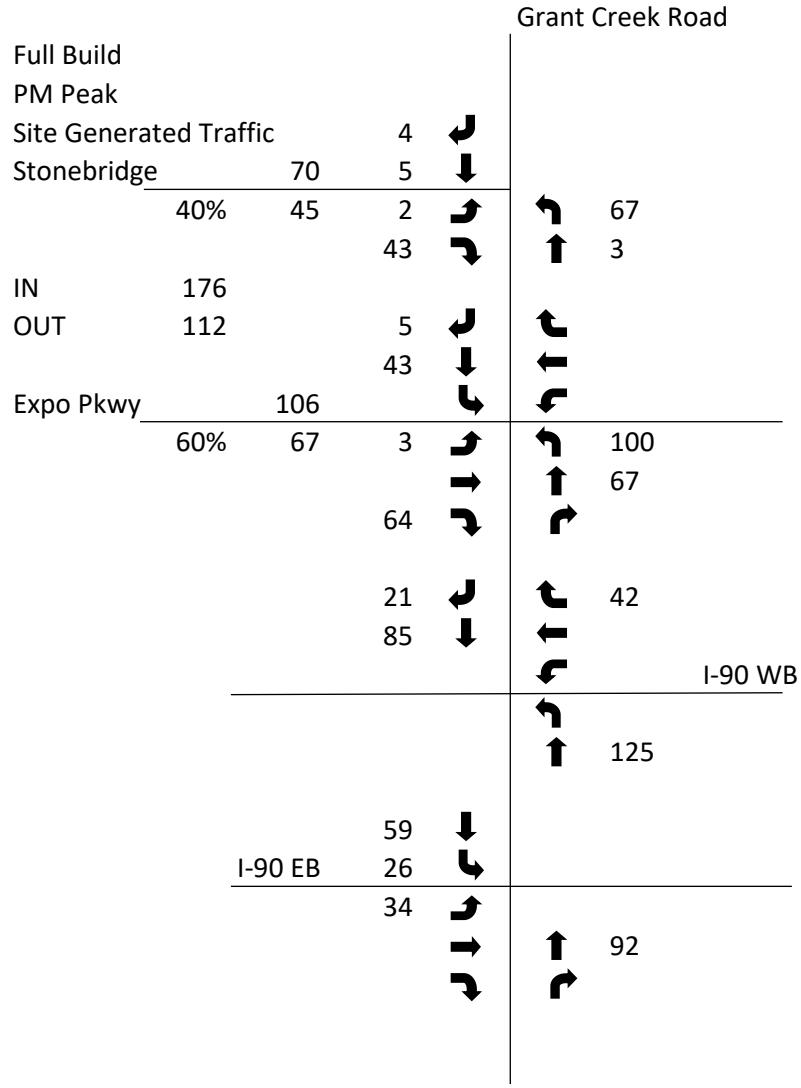
Full Build

AM Peak



Full Build

PM Peak



Grant Creek Village

Traffic Model

Phase 1A

AM Peak

Total Projected Traffic

			Grant Creek Road		
		4		10.4 B	
	Stonebridge	285			
		4		90	
		51		181	
		1		8	10.8/14.7 B/B
		283		0	
	Expo Pkwy	8		28	
		5		38	
		0		174	
		88		4	
		83		59	54.7 D
		460		0	
				348	I-90 WB
				132	
				141	
		611		13.6 B	
	I-90 EB	193			
		35			
		0		259	
		324		0	

Phase 1A

PM Peak

Total Projected Traffic

			Grant Creek Road		
		4		35	
	Stonebridge	182			
		4		35	
		53		321	
		2		8	
		185		0	
	Expo Pkwy	8		12	
		1		105	
		8		315	
		66		4	
		73		145	
		282		4	
				288	I-90 WB
				292	
				267	
		501			
	I-90 EB	94			
		55			
		0		460	
		160		0	

Grant Creek Village

Traffic Model

Phase 1B

AM Peak

Total Projected Traffic

		4		10.5 B	
Stonebridge		285			
		5		95	
		63		183	
		1		8	11.1/15.7 B/C
		295		0	
Expo Pkwy		8		28	
		7		48	
		0		179	
		115		4	
		91		63	62.7 E
		491		0	
				348	I-90 WB
				132	
				152	
		633		13.9 B	
	I-90 EB	202			
		37			
		0		267	
		324		0	

Grant Creek Road

Phase 1B

PM Peak

Total Projected Traffic

		5			
Stonebridge		183			
		5		47	
		60		322	
		3		8	
		192		0	
Expo Pkwy		8		12	
		2		133	
		8		327	
		84		4	
		78		155	
		303		4	
				288	I-90 WB
				292	
				297	
		515			
	I-90 EB	100			
		63			
		0		482	
		160		0	

Grant Creek Road

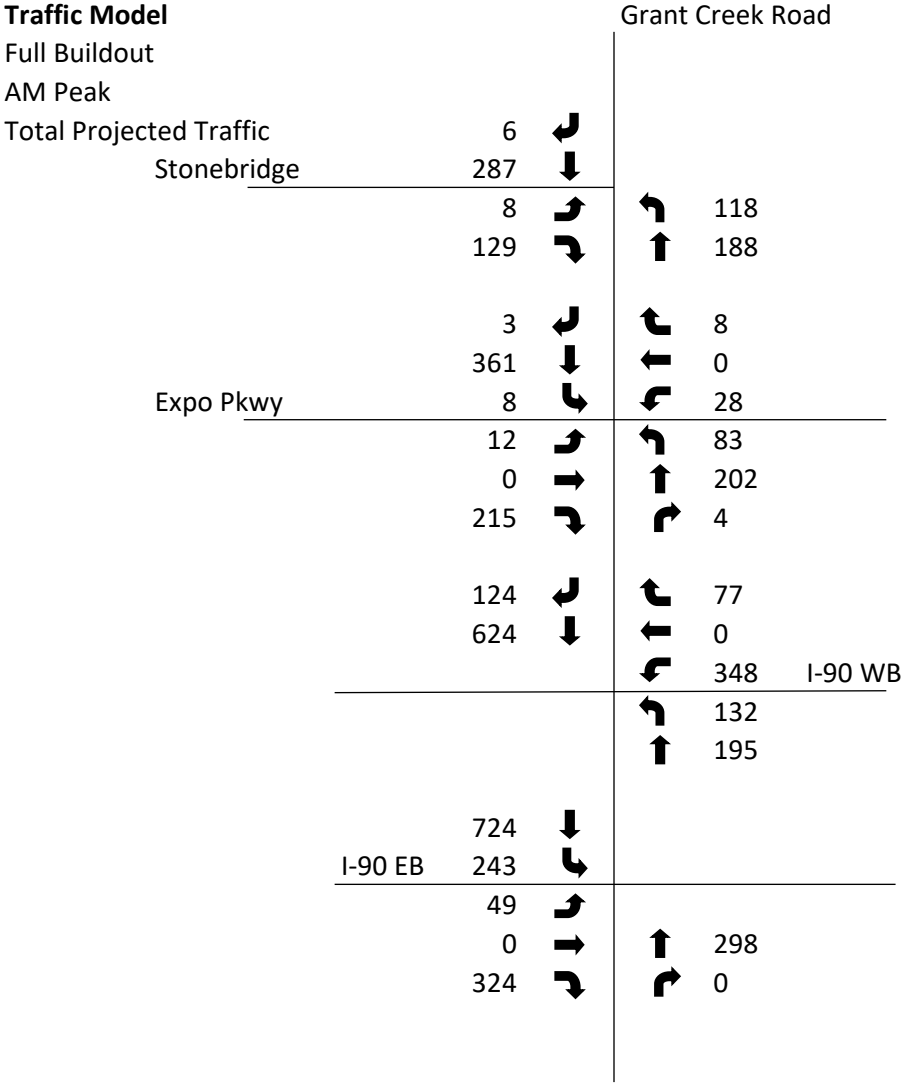
Grant Creek Village

Traffic Model

Full Buildout

AM Peak

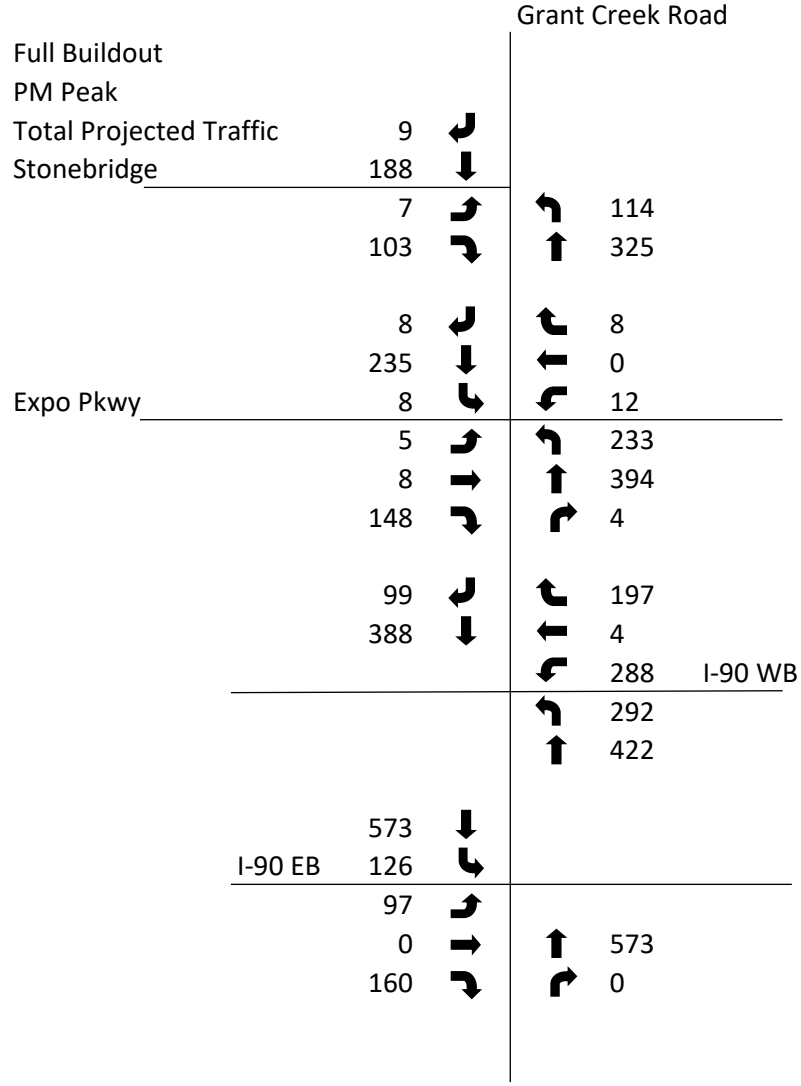
Total Projected Traffic



Full Buildout

PM Peak

Total Projected Traffic



APPENDIX C

LOS Calculations

Lanes, Volumes, Timings
2: Reserve Street & WB On Ramp/WB Off Ramp

07/27/2020

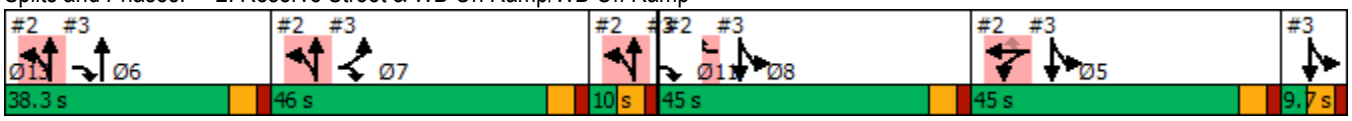
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	348	1	56	132	132	0	0	432	76
Future Volume (vph)	0	0	0	348	1	56	132	132	0	0	432	76
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-2%	
Storage Length (ft)	0		0	330		330	0		0	0		370
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950	0.953		0.950	0.987				
Satd. Flow (prot)	0	0	0	1564	1569	1473	1476	3067	0	0	3292	1473
Flt Permitted				0.950	0.953		0.950	0.987				
Satd. Flow (perm)	0	0	0	1564	1569	1473	1476	3067	0	0	3292	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						118						154
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		967			1298			399			506	
Travel Time (s)		22.0			29.5			6.0			7.7	
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
Adj. Flow (vph)	0	0	0	348	1	56	132	132	0	0	432	76
Shared Lane Traffic (%)				50%			35%					
Lane Group Flow (vph)	0	0	0	174	175	56	86	178	0	0	432	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1	1	1	1			1	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				50	50	50	50	50			50	50
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				50	50	50	50	50			50	50
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Turn Type				Split	NA	custom	Split	NA			NA	Perm
Protected Phases				5	5	8	6 7 11	6 7 11			8	
Permitted Phases						5						8
Detector Phase				5	5	8	6 7 11	6 7 11			8	8
Switch Phase												
Minimum Initial (s)				6.0	6.0	20.0					20.0	20.0
Minimum Split (s)				39.3	39.3	33.0					33.0	33.0

