



ALDRIDGE TRANSPORTATION CONSULTANTS, LLC

Advanced Transportation Planning and Traffic Engineering

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April 11, 2019

Mr. Dan Yacovetta
1265 W. 68th Place
Arvada, CO 80004

Re: Traffic Impact Study - Revised
Parker Pointe, Parker, CO

Dear Mr. Yacovetta:

Aldridge Transportation Consultants (ATC) is pleased to present this traffic impact study regarding the proposed development of a 14-acre shopping center on the southeast corner of Parker Road and Stroh in Parker.

ATC is professional service firm specializing in traffic engineering and transportation planning. ATC's principal, John M.W. Aldridge, is a Colorado licensed professional engineer. In the past 20 years, ATC has prepared over 1,000 traffic impact studies, designed over 100 traffic signals, and has provided expert witness testimony on engineering design and access issues on multi-million dollar interchange and highway projects in Kansas and Colorado.

ATC appreciates the opportunity to be of service. Please call if you have any questions. We can be reached at 303-703-9112.



Respectfully submitted,

Aldridge Transportation Consultants, LLC

John M.W. Aldridge, P.E.
Principal



1. Introduction/Project Description

This traffic impact study provides an evaluation and analysis of the traffic impact occasioned by development of a retail center on the southeast corner of Parker Road and Stroh Road in Parker. Figure 1 shows the location of the site and surrounding streets and intersections.



Figure 1 Project Vicinity



SEC STROH ROAD/PARKER ROAD *Transportation Impact Study*

The site is approximately 14 acres and zoned for commercial development. The site will contain 14 lots for general commercial/retail uses that could include a myriad of uses such as coffee shops, gas stations and convenience stores, day care, bank, and auto parts/service stores.

Three accesses are proposed. From Parker Road at approximately the midpoint (550 feet south of Stroh Road) a right in/right out only access. On Stroh Road at approximately 250 east of Parker Road a right in/right out only access, and at approximately 700 feet and directly opposite the new Stroh Crossing entrance, a full-movement access.

An up-to-date site plan is available separately.



2. Existing Conditions

Parker Road is State Highway 83 and the State Highway Access Code governs access. In addition, the SH-83/SH-86 Access Control Plan defines the type and location of access under an agreement with CDOT, counties, and communities within the corridor. Parker Road is a six-lane principal arterial that currently carries 34,000 AADT per the ***Town of Parker Roadway System Analysis***. The posted speed limit is 55 mph. The Code defines it as an NR-A highway. A 30-foot grassy median divides the highway.

On the east side of Parker Road, Stroh Road is a two-lane minor arterial that currently carries approximately 1,000 AADT if the PM peak hour is 10 percent of the daily volume. On the west side, Stroh Road is a four-lane roadway carrying approximately 11,000 AADT. The westbound approach is a single lane with shared right, thru, and left turn movements. The eastbound approach includes a single through lane and exclusive right and dual left turn lanes.

The Parker Road/Stroh Road intersection is under traffic signal control. Counter Measures conducted the turning movement counts on February 25, 2016. The appendix contains the count data. Presently the traffic signal operates at LOS C/C in the AM and PM peak hours, respectively. Figures 3 and 4 in the appendix show the existing traffic counts. The count worksheets are also provided in the appendix.



3. Proposed Conditions

The conceptual site plan proposes approximately 70,000 square feet of commercial and retail land uses. Recently a Ziggi's Coffee Shop was added. Although a small store of 624 square feet, it is a high trip generating use, so it is included as a separate use in the table. The trip generation rates for the uses are from the *ITE Trip Generation Manual, 9th Edition*. The following table provides the ADT and AM/PM Peak Hour traffic volumes.