Lane Group	Ø6	Ø7	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	6	7	11	13
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	20.0	6.0	4.0	3.7
Minimum Split (s)	34.0	46.0	10.0	9.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)				45.0	45.0	45.0					45.0	45.0
Total Split (%)				23.2%	23.2%	23.2%					23.2%	23.2%
Maximum Green (s)				38.7	38.7	39.0					39.0	39.0
Yellow Time (s)				4.3	4.3	4.0					4.0	4.0
All-Red Time (s)				2.0	2.0	2.0					2.0	2.0
Lost Time Adjust (s)				0.0	0.0	0.0					0.0	0.0
Total Lost Time (s)				6.3	6.3	6.0					6.0	6.0
Lead/Lag				Lag	Lag	Lead					Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				4.0	4.0	4.5					4.5	4.5
Recall Mode				None	None	None					None	None
Walk Time (s)				7.0	7.0	7.0					7.0	7.0
Flash Dont Walk (s)				18.0	18.0	20.0					20.0	20.0
Pedestrian Calls (#/hr)				0	0	0					0	0
Act Effct Green (s)				25.9	25.9	64.5	46.3	46.3			32.2	32.2
Actuated g/C Ratio				0.19	0.19	0.49	0.35	0.35			0.24	0.24
v/c Ratio				0.57	0.57	0.07	0.17	0.17			0.54	0.16
Control Delay				57.1	57.1	0.2	1.1	0.5			47.5	0.7
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay				57.1	57.1	0.2	1.1	0.5			47.5	0.7
LOS				E	E	A	A	A			D	A
Approach Delay					49.2			0.7			40.5	
Approach LOS					D			A			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 194	
Actuated Cycle Length: 132.9	
Natural Cycle: 175	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 34.6	Intersection LOS: C
Intersection Capacity Utilization 48.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Reserve Street & WB On Ramp/WB Off Ramp



Lane Group	Ø6	Ø7	Ø11	Ø13
Total Split (s)	38.3	46.0	10.0	9.7
Total Split (%)	20%	24%	5%	5%
Maximum Green (s)	32.3	40.0	4.0	3.7
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?				
Vehicle Extension (s)	3.5	3.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	21.0	25.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

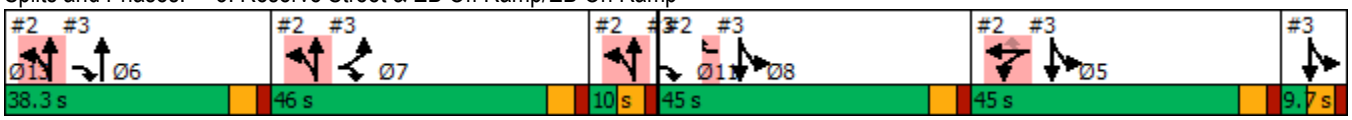
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	0	324	0	0	0	0	252	149	184	592	0
Future Volume (vph)	32	0	324	0	0	0	0	252	149	184	592	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-1%	
Storage Length (ft)	165		165	0		0	150		240	190		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	200			25			30			50		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			324						187			
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1164			1456			816			399	
Travel Time (s)		26.5			33.1			12.4			6.0	
Confl. Peds. (#/hr)												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
Adj. Flow (vph)	32	0	324	0	0	0	0	252	149	184	592	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	0	324	0	0	0	0	252	149	184	592	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1		1					1	1	1	1	
Detector Template	Left		Right					Thru	Right	Left	Thru	
Leading Detector (ft)	50		50					50	50	50	50	
Trailing Detector (ft)	0		0					0	0	0	0	
Detector 1 Position(ft)	0		0					0	0	0	0	
Detector 1 Size(ft)	50		50					50	50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Turn Type	Prot		custom					NA	Free	Split	NA	
Protected Phases	7		6 7 11					6		5 8 13	5 8 13	
Permitted Phases									Free			
Detector Phase	7		6 7 11					6		5 8 13	5 8 13	
Switch Phase												

Lane Group	Ø5	Ø8	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	5	8	11	13
Permitted Phases				
Detector Phase				
Switch Phase				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	6.0							20.0				
Minimum Split (s)	46.0							34.0				
Total Split (s)	46.0							38.3				
Total Split (%)	23.7%							19.7%				
Maximum Green (s)	40.0							32.3				
Yellow Time (s)	4.0							4.0				
All-Red Time (s)	2.0							2.0				
Lost Time Adjust (s)	0.0							0.0				
Total Lost Time (s)	6.0							6.0				
Lead/Lag	Lag							Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5							3.5				
Recall Mode	None							None				
Walk Time (s)	7.0							7.0				
Flash Dont Walk (s)	25.0							21.0				
Pedestrian Calls (#/hr)	0							0				
Act Effct Green (s)	9.5		46.3					20.5	132.9	74.1	74.1	
Actuated g/C Ratio	0.07		0.35					0.15	1.00	0.56	0.56	
v/c Ratio	0.27		0.29					0.35	0.10	0.20	0.32	
Control Delay	69.1		4.3					54.8	0.1	0.5	0.5	
Queue Delay	0.0		0.0					0.0	0.0	0.3	0.2	
Total Delay	69.1		4.3					54.8	0.1	0.8	0.6	
LOS	E		A					D	A	A	A	
Approach Delay		10.1						34.5			0.7	
Approach LOS		B						C			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 194	
Actuated Cycle Length: 132.9	
Natural Cycle: 175	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 11.7	Intersection LOS: B
Intersection Capacity Utilization 48.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Reserve Street & EB Off Ramp/EB On Ramp



Lane Group	Ø5	Ø8	Ø11	Ø13
Minimum Initial (s)	6.0	20.0	4.0	3.7
Minimum Split (s)	39.3	33.0	10.0	9.7
Total Split (s)	45.0	45.0	10.0	9.7
Total Split (%)	23%	23%	5%	5%
Maximum Green (s)	38.7	39.0	4.0	3.7
Yellow Time (s)	4.3	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?				
Vehicle Extension (s)	4.0	4.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	18.0	20.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	1	60	28	1	8	28	172	4	8	276	1
Future Vol, veh/h	4	1	60	28	1	8	28	172	4	8	276	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1	60	28	1	8	28	172	4	8	276	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	528	525	277	553	523	174	277	0	0	176	0	0
Stage 1	293	293	-	230	230	-	-	-	-	-	-	-
Stage 2	235	232	-	323	293	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	461	458	762	444	459	869	1286	-	-	1400	-	-
Stage 1	715	670	-	773	714	-	-	-	-	-	-	-
Stage 2	768	713	-	689	670	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	446	445	762	400	446	869	1286	-	-	1400	-	-
Mov Cap-2 Maneuver	446	445	-	400	446	-	-	-	-	-	-	-
Stage 1	699	665	-	756	698	-	-	-	-	-	-	-
Stage 2	743	697	-	629	665	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	13.6	1.1	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1286	-	-	723	454	1400	-	-
HCM Lane V/C Ratio	0.022	-	-	0.09	0.081	0.006	-	-
HCM Control Delay (s)	7.9	-	-	10.5	13.6	7.6	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	44	88	180	284	4
Future Vol, veh/h	4	44	88	180	284	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	44	88	180	284	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	642	286	288	0	-	0
Stage 1	286	-	-	-	-	-
Stage 2	356	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	438	753	1274	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	709	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	404	753	1274	-	-	-
Mov Cap-2 Maneuver	507	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	2.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1274	-	724	-	-
HCM Lane V/C Ratio	0.069	-	0.066	-	-
HCM Control Delay (s)	8	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Lanes, Volumes, Timings
2: Reserve Street & WB On Ramp/WB Off Ramp

07/27/2020

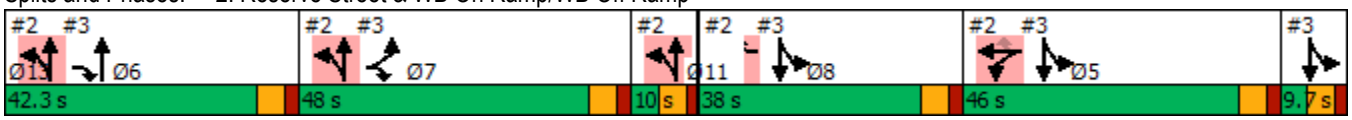
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	288	4	136	292	240	0	0	264	68
Future Volume (vph)	0	0	0	288	4	136	292	240	0	0	264	68
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-2%	
Storage Length (ft)	0		0	330		330	0		0	0		370
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950	0.954		0.950	0.984				
Satd. Flow (prot)	0	0	0	1564	1570	1473	1476	3057	0	0	3292	1473
Flt Permitted				0.950	0.954		0.950	0.984				
Satd. Flow (perm)	0	0	0	1564	1570	1473	1476	3057	0	0	3292	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						136						154
Link Speed (mph)		75			30			45			45	
Link Distance (ft)		967			1298			399			506	
Travel Time (s)		8.8			29.5			6.0			7.7	
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
Adj. Flow (vph)	0	0	0	288	4	136	292	240	0	0	264	68
Shared Lane Traffic (%)				49%			41%					
Lane Group Flow (vph)	0	0	0	147	145	136	172	360	0	0	264	68
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1	1	1	1			1	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				50	50	50	50	50			50	50
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				50	50	50	50	50			50	50
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Turn Type				Split	NA	custom	Split	NA			NA	Perm
Protected Phases				5	5	8	6 7 11	6 7 11			8	
Permitted Phases						5						8
Detector Phase				5	5	8	6 7 11	6 7 11			8	8
Switch Phase												
Minimum Initial (s)				6.0	6.0	20.0					20.0	20.0
Minimum Split (s)				39.3	39.3	33.0					33.0	33.0

Lane Group	Ø6	Ø7	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	6	7	11	13
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	20.0	6.0	4.0	3.7
Minimum Split (s)	34.0	46.0	10.0	9.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)				46.0	46.0	38.0					38.0	38.0
Total Split (%)				23.7%	23.7%	19.6%					19.6%	19.6%
Maximum Green (s)				39.7	39.7	32.0					32.0	32.0
Yellow Time (s)				4.3	4.3	4.0					4.0	4.0
All-Red Time (s)				2.0	2.0	2.0					2.0	2.0
Lost Time Adjust (s)				0.0	0.0	0.0					0.0	0.0
Total Lost Time (s)				6.3	6.3	6.0					6.0	6.0
Lead/Lag				Lag	Lag	Lead					Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				4.0	4.0	4.5					4.5	4.5
Recall Mode				None	None	None					None	None
Walk Time (s)				7.0	7.0	7.0					7.0	7.0
Flash Dont Walk (s)				18.0	18.0	20.0					20.0	20.0
Pedestrian Calls (#/hr)				0	0	0					0	0
Act Effct Green (s)				21.4	21.4	52.6	52.2	52.2			24.7	24.7
Actuated g/C Ratio				0.17	0.17	0.41	0.41	0.41			0.19	0.19
v/c Ratio				0.56	0.55	0.20	0.28	0.29			0.41	0.17
Control Delay				58.8	58.4	4.5	3.8	2.9			48.9	0.9
Queue Delay				0.0	0.0	0.0	0.2	0.1			0.0	0.0
Total Delay				58.8	58.4	4.5	3.9	3.0			48.9	0.9
LOS				E	E	A	A	A			D	A
Approach Delay					41.4			3.3			39.1	
Approach LOS					D			A			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 194	
Actuated Cycle Length: 127	
Natural Cycle: 175	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 25.1	Intersection LOS: C
Intersection Capacity Utilization 43.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Reserve Street & WB On Ramp/WB Off Ramp



Lane Group	Ø6	Ø7	Ø11	Ø13
Total Split (s)	42.3	48.0	10.0	9.7
Total Split (%)	22%	25%	5%	5%
Maximum Green (s)	36.3	42.0	4.0	3.7
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?				
Vehicle Extension (s)	3.5	3.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	21.0	25.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

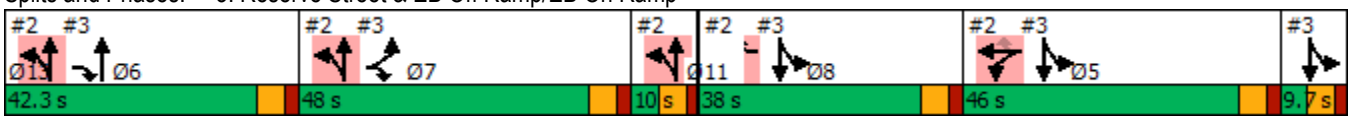
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	0	160	0	0	0	0	440	377	88	488	0
Future Volume (vph)	48	0	160	0	0	0	0	440	377	88	488	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-1%	
Storage Length (ft)	165		165	0		0	150		240	190		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	200			25			30			50		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Ped Bike Factor										1.00		
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1646	0	2592	0	0	0	0	4660	1451	1636	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160						377			
Link Speed (mph)		30			75			45			45	
Link Distance (ft)		1164			1456			816			399	
Travel Time (s)		26.5			13.2			12.4			6.0	
Confl. Peds. (#/hr)										1		
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
Adj. Flow (vph)	48	0	160	0	0	0	0	440	377	88	488	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	0	160	0	0	0	0	440	377	88	488	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1		1					1	1	1	1	
Detector Template	Left		Right					Thru	Right	Left	Thru	
Leading Detector (ft)	50		50					50	50	50	50	
Trailing Detector (ft)	0		0					0	0	0	0	
Detector 1 Position(ft)	0		0					0	0	0	0	
Detector 1 Size(ft)	50		50					50	50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Turn Type	Prot		custom					NA	Free	Split	NA	
Protected Phases	7		6 7					6		5 8 13	5 8 13	
Permitted Phases									Free			
Detector Phase	7		6 7					6		5 8 13	5 8 13	
Switch Phase												

Lane Group	Ø5	Ø8	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	5	8	11	13
Permitted Phases				
Detector Phase				
Switch Phase				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	6.0							20.0				
Minimum Split (s)	46.0							34.0				
Total Split (s)	48.0							42.3				
Total Split (%)	24.7%							21.8%				
Maximum Green (s)	42.0							36.3				
Yellow Time (s)	4.0							4.0				
All-Red Time (s)	2.0							2.0				
Lost Time Adjust (s)	0.0							0.0				
Total Lost Time (s)	6.0							6.0				
Lead/Lag	Lag							Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5							3.5				
Recall Mode	None							None				
Walk Time (s)	7.0							7.0				
Flash Dont Walk (s)	25.0							21.0				
Pedestrian Calls (#/hr)	0							0				
Act Effct Green (s)	11.5		41.9					24.3	127.0	62.2	62.2	
Actuated g/C Ratio	0.09		0.33					0.19	1.00	0.49	0.49	
v/c Ratio	0.32		0.17					0.49	0.26	0.11	0.30	
Control Delay	64.8		5.2					49.5	0.4	1.0	1.2	
Queue Delay	0.0		0.0					0.0	0.0	0.0	0.1	
Total Delay	64.8		5.2					49.5	0.4	1.0	1.3	
LOS	E		A					D	A	A	A	
Approach Delay		18.9						26.9			1.3	
Approach LOS		B						C			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 194	
Actuated Cycle Length: 127	
Natural Cycle: 175	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 43.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Reserve Street & EB Off Ramp/EB On Ramp



Lane Group	Ø5	Ø8	Ø11	Ø13
Minimum Initial (s)	6.0	20.0	4.0	3.7
Minimum Split (s)	39.3	33.0	10.0	9.7
Total Split (s)	46.0	38.0	10.0	9.7
Total Split (%)	24%	20%	5%	5%
Maximum Green (s)	39.7	32.0	4.0	3.7
Yellow Time (s)	4.3	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?				
Vehicle Extension (s)	4.0	4.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	18.0	20.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	8	48	12	1	8	76	308	4	8	180	1
Future Vol, veh/h	1	8	48	12	1	8	76	308	4	8	180	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	8	48	12	1	8	76	308	4	8	180	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	664	661	181	687	659	310	181	0	0	312	0	0
Stage 1	197	197	-	462	462	-	-	-	-	-	-	-
Stage 2	467	464	-	225	197	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	374	383	862	361	384	730	1394	-	-	1248	-	-
Stage 1	805	738	-	580	565	-	-	-	-	-	-	-
Stage 2	576	564	-	778	738	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	352	359	862	319	360	730	1394	-	-	1248	-	-
Mov Cap-2 Maneuver	352	359	-	319	360	-	-	-	-	-	-	-
Stage 1	761	733	-	548	534	-	-	-	-	-	-	-
Stage 2	538	533	-	722	733	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	14.3	1.5	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1394	-	-	705	409	1248	-	-
HCM Lane V/C Ratio	0.055	-	-	0.081	0.051	0.006	-	-
HCM Control Delay (s)	7.7	-	-	10.6	14.3	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	0.2	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	48	28	320	180	4
Future Vol, veh/h	4	48	28	320	180	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	48	28	320	180	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	558	182	184	0	-	0
Stage 1	182	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	491	861	1391	-	-	-
Stage 1	849	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	479	861	1391	-	-	-
Mov Cap-2 Maneuver	559	-	-	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	694	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1391	-	827	-	-
HCM Lane V/C Ratio	0.02	-	0.063	-	-
HCM Control Delay (s)	7.6	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Lanes, Volumes, Timings
2: Reserve Street & WB On Ramp/WB Off Ramp

07/29/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	348	1	59	132	141	0	0	460	83
Future Volume (vph)	0	0	0	348	1	59	132	141	0	0	460	83
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-2%	
Storage Length (ft)	0		0	330		330	0		0	0		370
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950	0.953		0.950	0.988				
Satd. Flow (prot)	0	0	0	1564	1569	1473	1476	3070	0	0	3292	1473
Flt Permitted				0.950	0.953		0.950	0.988				
Satd. Flow (perm)	0	0	0	1564	1569	1473	1476	3070	0	0	3292	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						118						154
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		967			1298			399			506	
Travel Time (s)		22.0			29.5			6.0			7.7	
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
Adj. Flow (vph)	0	0	0	348	1	59	132	141	0	0	460	83
Shared Lane Traffic (%)				50%			33%					
Lane Group Flow (vph)	0	0	0	174	175	59	88	185	0	0	460	83
Number of Detectors				1	1	1	1	1			1	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				50	50	50	50	50			50	50
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				50	50	50	50	50			50	50
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Turn Type				Split	NA	custom	Split	NA			NA	Perm
Protected Phases				5	5	8	6 7 11	6 7 11			8	
Permitted Phases						5						8
Detector Phase				5	5	8	6 7 11	6 7 11			8	8
Switch Phase												
Minimum Initial (s)				6.0	6.0	20.0					20.0	20.0
Minimum Split (s)				39.3	39.3	33.0					33.0	33.0
Total Split (s)				44.0	44.0	46.0					46.0	46.0
Total Split (%)				22.7%	22.7%	23.7%					23.7%	23.7%
Yellow Time (s)				4.3	4.3	4.0					4.0	4.0
All-Red Time (s)				2.0	2.0	2.0					2.0	2.0
Lost Time Adjust (s)				0.0	0.0	0.0					0.0	0.0
Total Lost Time (s)				6.3	6.3	6.0					6.0	6.0
Lead/Lag				Lag	Lag	Lead					Lead	Lead
Lead-Lag Optimize?												

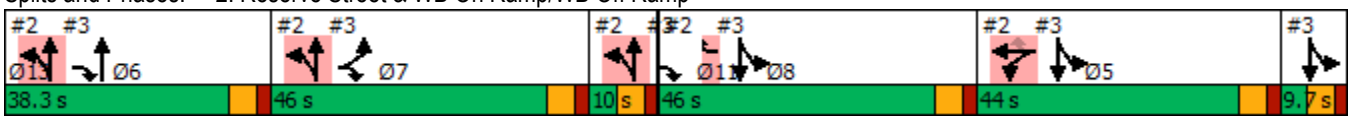
Lane Group	Ø6	Ø7	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	6	7	11	13
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	20.0	6.0	4.0	3.7
Minimum Split (s)	34.0	46.0	10.0	9.7
Total Split (s)	38.3	46.0	10.0	9.7
Total Split (%)	20%	24%	5%	5%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode				None	None	None					None	None
Act Effct Green (s)				26.3	26.3	67.0	47.0	47.0			34.2	34.2
Actuated g/C Ratio				0.19	0.19	0.49	0.35	0.35			0.25	0.25
v/c Ratio				0.58	0.58	0.08	0.17	0.17			0.56	0.17
Control Delay				58.6	58.7	0.2	1.1	0.6			48.1	0.8
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay				58.6	58.7	0.2	1.1	0.6			48.1	0.8
LOS				E	E	A	A	A			D	A
Approach Delay					50.2			0.8			40.8	
Approach LOS					D			A			D	

Intersection Summary

Area Type: Other
Cycle Length: 194
Actuated Cycle Length: 136
Natural Cycle: 175
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 35.0 Intersection LOS: D
Intersection Capacity Utilization 48.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Reserve Street & WB On Ramp/WB Off Ramp



Lane Group	Ø6	Ø7	Ø11	Ø13
Recall Mode	None	None	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