Trip Generation Worksheet								
ITE CODE	LAND USE	UNIT	QUANTITY	ADT	AM		PM	
					IN	OUT	IN	OUT
820	Shopping Center	KSF	70	42.70	0.60	0.36	1.78	1.93
				2989	42	26	125	135
937	Ziggi's Coffee Shop	KSF	0.624	818.58	51.30	49.28	24.40	24.40
				511	32	31	15	15
Total Trips				3500	74	56	140	150

Note that the coffee shop trip generation is for the driveway use. Approximately 50 percent of the trip generation will come from pass-by trips, those already on the road that stop in to pick up coffee. The pass-by trip reduction, however, is too small to have an impact on the level of service at the signalized intersection of Parker Road and Stroh Road.

The PM peak hour is the highest time of travel on the adjacent streets and at the intersections and therefore considered the design hour volume (DHV) for operations analysis and geometric design purposes.

About distribution, for the inbound movements, 50 percent of the shopping center traffic will turn left at the intersection and turn into the right in only access from Stroh Road. Five percent will enter the right in only coming from the west on Stroh Road. Five percent will turn left in at the full movement access on Stroh Road. 35 percent will enter by turning right from northbound Parker at the right in/right out access, and the remaining five percent will turn right from Parker Road to Stroh Road and enter at the right in only access. Figure 2 shows the distribution percentage and trip assignment.