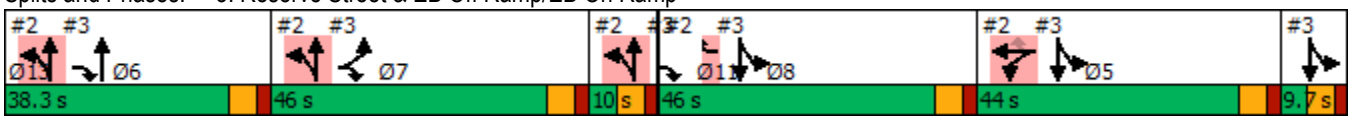
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	0	324	0	0	0	0	259	149	193	611	0
Future Volume (vph)	35	0	324	0	0	0	0	259	149	193	611	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-1%	
Storage Length (ft)	165		165	0		0	150		240	190		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	200			25			30			50		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			324						187			
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1164			1456			816			399	
Travel Time (s)		26.5			33.1			12.4			6.0	
Confl. Peds. (#/hr)												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
Adj. Flow (vph)	35	0	324	0	0	0	0	259	149	193	611	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	0	324	0	0	0	0	259	149	193	611	0
Number of Detectors	1		1					1	1	1	1	
Detector Template	Left		Right					Thru	Right	Left	Thru	
Leading Detector (ft)	50		50					50	50	50	50	
Trailing Detector (ft)	0		0					0	0	0	0	
Detector 1 Position(ft)	0		0					0	0	0	0	
Detector 1 Size(ft)	50		50					50	50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Turn Type	Prot		custom					NA	Free	Split	NA	
Protected Phases	7		6 7 11					6		5 8 13	5 8 13	
Permitted Phases									Free			
Detector Phase	7		6 7 11					6		5 8 13	5 8 13	
Switch Phase												
Minimum Initial (s)	6.0							20.0				
Minimum Split (s)	46.0							34.0				
Total Split (s)	46.0							38.3				
Total Split (%)	23.7%							19.7%				
Yellow Time (s)	4.0							4.0				
All-Red Time (s)	2.0							2.0				
Lost Time Adjust (s)	0.0							0.0				
Total Lost Time (s)	6.0							6.0				

Lane Group	Ø5	Ø8	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	5	8	11	13
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	6.0	20.0	4.0	3.7
Minimum Split (s)	39.3	33.0	10.0	9.7
Total Split (s)	44.0	46.0	10.0	9.7
Total Split (%)	23%	24%	5%	5%
Yellow Time (s)	4.3	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lag							Lead				
Lead-Lag Optimize?												
Recall Mode	None							None				
Act Effct Green (s)	10.0		47.0					20.7	136.0	76.5	76.5	
Actuated g/C Ratio	0.07		0.35					0.15	1.00	0.56	0.56	
v/c Ratio	0.29		0.29					0.36	0.10	0.21	0.33	
Control Delay	70.5		4.2					56.2	0.1	0.5	0.5	
Queue Delay	0.0		0.0					0.0	0.0	0.4	0.2	
Total Delay	70.5		4.2					56.2	0.1	0.8	0.6	
LOS	E		A					E	A	A	A	
Approach Delay		10.7						35.7			0.7	
Approach LOS		B						D			A	

Intersection Summary	
Area Type:	Other
Cycle Length: 194	
Actuated Cycle Length: 136	
Natural Cycle: 175	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 12.1	Intersection LOS: B
Intersection Capacity Utilization 48.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Reserve Street & EB Off Ramp/EB On Ramp



Lane Group	Ø5	Ø8	Ø11	Ø13
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?				
Recall Mode	None	None	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	88	28	1	8	38	174	4	8	283	1
Future Vol, veh/h	5	1	88	28	1	8	38	174	4	8	283	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1	88	28	1	8	38	174	4	8	283	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	557	554	284	596	552	176	284	0	0	178	0	0
Stage 1	300	300	-	252	252	-	-	-	-	-	-	-
Stage 2	257	254	-	344	300	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	441	440	755	415	442	867	1278	-	-	1398	-	-
Stage 1	709	666	-	752	698	-	-	-	-	-	-	-
Stage 2	748	697	-	671	666	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	424	424	755	356	426	867	1278	-	-	1398	-	-
Mov Cap-2 Maneuver	424	424	-	356	426	-	-	-	-	-	-	-
Stage 1	688	661	-	729	677	-	-	-	-	-	-	-
Stage 2	718	676	-	588	661	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	14.7	1.4	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	719	410	1398	-	-
HCM Lane V/C Ratio	0.03	-	-	0.131	0.09	0.006	-	-
HCM Control Delay (s)	7.9	-	-	10.8	14.7	7.6	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	51	90	181	285	4
Future Vol, veh/h	4	51	90	181	285	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	51	90	181	285	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	648	287	289	0	-	0
Stage 1	287	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	435	752	1273	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	401	752	1273	-	-	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	705	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	2.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1273	-	726	-	-
HCM Lane V/C Ratio	0.071	-	0.076	-	-
HCM Control Delay (s)	8	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Lanes, Volumes, Timings
2: Reserve Street & WB On Ramp/WB Off Ramp

07/29/2020

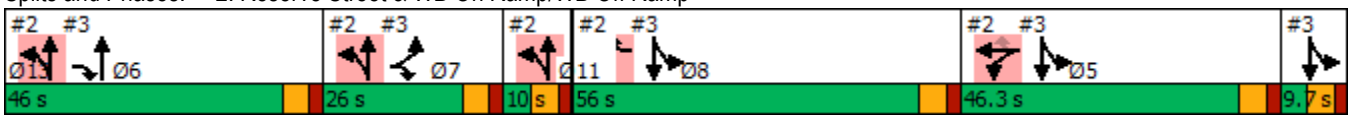
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	288	4	145	292	267	0	0	282	73
Future Volume (vph)	0	0	0	288	4	145	292	267	0	0	282	73
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-2%	
Storage Length (ft)	0		0	330		330	0		0	0		370
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950	0.954		0.950	0.986				
Satd. Flow (prot)	0	0	0	1564	1570	1473	1476	3063	0	0	3292	1473
Flt Permitted				0.950	0.954		0.950	0.986				
Satd. Flow (perm)	0	0	0	1564	1570	1473	1476	3063	0	0	3292	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						145						154
Link Speed (mph)		75			30			45			45	
Link Distance (ft)		967			1298			399			506	
Travel Time (s)		8.8			29.5			6.0			7.7	
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
Adj. Flow (vph)	0	0	0	288	4	145	292	267	0	0	282	73
Shared Lane Traffic (%)				49%			38%					
Lane Group Flow (vph)	0	0	0	147	145	145	181	378	0	0	282	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA	custom	Split	NA			NA	Perm
Protected Phases				5	5	8	6 7 11	6 7 11			8	
Permitted Phases						5						8
Minimum Initial (s)				6.0	6.0	20.0					20.0	20.0
Minimum Split (s)				39.3	39.3	33.0					33.0	33.0
Total Split (s)				46.3	46.3	56.0					56.0	56.0
Total Split (%)				23.9%	23.9%	28.9%					28.9%	28.9%
Maximum Green (s)				40.0	40.0	50.0					50.0	50.0
Yellow Time (s)				4.3	4.3	4.0					4.0	4.0
All-Red Time (s)				2.0	2.0	2.0					2.0	2.0
Total Lost Time (s)				6.3	6.3	6.0					6.0	6.0
Lead/Lag				Lag	Lag	Lead					Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				4.0	4.0	4.5					4.5	4.5
Recall Mode				None	None	None					None	None
Walk Time (s)				7.0	7.0	7.0					7.0	7.0
Flash Dont Walk (s)				18.0	18.0	20.0					20.0	20.0
Pedestrian Calls (#/hr)				0	0	0					0	0

Lane Group	Ø6	Ø7	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	6	7	11	13
Permitted Phases				
Minimum Initial (s)	20.0	6.0	4.0	3.7
Minimum Split (s)	34.0	46.0	10.0	9.7
Total Split (s)	46.0	26.0	10.0	9.7
Total Split (%)	24%	13%	5%	5%
Maximum Green (s)	40.0	20.0	4.0	3.7
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Total Lost Time (s)				
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?				
Vehicle Extension (s)	3.5	3.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	21.0	25.0		
Pedestrian Calls (#/hr)	0	0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)				22.0	22.0	55.2	54.2	54.2			26.8	26.8
Actuated g/C Ratio				0.17	0.17	0.42	0.41	0.41			0.20	0.20
v/c Ratio				0.57	0.56	0.21	0.30	0.30			0.42	0.17
Control Delay				62.1	61.6	4.3	3.9	3.0			49.8	0.9
Queue Delay				0.0	0.0	0.0	0.8	0.4			0.0	0.0
Total Delay				62.1	61.6	4.3	4.7	3.4			49.8	0.9
LOS				E	E	A	A	A			D	A
Approach Delay					42.8			3.8			39.8	
Approach LOS					D			A			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 194	
Actuated Cycle Length: 132	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 25.9	Intersection LOS: C
Intersection Capacity Utilization 43.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Reserve Street & WB On Ramp/WB Off Ramp



Lane Group	Ø6	Ø7	Ø11	Ø13
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

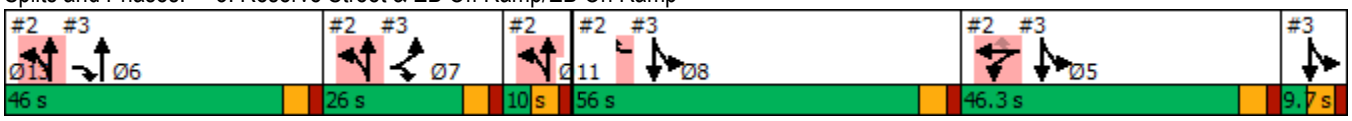
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	0	160	0	0	0	0	460	377	94	501	0
Future Volume (vph)	55	0	160	0	0	0	0	460	377	94	501	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-1%	
Storage Length (ft)	165		165	0		0	150		240	190		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	200			25			30			50		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Ped Bike Factor										1.00		
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1646	0	2592	0	0	0	0	4660	1451	1636	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160						377			
Link Speed (mph)		30			75			45			45	
Link Distance (ft)		1164			1456			816			399	
Travel Time (s)		26.5			13.2			12.4			6.0	
Confl. Peds. (#/hr)										1		
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
Adj. Flow (vph)	55	0	160	0	0	0	0	460	377	94	501	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	0	160	0	0	0	0	460	377	94	501	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		custom					NA	Free	Split	NA	
Protected Phases	7		6 7					6		5 8 13	5 8 13	
Permitted Phases									Free			
Minimum Initial (s)	6.0							20.0				
Minimum Split (s)	46.0							34.0				
Total Split (s)	26.0							46.0				
Total Split (%)	13.4%							23.7%				
Maximum Green (s)	20.0							40.0				
Yellow Time (s)	4.0							4.0				
All-Red Time (s)	2.0							2.0				
Total Lost Time (s)	6.0							6.0				
Lead/Lag	Lag							Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5							3.5				
Recall Mode	None							None				
Walk Time (s)	7.0							7.0				

Lane Group	Ø5	Ø8	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	5	8	11	13
Permitted Phases				
Minimum Initial (s)	6.0	20.0	4.0	3.7
Minimum Split (s)	39.3	33.0	10.0	9.7
Total Split (s)	46.3	56.0	10.0	9.7
Total Split (%)	24%	29%	5%	5%
Maximum Green (s)	40.0	50.0	4.0	3.7
Yellow Time (s)	4.3	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Total Lost Time (s)				
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?				
Vehicle Extension (s)	4.0	4.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Dont Walk (s)	25.0							21.0				
Pedestrian Calls (#/hr)	0							0				
Act Effct Green (s)	12.3		43.9					25.4	132.0	65.0	65.0	
Actuated g/C Ratio	0.09		0.33					0.19	1.00	0.49	0.49	
v/c Ratio	0.36		0.17					0.51	0.26	0.12	0.31	
Control Delay	68.9		5.3					51.9	0.4	1.0	1.3	
Queue Delay	0.0		0.0					0.0	0.0	0.0	0.1	
Total Delay	68.9		5.3					51.9	0.4	1.0	1.4	
LOS	E		A					D	A	A	A	
Approach Delay		21.6						28.7			1.3	
Approach LOS		C						C			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 194	
Actuated Cycle Length: 132	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 17.9	Intersection LOS: B
Intersection Capacity Utilization 43.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Reserve Street & EB Off Ramp/EB On Ramp