SEC STROH ROAD/PARKER ROAD

Transportation Impact Study

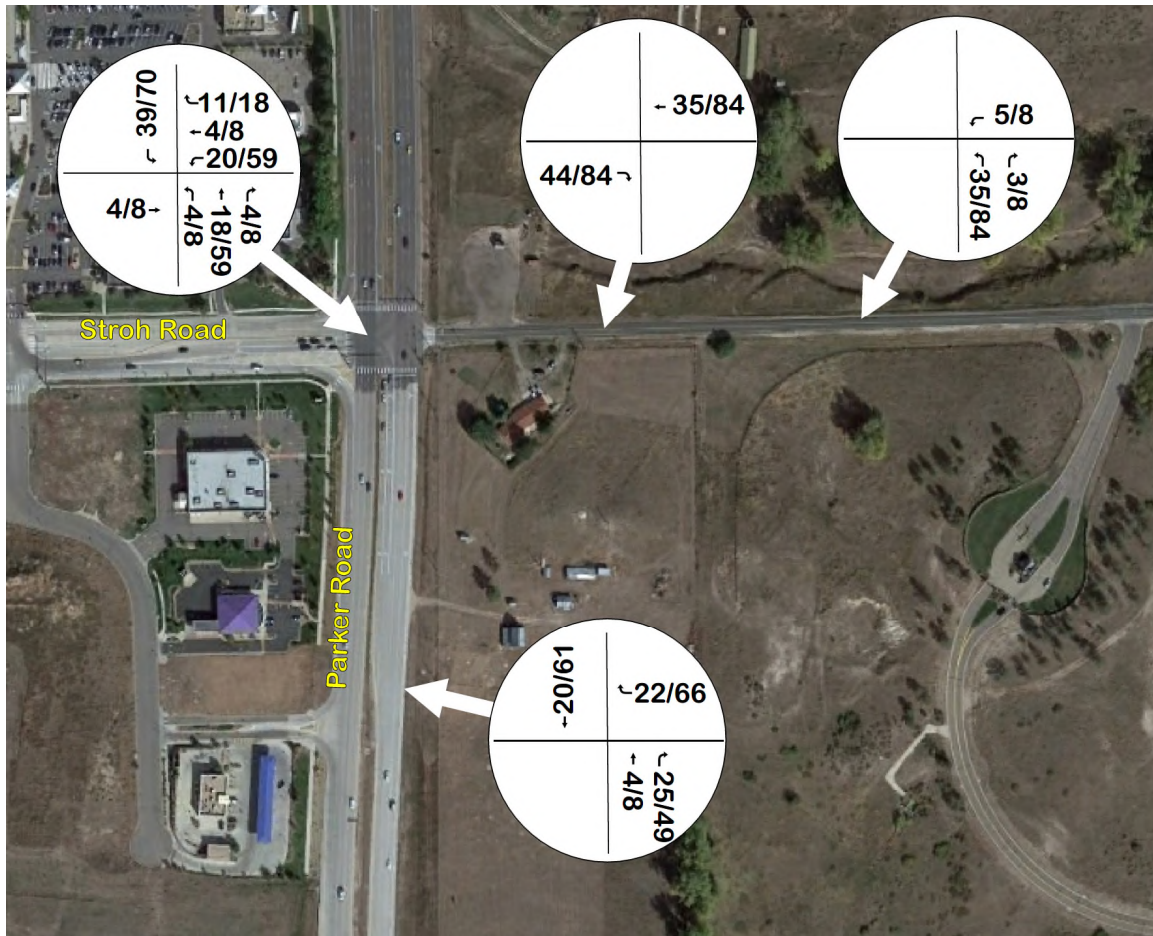


Figure 2 Trip Distribution & Assignment



4. Future Conditions

Per the Town's projections and CDOT 20-year growth rate, traffic on Parker Road is expected to increase by a factor of 1.5. This factor was also applied to the western side of Stroh Road for the 2037 analysis of traffic conditions.

The near-term (within 5 years) background traffic growth assumed a 10 percent increase on Parker Road and the western section of Stroh Road. The background growth also includes the trip generation previously determined for Stroh Crossing on the northeast corner of Parker Road and Stroh Road. The long-term 2037 background traffic includes an estimated build-out of the Colorado Golf Club. Per a club representative, they are planning on an additional 225 homes. 140 currently approved and 85 are in review at Douglas County. The 225 homes would generate 2,142 daily trips, 43 vph in and 126 vph out in the AM peak hour and 142 vph in and 84 vph out in the PM peak hour.

The Synchro analysis of the near-term and long-term 2037 conditions assumes the reconstruction and retiming of the intersection to what it would be with the full development of Stroh Crossing. This assumes a new NB right turn lane from Parker, two WB through lanes, dual left turns on the EB approach, and exclusive left and right turn lanes on the WB approach. The signal retiming assumes protected left turn phasing on all approaches.

Figures 5 through 13 show the near-term AM and PM with and without the project and 2037 long-term AM and PM with and without the project.



5. Site Circulation and Design Evaluation

ATC uses Synchro v.9 for operations analyses. The Synchro v.9 methodology is based on the Highway Capacity Manual 2010 (HCM). The Synchro HCM reports are attached for reference. The chart summarizes the forecast near-term and 2035 LOS (level of service). LOS is letter rating from A to F. LOS A indicates free-flow traffic conditions and no delay at intersections. LOS F is heavy traffic congestion with significant delay. LOS is provided for the overall operations at signalized intersections. LOS D is generally the benchmark for acceptable signalized intersection operations during the weekday peak hours. The critical movement, not the overall, provides the LOS rating for unsignalized intersections. The critical movement is generally a left turn from the minor approach. Caution is advised when evaluating the LOS at unsignalized intersections particularly when LOS F shows. In cases of an LOS F, the HCM¹ suggests that other evaluation measures should be considered such as the volume over capacity ratio and 95th percentile queue length to make the most effective traffic control decision. LOS F at unsignalized intersections is often normal for the average weekday peak hour.

HCM 2010 does not analyze intersections without a stop condition. So, the right in only access on Stroh Road is not included in the table. HCM 2010 also will not analyze right in/right out movement if there are 3 through lanes or more. So, the right in/right out on Parker Road is not included in the table.