Lane Group	Ø5	Ø8	Ø11	Ø13
Flash Dont Walk (s)	18.0	20.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	8	66	12	1	8	105	315	4	8	185	2
Future Vol, veh/h	1	8	66	12	1	8	105	315	4	8	185	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	8	66	12	1	8	105	315	4	8	185	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	734	731	186	766	730	317	187	0	0	319	0	0
Stage 1	202	202	-	527	527	-	-	-	-	-	-	-
Stage 2	532	529	-	239	203	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	336	349	856	320	349	724	1387	-	-	1241	-	-
Stage 1	800	734	-	535	528	-	-	-	-	-	-	-
Stage 2	531	527	-	764	733	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	311	320	856	272	320	724	1387	-	-	1241	-	-
Mov Cap-2 Maneuver	311	320	-	272	320	-	-	-	-	-	-	-
Stage 1	739	729	-	494	488	-	-	-	-	-	-	-
Stage 2	484	487	-	692	728	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	15.6	1.9	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1387	-	-	712	360	1241	-	-
HCM Lane V/C Ratio	0.076	-	-	0.105	0.058	0.006	-	-
HCM Control Delay (s)	7.8	-	-	10.7	15.6	7.9	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.2	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	53	35	321	182	4
Future Vol, veh/h	4	53	35	321	182	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	53	35	321	182	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	575	184	186	0	-	0
Stage 1	184	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	480	858	1388	-	-	-
Stage 1	848	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	465	858	1388	-	-	-
Mov Cap-2 Maneuver	548	-	-	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	683	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1388	-	825	-	-
HCM Lane V/C Ratio	0.025	-	0.069	-	-
HCM Control Delay (s)	7.7	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Lanes, Volumes, Timings
2: Reserve Street & WB On Ramp/WB Off Ramp

07/29/2020

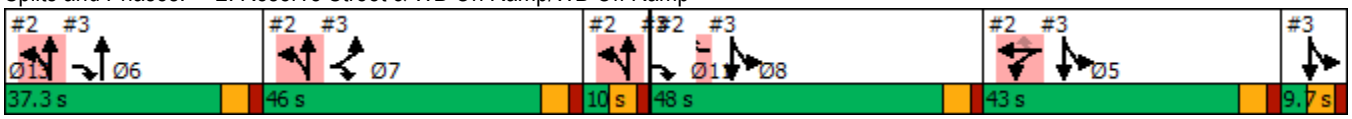
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	348	1	63	132	152	0	0	491	91
Future Volume (vph)	0	0	0	348	1	63	132	152	0	0	491	91
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-2%	
Storage Length (ft)	0		0	330		330	0		0	0		370
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950	0.953		0.950	0.990				
Satd. Flow (prot)	0	0	0	1564	1569	1473	1476	3076	0	0	3292	1473
Flt Permitted				0.950	0.953		0.950	0.990				
Satd. Flow (perm)	0	0	0	1564	1569	1473	1476	3076	0	0	3292	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						118						154
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		967			1298			399			506	
Travel Time (s)		22.0			29.5			6.0			7.7	
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
Adj. Flow (vph)	0	0	0	348	1	63	132	152	0	0	491	91
Shared Lane Traffic (%)				50%			30%					
Lane Group Flow (vph)	0	0	0	174	175	63	92	192	0	0	491	91
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA	custom	Split	NA			NA	Perm
Protected Phases				5	5	8	6 7 11	6 7 11			8	
Permitted Phases						5						8
Minimum Initial (s)				6.0	6.0	20.0					20.0	20.0
Minimum Split (s)				39.3	39.3	33.0					33.0	33.0
Total Split (s)				43.0	43.0	48.0					48.0	48.0
Total Split (%)				22.2%	22.2%	24.7%					24.7%	24.7%
Maximum Green (s)				36.7	36.7	42.0					42.0	42.0
Yellow Time (s)				4.3	4.3	4.0					4.0	4.0
All-Red Time (s)				2.0	2.0	2.0					2.0	2.0
Total Lost Time (s)				6.3	6.3	6.0					6.0	6.0
Lead/Lag				Lag	Lag	Lead					Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				4.0	4.0	4.5					4.5	4.5
Recall Mode				None	None	None					None	None
Walk Time (s)				7.0	7.0	7.0					7.0	7.0
Flash Dont Walk (s)				18.0	18.0	20.0					20.0	20.0
Pedestrian Calls (#/hr)				0	0	0					0	0

Lane Group	Ø6	Ø7	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	6	7	11	13
Permitted Phases				
Minimum Initial (s)	20.0	6.0	4.0	3.7
Minimum Split (s)	34.0	46.0	10.0	9.7
Total Split (s)	37.3	46.0	10.0	9.7
Total Split (%)	19%	24%	5%	5%
Maximum Green (s)	31.3	40.0	4.0	3.7
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Total Lost Time (s)				
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?				
Vehicle Extension (s)	3.5	3.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	21.0	25.0		
Pedestrian Calls (#/hr)	0	0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)				26.7	26.7	69.9	47.4	47.4			36.8	36.8
Actuated g/C Ratio				0.19	0.19	0.50	0.34	0.34			0.26	0.26
v/c Ratio				0.58	0.58	0.08	0.18	0.18			0.57	0.18
Control Delay				60.6	60.6	0.2	1.2	0.7			48.1	0.8
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay				60.6	60.6	0.2	1.2	0.7			48.1	0.8
LOS				E	E	A	A	A			D	A
Approach Delay					51.4			0.8			40.7	
Approach LOS					D			A			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 194	
Actuated Cycle Length: 139.3	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 35.3	Intersection LOS: D
Intersection Capacity Utilization 49.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Reserve Street & WB On Ramp/WB Off Ramp



Lane Group	Ø6	Ø7	Ø11	Ø13
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

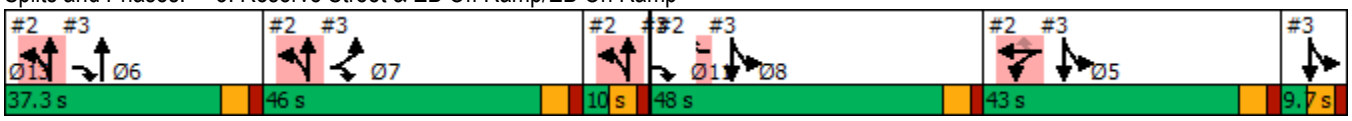
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	0	324	0	0	0	0	267	149	202	633	0
Future Volume (vph)	37	0	324	0	0	0	0	267	149	202	633	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-1%	
Storage Length (ft)	165		165	0		0	150		240	190		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	200			25			30			50		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			324						187			
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1164			1456			816			399	
Travel Time (s)		26.5			33.1			12.4			6.0	
Confl. Peds. (#/hr)												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
Adj. Flow (vph)	37	0	324	0	0	0	0	267	149	202	633	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	0	324	0	0	0	0	267	149	202	633	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		custom					NA	Free	Split	NA	
Protected Phases	7		6 7 11					6		5 8 13	5 8 13	
Permitted Phases									Free			
Minimum Initial (s)	6.0							20.0				
Minimum Split (s)	46.0							34.0				
Total Split (s)	46.0							37.3				
Total Split (%)	23.7%							19.2%				
Maximum Green (s)	40.0							31.3				
Yellow Time (s)	4.0							4.0				
All-Red Time (s)	2.0							2.0				
Total Lost Time (s)	6.0							6.0				
Lead/Lag	Lag							Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5							3.5				
Recall Mode	None							None				
Walk Time (s)	7.0							7.0				

Lane Group	Ø5	Ø8	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	5	8	11	13
Permitted Phases				
Minimum Initial (s)	6.0	20.0	4.0	3.7
Minimum Split (s)	39.3	33.0	10.0	9.7
Total Split (s)	43.0	48.0	10.0	9.7
Total Split (%)	22%	25%	5%	5%
Maximum Green (s)	36.7	42.0	4.0	3.7
Yellow Time (s)	4.3	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Total Lost Time (s)				
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?				
Vehicle Extension (s)	4.0	4.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Dont Walk (s)	25.0							21.0				
Pedestrian Calls (#/hr)	0							0				
Act Effct Green (s)	10.3		47.4					20.8	139.3	79.4	79.4	
Actuated g/C Ratio	0.07		0.34					0.15	1.00	0.57	0.57	
v/c Ratio	0.31		0.30					0.38	0.10	0.22	0.34	
Control Delay	71.8		4.2					57.9	0.1	0.5	0.5	
Queue Delay	0.0		0.0					0.0	0.0	0.4	0.2	
Total Delay	71.8		4.2					57.9	0.1	0.9	0.7	
LOS	E		A					E	A	A	A	
Approach Delay		11.2						37.2			0.7	
Approach LOS		B						D			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 194	
Actuated Cycle Length: 139.3	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 12.5	Intersection LOS: B
Intersection Capacity Utilization 49.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Reserve Street & EB Off Ramp/EB On Ramp



Lane Group	Ø5	Ø8	Ø11	Ø13
Flash Dont Walk (s)	18.0	20.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	1	115	28	1	8	48	179	4	8	295	1
Future Vol, veh/h	7	1	115	28	1	8	48	179	4	8	295	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	115	28	1	8	48	179	4	8	295	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	594	591	296	647	589	181	296	0	0	183	0	0
Stage 1	312	312	-	277	277	-	-	-	-	-	-	-
Stage 2	282	279	-	370	312	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	417	420	743	384	421	862	1265	-	-	1392	-	-
Stage 1	699	658	-	729	681	-	-	-	-	-	-	-
Stage 2	725	680	-	650	658	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	398	401	743	313	402	862	1265	-	-	1392	-	-
Mov Cap-2 Maneuver	398	401	-	313	402	-	-	-	-	-	-	-
Stage 1	672	653	-	701	655	-	-	-	-	-	-	-
Stage 2	690	654	-	545	653	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	15.9	1.7	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1265	-	-	703	366	1392	-	-
HCM Lane V/C Ratio	0.038	-	-	0.175	0.101	0.006	-	-
HCM Control Delay (s)	8	-	-	11.2	15.9	7.6	0	-
HCM Lane LOS	A	-	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	63	95	183	285	4
Future Vol, veh/h	5	63	95	183	285	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	63	95	183	285	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	660	287	289	0	-	0
Stage 1	287	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	428	752	1273	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	392	752	1273	-	-	-
Mov Cap-2 Maneuver	497	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	2.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1273	-	725	-	-
HCM Lane V/C Ratio	0.075	-	0.094	-	-
HCM Control Delay (s)	8.1	0	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

Lanes, Volumes, Timings
2: Reserve Street & WB On Ramp/WB Off Ramp

07/29/2020

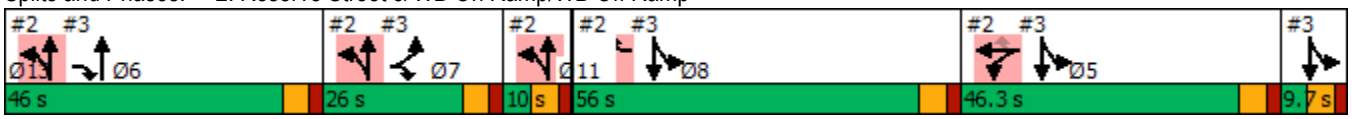
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	288	4	155	292	297	0	0	303	78
Future Volume (vph)	0	0	0	288	4	155	292	297	0	0	303	78
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-2%	
Storage Length (ft)	0		0	330		330	0		0	0		370
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950	0.954		0.950	0.988				
Satd. Flow (prot)	0	0	0	1564	1570	1473	1476	3070	0	0	3292	1473
Flt Permitted				0.950	0.954		0.950	0.988				
Satd. Flow (perm)	0	0	0	1564	1570	1473	1476	3070	0	0	3292	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						155						154
Link Speed (mph)		75			30			45			45	
Link Distance (ft)		967			1298			399			506	
Travel Time (s)		8.8			29.5			6.0			7.7	
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
Adj. Flow (vph)	0	0	0	288	4	155	292	297	0	0	303	78
Shared Lane Traffic (%)				49%			34%					
Lane Group Flow (vph)	0	0	0	147	145	155	193	396	0	0	303	78
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA	custom	Split	NA			NA	Perm
Protected Phases				5	5	8	6 7 11	6 7 11			8	
Permitted Phases						5						8
Minimum Initial (s)				6.0	6.0	20.0					20.0	20.0
Minimum Split (s)				39.3	39.3	33.0					33.0	33.0
Total Split (s)				46.3	46.3	56.0					56.0	56.0
Total Split (%)				23.9%	23.9%	28.9%					28.9%	28.9%
Maximum Green (s)				40.0	40.0	50.0					50.0	50.0
Yellow Time (s)				4.3	4.3	4.0					4.0	4.0
All-Red Time (s)				2.0	2.0	2.0					2.0	2.0
Total Lost Time (s)				6.3	6.3	6.0					6.0	6.0
Lead/Lag				Lag	Lag	Lead					Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				4.0	4.0	4.5					4.5	4.5
Recall Mode				None	None	None					None	None
Walk Time (s)				7.0	7.0	7.0					7.0	7.0
Flash Dont Walk (s)				18.0	18.0	20.0					20.0	20.0
Pedestrian Calls (#/hr)				0	0	0					0	0

Lane Group	Ø6	Ø7	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	6	7	11	13
Permitted Phases				
Minimum Initial (s)	20.0	6.0	4.0	3.7
Minimum Split (s)	34.0	46.0	10.0	9.7
Total Split (s)	46.0	26.0	10.0	9.7
Total Split (%)	24%	13%	5%	5%
Maximum Green (s)	40.0	20.0	4.0	3.7
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Total Lost Time (s)				
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?				
Vehicle Extension (s)	3.5	3.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	21.0	25.0		
Pedestrian Calls (#/hr)	0	0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)				22.5	22.5	57.3	56.3	56.3			28.3	28.3
Actuated g/C Ratio				0.17	0.17	0.42	0.41	0.41			0.21	0.21
v/c Ratio				0.57	0.56	0.22	0.32	0.31			0.44	0.18
Control Delay				64.4	63.9	4.3	3.8	2.7			51.2	0.9
Queue Delay				0.0	0.0	0.0	0.8	0.4			0.0	0.0
Total Delay				64.4	63.9	4.3	4.7	3.1			51.2	0.9
LOS				E	E	A	A	A			D	A
Approach Delay					43.4			3.6			40.9	
Approach LOS					D			A			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 194	
Actuated Cycle Length: 136.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 26.2	Intersection LOS: C
Intersection Capacity Utilization 43.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Reserve Street & WB On Ramp/WB Off Ramp



Lane Group	Ø6	Ø7	Ø11	Ø13
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

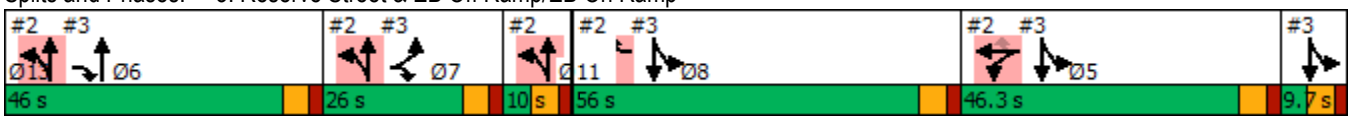
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	0	160	0	0	0	0	482	377	100	515	0
Future Volume (vph)	63	0	160	0	0	0	0	482	377	100	515	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-1%	
Storage Length (ft)	165		165	0		0	150		240	190		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	200			25			30			50		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Ped Bike Factor										1.00		
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1646	0	2592	0	0	0	0	4660	1451	1636	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160						377			
Link Speed (mph)		30			75			45			45	
Link Distance (ft)		1164			1456			816			399	
Travel Time (s)		26.5			13.2			12.4			6.0	
Confl. Peds. (#/hr)										1		
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
Adj. Flow (vph)	63	0	160	0	0	0	0	482	377	100	515	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	0	160	0	0	0	0	482	377	100	515	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		custom					NA	Free	Split	NA	
Protected Phases	7		6 7					6		5 8 13	5 8 13	
Permitted Phases									Free			
Minimum Initial (s)	6.0							20.0				
Minimum Split (s)	46.0							34.0				
Total Split (s)	26.0							46.0				
Total Split (%)	13.4%							23.7%				
Maximum Green (s)	20.0							40.0				
Yellow Time (s)	4.0							4.0				
All-Red Time (s)	2.0							2.0				
Total Lost Time (s)	6.0							6.0				
Lead/Lag	Lag							Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5							3.5				
Recall Mode	None							None				
Walk Time (s)	7.0							7.0				

Lane Group	Ø5	Ø8	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Turn Type				
Protected Phases	5	8	11	13
Permitted Phases				
Minimum Initial (s)	6.0	20.0	4.0	3.7
Minimum Split (s)	39.3	33.0	10.0	9.7
Total Split (s)	46.3	56.0	10.0	9.7
Total Split (%)	24%	29%	5%	5%
Maximum Green (s)	40.0	50.0	4.0	3.7
Yellow Time (s)	4.3	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Total Lost Time (s)				
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?				
Vehicle Extension (s)	4.0	4.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Dont Walk (s)	25.0							21.0				
Pedestrian Calls (#/hr)	0							0				
Act Effct Green (s)	13.0		45.9					26.6	136.2	67.1	67.1	
Actuated g/C Ratio	0.10		0.34					0.20	1.00	0.49	0.49	
v/c Ratio	0.40		0.16					0.53	0.26	0.12	0.32	
Control Delay	71.9		5.4					53.3	0.4	1.0	1.2	
Queue Delay	0.0		0.0					0.0	0.0	0.0	0.1	
Total Delay	71.9		5.4					53.3	0.4	1.0	1.3	
LOS	E		A					D	A	A	A	
Approach Delay		24.2						30.1			1.3	
Approach LOS		C						C			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 194	
Actuated Cycle Length: 136.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 43.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Reserve Street & EB Off Ramp/EB On Ramp



Lane Group	Ø5	Ø8	Ø11	Ø13
Flash Dont Walk (s)	18.0	20.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	8	84	12	1	8	133	327	4	8	192	3
Future Vol, veh/h	2	8	84	12	1	8	133	327	4	8	192	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	8	84	12	1	8	133	327	4	8	192	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	810	807	194	851	806	329	195	0	0	331	0	0
Stage 1	210	210	-	595	595	-	-	-	-	-	-	-
Stage 2	600	597	-	256	211	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	298	315	847	280	316	712	1378	-	-	1228	-	-
Stage 1	792	728	-	491	492	-	-	-	-	-	-	-
Stage 2	488	491	-	749	728	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	271	283	847	227	283	712	1378	-	-	1228	-	-
Mov Cap-2 Maneuver	271	283	-	227	283	-	-	-	-	-	-	-
Stage 1	715	723	-	443	444	-	-	-	-	-	-	-
Stage 2	435	443	-	663	723	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	17.5	2.3	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1378	-	-	697	310	1228	-	-
HCM Lane V/C Ratio	0.097	-	-	0.135	0.068	0.007	-	-
HCM Control Delay (s)	7.9	-	-	11	17.5	8	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.5	0.2	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	60	47	322	183	5
Future Vol, veh/h	5	60	47	322	183	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	60	47	322	183	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	602	186	188	0	-	0
Stage 1	186	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	463	856	1386	-	-	-
Stage 1	846	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	444	856	1386	-	-	-
Mov Cap-2 Maneuver	532	-	-	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1386	-	818	-	-
HCM Lane V/C Ratio	0.034	-	0.079	-	-
HCM Control Delay (s)	7.7	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

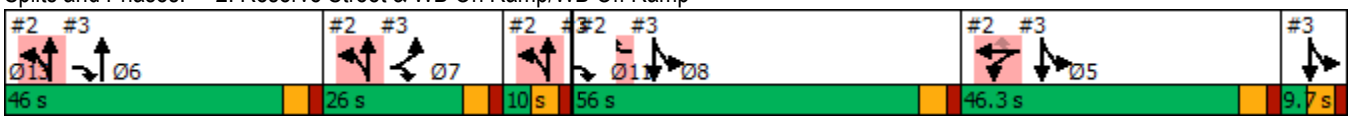
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	348	1	77	132	195	0	0	624	124
Future Volume (vph)	0	0	0	348	1	77	132	195	0	0	624	124
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-2%	
Storage Length (ft)	0		0	330		330	0		0	0		370
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950	0.953		0.950	0.994				
Satd. Flow (prot)	0	0	0	1564	1569	1473	1476	3088	0	0	3292	1473
Flt Permitted				0.950	0.953		0.950	0.994				
Satd. Flow (perm)	0	0	0	1564	1569	1473	1476	3088	0	0	3292	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						118						154
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		967			1298			399			506	
Travel Time (s)		22.0			29.5			6.0			7.7	
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
Adj. Flow (vph)	0	0	0	348	1	77	132	195	0	0	624	124
Shared Lane Traffic (%)				50%			20%					
Lane Group Flow (vph)	0	0	0	174	175	77	106	221	0	0	624	124
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1	1	1	1			1	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				50	50	50	50	50			50	50
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				50	50	50	50	50			50	50
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Turn Type				Split	NA	custom	Split	NA			NA	Perm
Protected Phases				5	5	8	6 7 11	6 7 11			8	
Permitted Phases						5						8
Detector Phase				5	5	8	6 7 11	6 7 11			8	8
Switch Phase												
Minimum Initial (s)				6.0	6.0	20.0					20.0	20.0
Minimum Split (s)				39.3	39.3	33.0					33.0	33.0

Lane Group	Ø6	Ø7	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	6	7	11	13
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	20.0	6.0	4.0	3.7
Minimum Split (s)	34.0	46.0	10.0	9.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)				46.3	46.3	56.0					56.0	56.0
Total Split (%)				23.9%	23.9%	28.9%					28.9%	28.9%
Maximum Green (s)				40.0	40.0	50.0					50.0	50.0
Yellow Time (s)				4.3	4.3	4.0					4.0	4.0
All-Red Time (s)				2.0	2.0	2.0					2.0	2.0
Lost Time Adjust (s)				0.0	0.0	0.0					0.0	0.0
Total Lost Time (s)				6.3	6.3	6.0					6.0	6.0
Lead/Lag				Lag	Lag	Lead					Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				4.0	4.0	4.5					4.5	4.5
Recall Mode				None	None	None					None	None
Walk Time (s)				7.0	7.0	7.0					7.0	7.0
Flash Dont Walk (s)				18.0	18.0	20.0					20.0	20.0
Pedestrian Calls (#/hr)				0	0	0					0	0
Act Effct Green (s)				29.7	29.7	81.9	49.9	49.9			45.8	45.8
Actuated g/C Ratio				0.19	0.19	0.53	0.32	0.32			0.30	0.30
v/c Ratio				0.58	0.58	0.09	0.22	0.22			0.64	0.23
Control Delay				65.8	65.8	0.7	1.6	0.9			51.6	3.6
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay				65.8	65.8	0.7	1.6	0.9			51.6	3.6
LOS				E	E	A	A	A			D	A
Approach Delay					54.1			1.1			43.6	
Approach LOS					D			A			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 194	
Actuated Cycle Length: 153.9	
Natural Cycle: 175	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 37.3	Intersection LOS: D
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Reserve Street & WB On Ramp/WB Off Ramp