LOS Summary (LOS/Seconds of Delay)										
Intersection	Existing		Near Term w/o Project		Near Term with Project		2037 Background		2037 with Project	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Parker/Stroh (Signalized)	C/20.4	C/23.5	C/33.5	C/31.6	D/39.0	D/37.2	E/60.6	E/60.7	E/70.4	E/69.1
Stroh/Full-Movement	n/a	n/a	C/15.6	C/15.9	C/25.7	D/32.2	C/17.4	C/18.4	C/20.3	F/59.2

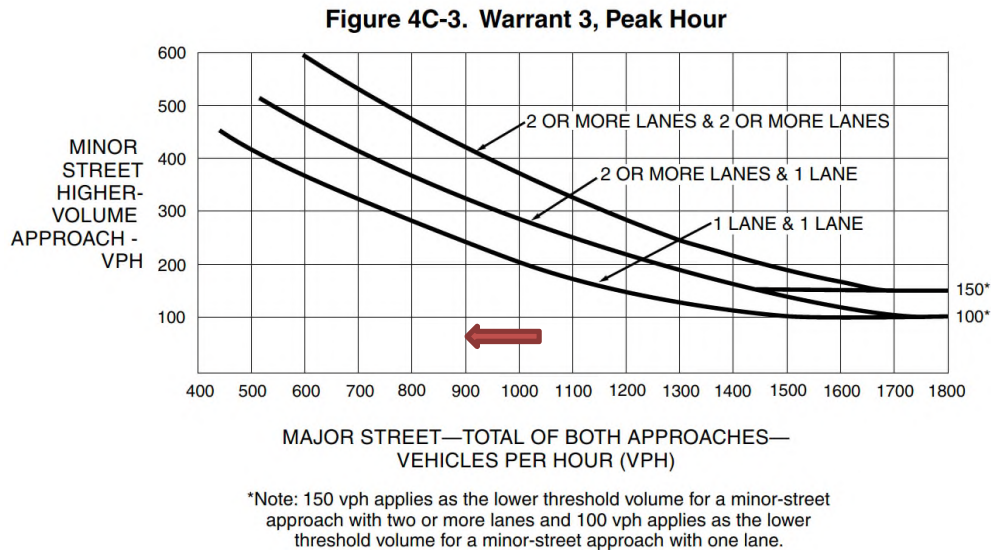
The Parker/Stroh signalized intersection will continue to provide an acceptable level of service in the near-term future. In the long-term 20-year future the intersection will operate at LOS E in all conditions. The Stroh/East Entrance intersection will operate acceptable in the near-term and long-term conditions.

¹ Highway Capacity Manual 2010 page 19-40



SEC STROH ROAD/PARKER ROAD Transportation Impact Study

The Colorado Golf Club representatives have a special concern regarding the implementation of a southbound dual left turn lane at the Parker/Stroh intersection. Typically, a dual left turn lane is warranted when at least 300 vehicles per hour make the turn in the peak hour or when a significant benefit is realized in signal operations and level of service. Only in the 2037 PM peak hour is the 300 vph projected. A Synchro analysis of the 2037 PM peak hour tested the efficacy of a dual left turn lane and found that the overall delay improved one (1) second from 69.8 seconds (LOS E) to 68.8 seconds (still LOS E). Note that should the dual left turn be implemented, the signal mast arm and width of the median could accommodate it.



A signal warrant analysis of the PM peak hour indicates that the intersection of Stroh Road and the East Entrance full-movement intersection falls far short of the warrant threshold.

The Synchro reports are provided in the appendix for reference.



6. Proposed Mitigation Measures

Based on the analysis, traffic generated by project can be easily absorbed and will not cause a safety or operational problem on the adjacent streets and intersections. The proposed access locations are the best engineering fit for the parcel's configuration and for matching to the internal street layout. The following improvements are recommended.