Lane Group	Ø6	Ø7	Ø11	Ø13
Total Split (s)	46.0	26.0	10.0	9.7
Total Split (%)	24%	13%	5%	5%
Maximum Green (s)	40.0	20.0	4.0	3.7
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?				
Vehicle Extension (s)	3.5	3.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	21.0	25.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

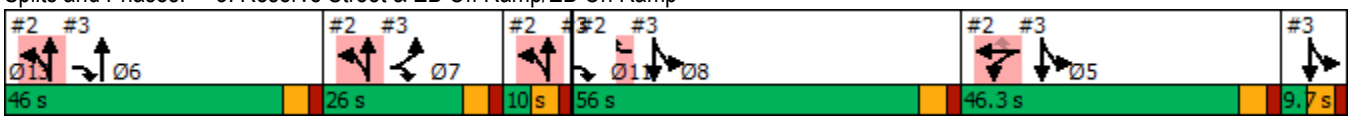
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	0	324	0	0	0	0	298	149	244	725	0
Future Volume (vph)	49	0	324	0	0	0	0	298	149	244	725	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-1%	
Storage Length (ft)	165		165	0		0	150		240	190		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	200			25			30			50		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			324						187			
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1164			1456			816			399	
Travel Time (s)		26.5			33.1			12.4			6.0	
Confl. Peds. (#/hr)												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
Adj. Flow (vph)	49	0	324	0	0	0	0	298	149	244	725	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	0	324	0	0	0	0	298	149	244	725	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1		1					1	1	1	1	
Detector Template	Left		Right					Thru	Right	Left	Thru	
Leading Detector (ft)	50		50					50	50	50	50	
Trailing Detector (ft)	0		0					0	0	0	0	
Detector 1 Position(ft)	0		0					0	0	0	0	
Detector 1 Size(ft)	50		50					50	50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Turn Type	Prot		custom					NA	Free	Split	NA	
Protected Phases	7		6 7 11					6		5 8 13	5 8 13	
Permitted Phases									Free			
Detector Phase	7		6 7 11					6		5 8 13	5 8 13	
Switch Phase												

Lane Group	Ø5	Ø8	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	5	8	11	13
Permitted Phases				
Detector Phase				
Switch Phase				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	6.0							20.0				
Minimum Split (s)	46.0							34.0				
Total Split (s)	26.0							46.0				
Total Split (%)	13.4%							23.7%				
Maximum Green (s)	20.0							40.0				
Yellow Time (s)	4.0							4.0				
All-Red Time (s)	2.0							2.0				
Lost Time Adjust (s)	0.0							0.0				
Total Lost Time (s)	6.0							6.0				
Lead/Lag	Lag							Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5							3.5				
Recall Mode	None							None				
Walk Time (s)	7.0							7.0				
Flash Dont Walk (s)	25.0							21.0				
Pedestrian Calls (#/hr)	0							0				
Act Effct Green (s)	11.9		49.9					21.8	153.9	91.5	91.5	
Actuated g/C Ratio	0.08		0.32					0.14	1.00	0.59	0.59	
v/c Ratio	0.39		0.31					0.45	0.10	0.25	0.37	
Control Delay	80.8		4.5					65.3	0.1	0.5	0.5	
Queue Delay	0.0		0.0					0.0	0.0	0.5	0.2	
Total Delay	80.8		4.5					65.3	0.1	1.0	0.7	
LOS	F		A					E	A	A	A	
Approach Delay		14.5						43.6			0.8	
Approach LOS		B						D			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 194	
Actuated Cycle Length: 153.9	
Natural Cycle: 175	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Reserve Street & EB Off Ramp/EB On Ramp



Lane Group	Ø5	Ø8	Ø11	Ø13
Minimum Initial (s)	6.0	20.0	4.0	3.7
Minimum Split (s)	39.3	33.0	10.0	9.7
Total Split (s)	46.3	56.0	10.0	9.7
Total Split (%)	24%	29%	5%	5%
Maximum Green (s)	40.0	50.0	4.0	3.7
Yellow Time (s)	4.3	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?				
Vehicle Extension (s)	4.0	4.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	18.0	20.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1	214	28	1	8	82	202	4	8	363	3
Future Volume (vph)	12	1	214	28	1	8	82	202	4	8	363	3
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. 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
Frt		0.873			0.971			0.997			0.999	
Flt Protected		0.997			0.964		0.950				0.999	
Satd. Flow (prot)	0	1493	0	0	1606	0	1630	1711	0	0	1712	0
Flt Permitted		0.997			0.964		0.950				0.999	
Satd. Flow (perm)	0	1493	0	0	1606	0	1630	1711	0	0	1712	0
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		575			291			351			587	
Travel Time (s)		8.7			4.4			5.3			8.9	
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
Adj. Flow (vph)	12	1	214	28	1	8	82	202	4	8	363	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	227	0	0	37	0	82	206	0	0	374	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 58.2%	ICU Level of Service B
Analysis Period (min) 15	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	131	118	188	287	6
Future Volume (vph)	9	131	118	188	287	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.874				0.997	
Flt Protected	0.997			0.981		
Satd. Flow (prot)	1495	0	0	1683	1711	0
Flt Permitted	0.997			0.981		
Satd. Flow (perm)	1495	0	0	1683	1711	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	819			587	252	
Travel Time (s)	12.4			8.9	3.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	9	131	118	188	287	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	0	0	306	293	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			13	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	1	214	28	1	8	82	202	4	8	363	3
Future Vol, veh/h	12	1	214	28	1	8	82	202	4	8	363	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1	214	28	1	8	82	202	4	8	363	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	754	751	365	856	750	204	366	0	0	206	0	0
Stage 1	381	381	-	368	368	-	-	-	-	-	-	-
Stage 2	373	370	-	488	382	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	326	340	680	278	340	837	1193	-	-	1365	-	-
Stage 1	641	613	-	652	621	-	-	-	-	-	-	-
Stage 2	648	620	-	561	613	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	304	314	680	179	314	837	1193	-	-	1365	-	-
Mov Cap-2 Maneuver	304	314	-	179	314	-	-	-	-	-	-	-
Stage 1	597	609	-	607	578	-	-	-	-	-	-	-
Stage 2	597	577	-	381	609	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	24.8	2.3	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1193	-	-	635	219	1365	-	-
HCM Lane V/C Ratio	0.069	-	-	0.357	0.169	0.006	-	-
HCM Control Delay (s)	8.2	-	-	13.8	24.8	7.7	0	-
HCM Lane LOS	A	-	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.6	0.6	0	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	131	118	188	287	6
Future Vol, veh/h	9	131	118	188	287	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	131	118	188	287	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	714	290	293	0	-	0
Stage 1	290	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	398	749	1269	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	357	749	1269	-	-	-
Mov Cap-2 Maneuver	469	-	-	-	-	-
Stage 1	680	-	-	-	-	-
Stage 2	660	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	3.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1269	-	721	-	-
HCM Lane V/C Ratio	0.093	-	0.194	-	-
HCM Control Delay (s)	8.1	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.7	-	-

Lanes, Volumes, Timings
2: Reserve Street & WB On Ramp/WB Off Ramp

07/27/2020

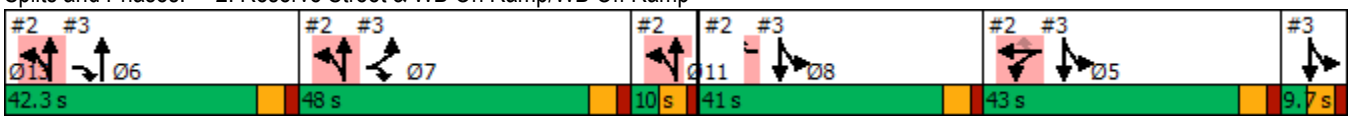
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	288	4	197	292	422	0	0	388	99
Future Volume (vph)	0	0	0	288	4	197	292	422	0	0	388	99
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-2%	
Storage Length (ft)	0		0	330		330	0		0	0		370
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			200			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950	0.954		0.950	0.994				
Satd. Flow (prot)	0	0	0	1564	1570	1473	1476	3088	0	0	3292	1473
Flt Permitted				0.950	0.954		0.950	0.994				
Satd. Flow (perm)	0	0	0	1564	1570	1473	1476	3088	0	0	3292	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						197						154
Link Speed (mph)		75			30			45			45	
Link Distance (ft)		967			1298			399			506	
Travel Time (s)		8.8			29.5			6.0			7.7	
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
Adj. Flow (vph)	0	0	0	288	4	197	292	422	0	0	388	99
Shared Lane Traffic (%)				49%			21%					
Lane Group Flow (vph)	0	0	0	147	145	197	231	483	0	0	388	99
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	1	1	1	1			1	1
Detector Template				Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (ft)				50	50	50	50	50			50	50
Trailing Detector (ft)				0	0	0	0	0			0	0
Detector 1 Position(ft)				0	0	0	0	0			0	0
Detector 1 Size(ft)				50	50	50	50	50			50	50
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Turn Type				Split	NA	custom	Split	NA			NA	Perm
Protected Phases				5	5	8	6 7 11	6 7 11			8	
Permitted Phases						5						8
Detector Phase				5	5	8	6 7 11	6 7 11			8	8
Switch Phase												
Minimum Initial (s)				6.0	6.0	20.0					20.0	20.0
Minimum Split (s)				39.3	39.3	33.0					33.0	33.0

Lane Group	Ø6	Ø7	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	6	7	11	13
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	20.0	6.0	4.0	3.7
Minimum Split (s)	34.0	46.0	10.0	9.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)				43.0	43.0	41.0					41.0	41.0
Total Split (%)				22.2%	22.2%	21.1%					21.1%	21.1%
Maximum Green (s)				36.7	36.7	35.0					35.0	35.0
Yellow Time (s)				4.3	4.3	4.0					4.0	4.0
All-Red Time (s)				2.0	2.0	2.0					2.0	2.0
Lost Time Adjust (s)				0.0	0.0	0.0					0.0	0.0
Total Lost Time (s)				6.3	6.3	6.0					6.0	6.0
Lead/Lag				Lag	Lag	Lead					Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				4.0	4.0	4.5					4.5	4.5
Recall Mode				None	None	None					None	None
Walk Time (s)				7.0	7.0	7.0					7.0	7.0
Flash Dont Walk (s)				18.0	18.0	20.0					20.0	20.0
Pedestrian Calls (#/hr)				0	0	0					0	0
Act Effct Green (s)				24.3	24.3	62.0	64.5	64.5			31.2	31.2
Actuated g/C Ratio				0.16	0.16	0.42	0.43	0.43			0.21	0.21
v/c Ratio				0.58	0.57	0.27	0.36	0.36			0.56	0.23
Control Delay				69.2	68.7	4.5	3.6	2.5			58.5	1.5
Queue Delay				0.0	0.0	0.0	0.4	0.2			0.0	0.0
Total Delay				69.2	68.7	4.5	4.0	2.7			58.5	1.5
LOS				E	E	A	A	A			E	A
Approach Delay					43.0			3.1			46.9	
Approach LOS					D			A			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 194	
Actuated Cycle Length: 148.8	
Natural Cycle: 175	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 27.3	Intersection LOS: C
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Reserve Street & WB On Ramp/WB Off Ramp