1. At the full-movement access on Stroh Road, no deceleration or acceleration turn lanes are necessary. Stroh Road is posted at 40 mph and would be considered an NR-B by access code standards. The town defers to the access code standards for acceleration and deceleration lanes. In this case, a right turn deceleration lane would be warranted with a turning volume of greater than 25 vph. The turning volume is projected to be zero as all the right turn in traffic will make the movement at the western right in only access. The left turn deceleration lane would be warranted with 10 vph. The maximum projected left turn volume is 7 vph.
2. A right in/right access located approximately 550 feet south of Stroh Road. A right turn deceleration lane of 600 feet will be required. A right turn acceleration lane is warranted but would overlap with the new northbound to eastbound right turn lane forming a continuous turn lane.
3. A right in/right out only access located approximately 250 feet will serve as the primary entry for traffic from southbound Parker Road and eastbound Stroh Road. The outside lane on the new roadway cross-section will serve as the deceleration lane. Although an exit is allowed, it is expected that the right turn out traffic will use the eastern full movement access finding it more convenient.
4. A full-movement access forming the south leg of the Stroh Crossing eastern access to Stroh Road is critical for traffic exiting the site headed southbound on Parker Road. This access located approximately 700 feet east of Parker Road, will be connected to the eastern edge of the shopping center property via short roadway parallel to Stroh Road.



5. The Town is requiring several improvements to the Parker/Stroh intersection for the Stroh Crossing project. The improvements include a new northbound to eastbound right turn lane, an exclusive westbound to southbound left turn lane, an exclusive eastbound to northbound right turn lane and two westbound through lanes.
6. In addition to the geometric improvements to the intersection, the traffic signal equipment will be modified to provide protected left turn phasing on the eastbound and westbound approaches. In addition, the southeast signal pole must be relocated to accommodate the new northbound right turn lane.
7. A southbound dual left turn lane at the Parker/Stroh intersection is not indicated by volume, excepting the 2037 PM peak hour, or by a reasonable improvement in level of service. Tests show that it would only improve operations by one (1) second of delay.