Lane Group	Ø6	Ø7	Ø11	Ø13
Total Split (s)	42.3	48.0	10.0	9.7
Total Split (%)	22%	25%	5%	5%
Maximum Green (s)	36.3	42.0	4.0	3.7
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?				
Vehicle Extension (s)	3.5	3.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	21.0	25.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

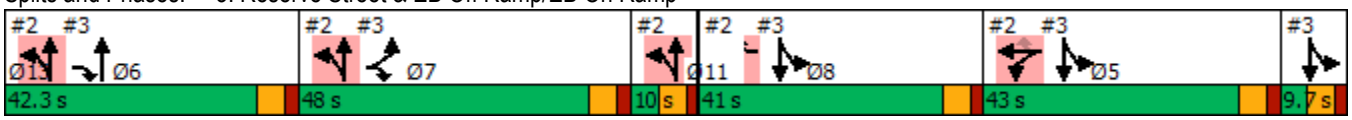
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	0	160	0	0	0	0	573	377	126	573	0
Future Volume (vph)	97	0	160	0	0	0	0	573	377	126	573	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-2%			-2%			1%			-1%	
Storage Length (ft)	165		165	0		0	150		240	190		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	200			25			30			50		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Ped Bike Factor										1.00		
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1646	0	2592	0	0	0	0	4660	1451	1638	3276	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1646	0	2592	0	0	0	0	4660	1451	1637	3276	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160						353			
Link Speed (mph)		30			75			45			45	
Link Distance (ft)		1164			1456			816			399	
Travel Time (s)		26.5			13.2			12.4			6.0	
Confl. Peds. (#/hr)										1		
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
Adj. Flow (vph)	97	0	160	0	0	0	0	573	377	126	573	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	0	160	0	0	0	0	573	377	126	573	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.12	1.12	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1		1					1	1	1	1	
Detector Template	Left		Right					Thru	Right	Left	Thru	
Leading Detector (ft)	50		50					50	50	50	50	
Trailing Detector (ft)	0		0					0	0	0	0	
Detector 1 Position(ft)	0		0					0	0	0	0	
Detector 1 Size(ft)	50		50					50	50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0					0.0	0.0	0.0	0.0	
Turn Type	Prot		custom					NA	Free	Split	NA	
Protected Phases	7		6 7					6		5 8 13	5 8 13	
Permitted Phases									Free			
Detector Phase	7		6 7					6		5 8 13	5 8 13	
Switch Phase												

Lane Group	Ø5	Ø8	Ø11	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Grade (%)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Ped Bike Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Confl. Peds. (#/hr)				
Peak Hour Factor				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Turn Type				
Protected Phases	5	8	11	13
Permitted Phases				
Detector Phase				
Switch Phase				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	6.0							20.0				
Minimum Split (s)	46.0							34.0				
Total Split (s)	48.0							42.3				
Total Split (%)	24.7%							21.8%				
Maximum Green (s)	42.0							36.3				
Yellow Time (s)	4.0							4.0				
All-Red Time (s)	2.0							2.0				
Lost Time Adjust (s)	0.0							0.0				
Total Lost Time (s)	6.0							6.0				
Lead/Lag	Lag							Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5							3.5				
Recall Mode	None							None				
Walk Time (s)	7.0							7.0				
Flash Dont Walk (s)	25.0							21.0				
Pedestrian Calls (#/hr)	0							0				
Act Effct Green (s)	17.9		54.2					30.1	148.8	71.7	71.7	
Actuated g/C Ratio	0.12		0.36					0.20	1.00	0.48	0.48	
v/c Ratio	0.49		0.15					0.61	0.26	0.16	0.36	
Control Delay	73.3		4.8					58.6	0.4	1.1	1.3	
Queue Delay	0.0		0.0					0.0	0.0	0.0	0.2	
Total Delay	73.3		4.8					58.6	0.4	1.1	1.5	
LOS	E		A					E	A	A	A	
Approach Delay		30.7						35.5			1.4	
Approach LOS		C						D			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 194	
Actuated Cycle Length: 148.8	
Natural Cycle: 175	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 22.4	Intersection LOS: C
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Reserve Street & EB Off Ramp/EB On Ramp



Lane Group	Ø5	Ø8	Ø11	Ø13
Minimum Initial (s)	6.0	20.0	4.0	3.7
Minimum Split (s)	39.3	33.0	10.0	9.7
Total Split (s)	43.0	41.0	10.0	9.7
Total Split (%)	22%	21%	5%	5%
Maximum Green (s)	36.7	35.0	4.0	3.7
Yellow Time (s)	4.3	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?				
Vehicle Extension (s)	4.0	4.5	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	7.0	7.0		
Flash Dont Walk (s)	18.0	20.0		
Pedestrian Calls (#/hr)	0	0		
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	8	147	12	1	8	231	395	4	8	236	8
Future Vol, veh/h	5	8	147	12	1	8	231	395	4	8	236	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	8	147	12	1	8	231	395	4	8	236	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1120	1117	240	1193	1119	397	244	0	0	399	0	0
Stage 1	256	256	-	859	859	-	-	-	-	-	-	-
Stage 2	864	861	-	334	260	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	184	207	799	164	207	652	1322	-	-	1160	-	-
Stage 1	749	696	-	351	373	-	-	-	-	-	-	-
Stage 2	349	372	-	680	693	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	156	169	799	111	169	652	1322	-	-	1160	-	-
Mov Cap-2 Maneuver	156	169	-	111	169	-	-	-	-	-	-	-
Stage 1	618	690	-	290	308	-	-	-	-	-	-	-
Stage 2	284	307	-	544	687	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	29.8	3	0.3
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1322	-	-	608	166	1160	-	-
HCM Lane V/C Ratio	0.175	-	-	0.263	0.127	0.007	-	-
HCM Control Delay (s)	8.3	-	-	13	29.8	8.1	-	-
HCM Lane LOS	A	-	-	B	D	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	1.1	0.4	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	104	115	325	188	9
Future Vol, veh/h	7	104	115	325	188	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	104	115	325	188	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	748	193	197	0	-	0
Stage 1	193	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	380	849	1376	-	-	-
Stage 1	840	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	341	849	1376	-	-	-
Mov Cap-2 Maneuver	448	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	575	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	2.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1376	-	804	-	-
HCM Lane V/C Ratio	0.084	-	0.138	-	-
HCM Control Delay (s)	7.9	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.5	-	-

Intersection: 2: Reserve Street & WB On Ramp/WB Off Ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	LT	T	T	T	R
Maximum Queue (ft)	145	168	28	16	12	31	199	173	45
Average Queue (ft)	109	125	14	8	5	10	154	114	24
95th Queue (ft)	174	197	34	27	19	34	225	209	51
Link Distance (ft)		1241		333	333	333	417	417	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	330		330						370
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Reserve Street & EB Off Ramp/EB On Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	T	T	T	L	T	T
Maximum Queue (ft)	55	172	149	44	75	83	14	17	23
Average Queue (ft)	31	125	85	13	44	43	6	4	9
95th Queue (ft)	63	192	173	43	88	96	29	21	30
Link Distance (ft)		1116			721	721		333	333
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	165		165	150			190		
Storage Blk Time (%)		3	0						
Queuing Penalty (veh)		6	0						

Intersection: 52: Expo Pkwy

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	LTR
Maximum Queue (ft)	28	30	14	4
Average Queue (ft)	26	24	3	1
95th Queue (ft)	35	43	15	8
Link Distance (ft)	521	256	284	537
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 57: Stonebridge

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	32	39
Average Queue (ft)	22	17
95th Queue (ft)	39	46
Link Distance (ft)	783	537
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 6

Intersection: 2: Reserve Street & WB On Ramp/WB Off Ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	LT	T	T	T	R
Maximum Queue (ft)	125	145	47	39	34	25	132	116	45
Average Queue (ft)	71	103	28	21	12	11	94	69	24
95th Queue (ft)	141	169	56	49	39	38	155	131	51
Link Distance (ft)		1241		333	333	333	417	417	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	330		330						370
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Reserve Street & EB Off Ramp/EB On Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	T	T	T	L	T	T
Maximum Queue (ft)	76	94	56	67	106	101	18	46	51
Average Queue (ft)	43	56	24	25	62	46	4	17	24
95th Queue (ft)	87	107	71	73	121	107	19	51	61
Link Distance (ft)		1116			721	721		333	333
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	165		165	150			190		
Storage Blk Time (%)					0				
Queuing Penalty (veh)					0				

Intersection: 28: Expo

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	LTR
Maximum Queue (ft)	36	30	22	5
Average Queue (ft)	24	20	6	1
95th Queue (ft)	43	43	28	10
Link Distance (ft)	270	144	379	642
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 57: Stonebridge

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	30	22
Average Queue (ft)	22	5
95th Queue (ft)	39	22
Link Distance (ft)	328	642
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 2: Reserve Street & WB On Ramp/WB Off Ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	LT	T	T	T	R
Maximum Queue (ft)	205	205	44	18	35	22	264	252	46
Average Queue (ft)	139	151	18	7	13	7	199	181	33
95th Queue (ft)	235	230	47	20	39	26	283	269	54
Link Distance (ft)		1241		333	333	333	417	417	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	330		330						370
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Reserve Street & EB Off Ramp/EB On Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	T	T	T	L	T	T
Maximum Queue (ft)	73	175	140	44	94	92	14	32	36
Average Queue (ft)	49	121	76	21	59	47	4	7	14
95th Queue (ft)	84	192	158	53	100	98	22	29	39
Link Distance (ft)		1116			721	721		333	333
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	165		165	150			190		
Storage Blk Time (%)		4	0						
Queuing Penalty (veh)		9	0						

Intersection: 52: Expo Pkwy

Movement	EB	WB	NB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	54	39	38
Average Queue (ft)	40	26	20
95th Queue (ft)	60	48	47
Link Distance (ft)	521	256	284
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 57: Stonebridge

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	49	44
Average Queue (ft)	36	19
95th Queue (ft)	56	51
Link Distance (ft)	783	537
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 10

Intersection: 2: Reserve Street & WB On Ramp/WB Off Ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	LT	T	T	T	R
Maximum Queue (ft)	133	141	54	31	37	51	172	167	54
Average Queue (ft)	73	108	37	12	17	23	131	120	33
95th Queue (ft)	147	164	62	35	42	62	188	193	57
Link Distance (ft)		1241		333	333	333	417	417	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	330		330						370
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Reserve Street & EB Off Ramp/EB On Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	T	T	T	L	T	T
Maximum Queue (ft)	127	123	76	88	144	161	18	36	49
Average Queue (ft)	69	71	31	40	92	92	4	14	25
95th Queue (ft)	136	133	84	105	151	173	19	46	57
Link Distance (ft)		1116			721	721		333	333
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	165		165	150			190		
Storage Blk Time (%)	0	0		1	1				
Queuing Penalty (veh)	1	0		1	2				

Intersection: 28: Expo

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	LTR
Maximum Queue (ft)	74	29	43	11
Average Queue (ft)	41	14	23	2
95th Queue (ft)	80	41	51	14
Link Distance (ft)	270	144	379	642
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 57: Stonebridge

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	53	39
Average Queue (ft)	33	17
95th Queue (ft)	54	48
Link Distance (ft)	328	642
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 4