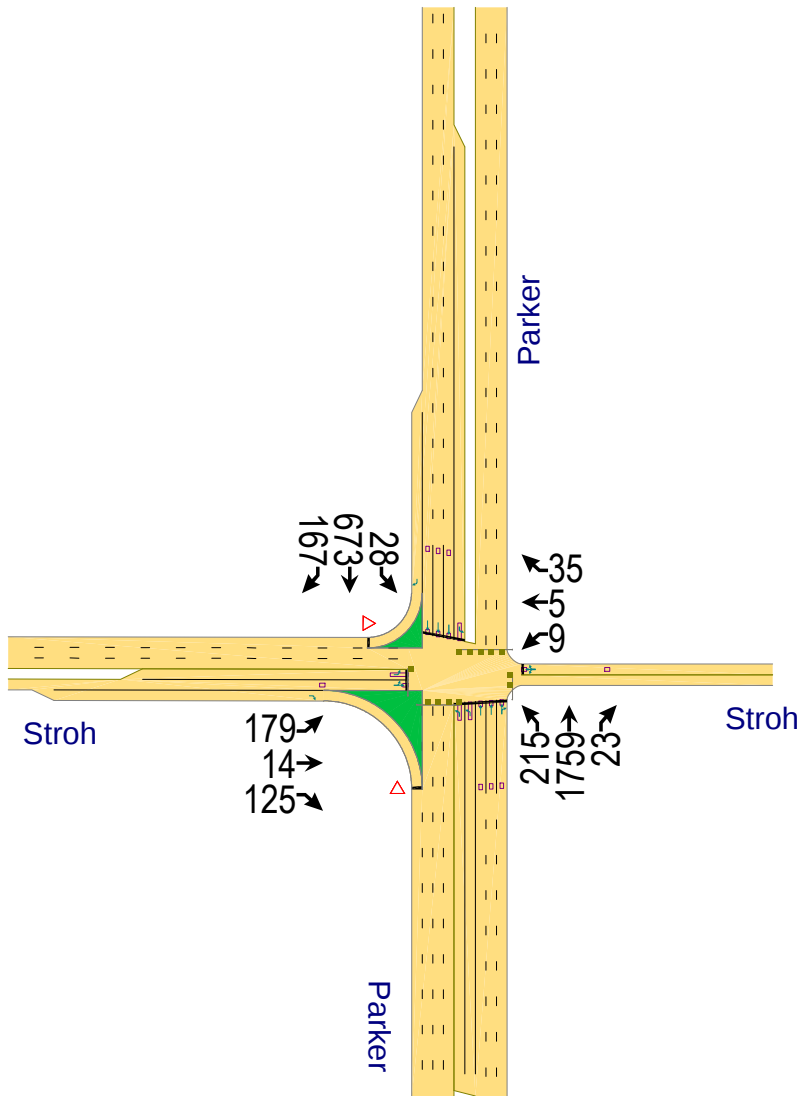


7. Conclusions/Recommendations

This analysis finds that the proposed project and the recommended roadway and intersection improvements will operate efficiently at an acceptable level of service.



APPENDIX



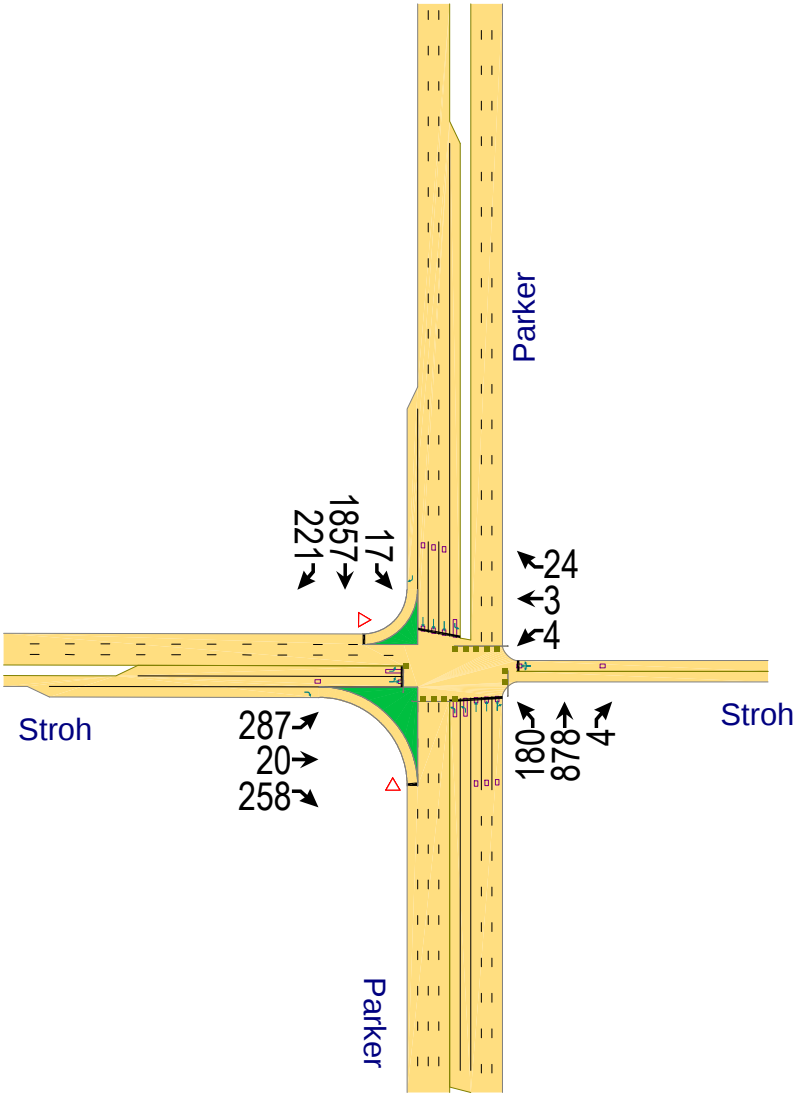


Figure 5
Near Term AM w/o Project

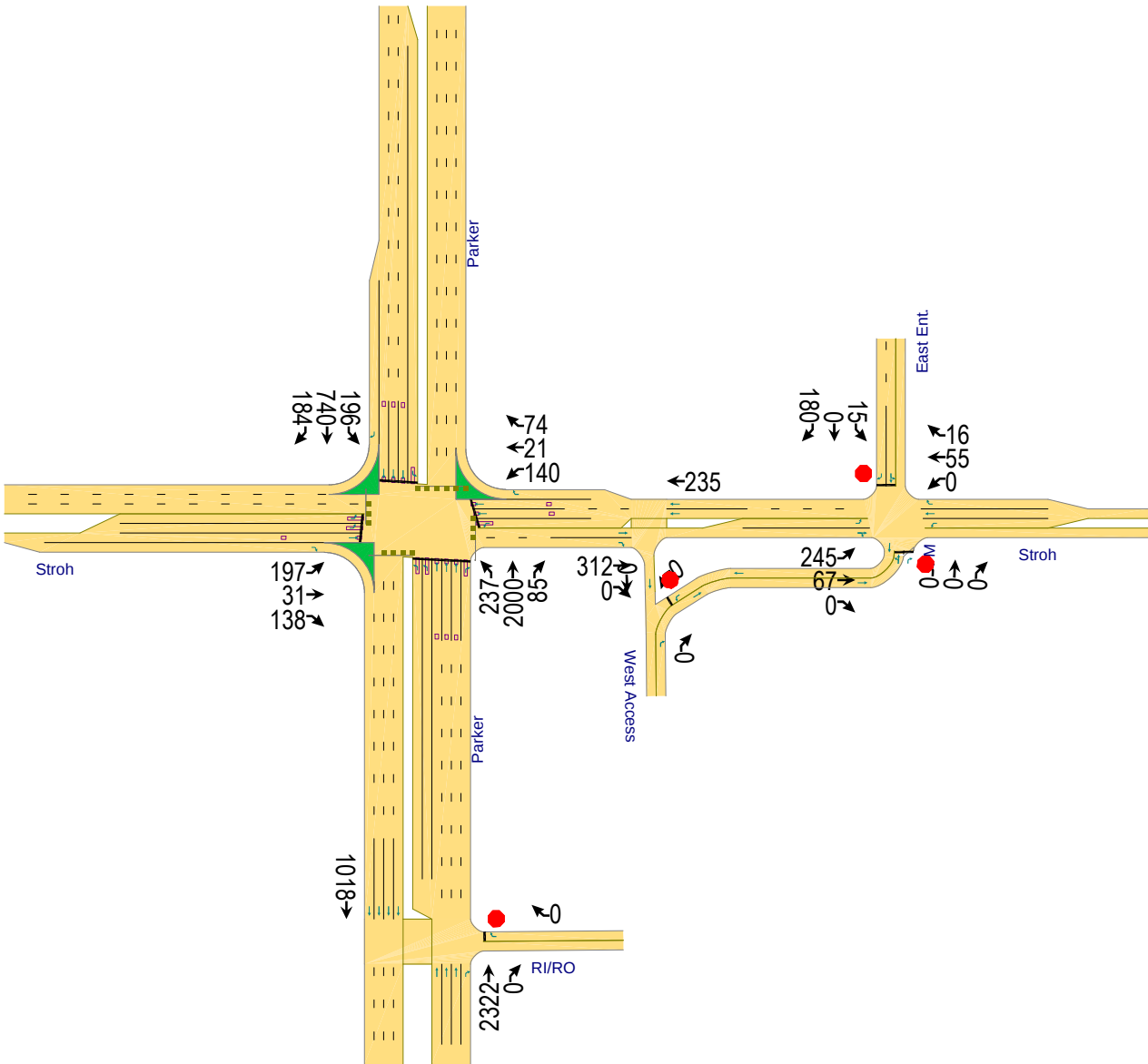
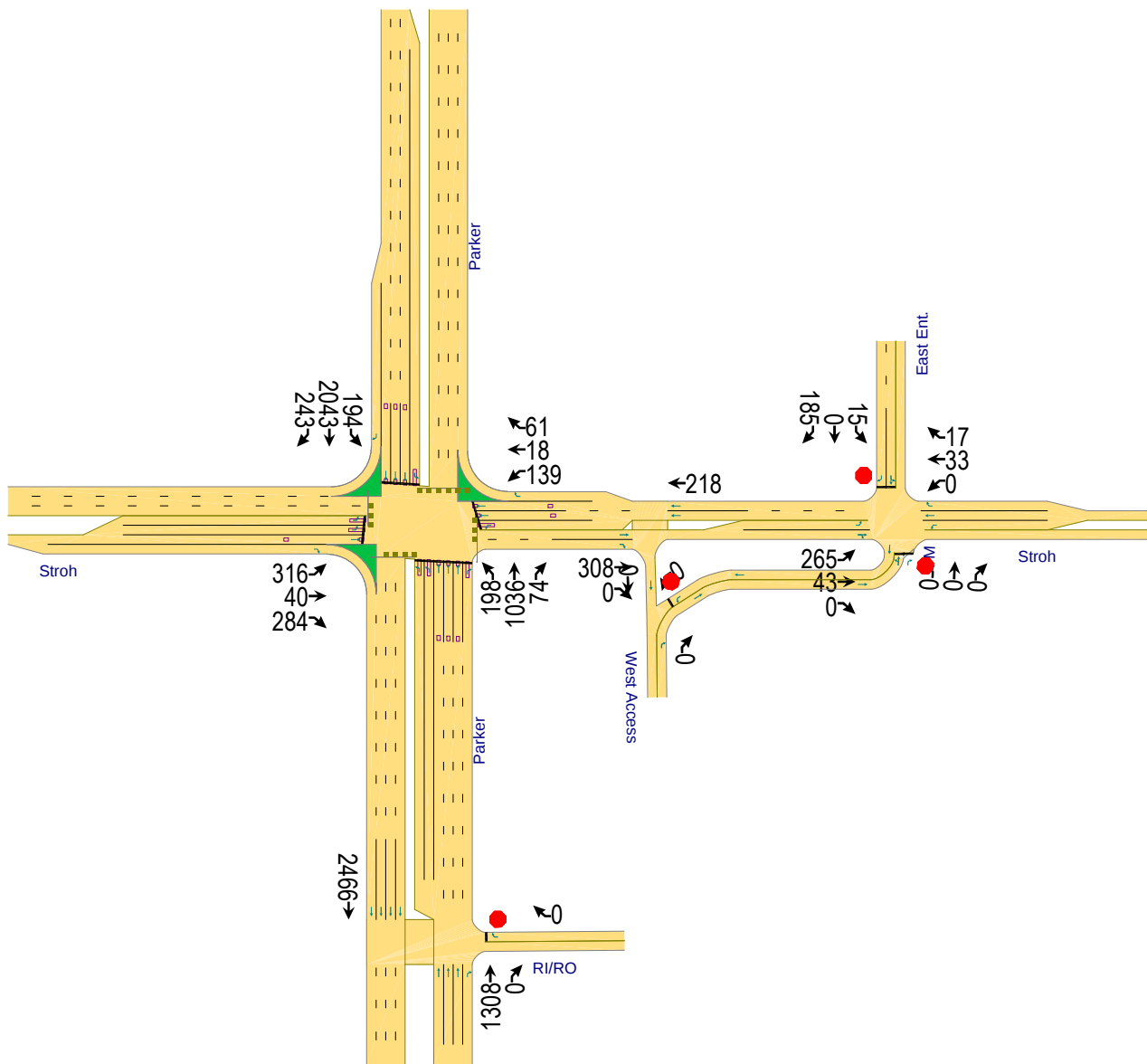
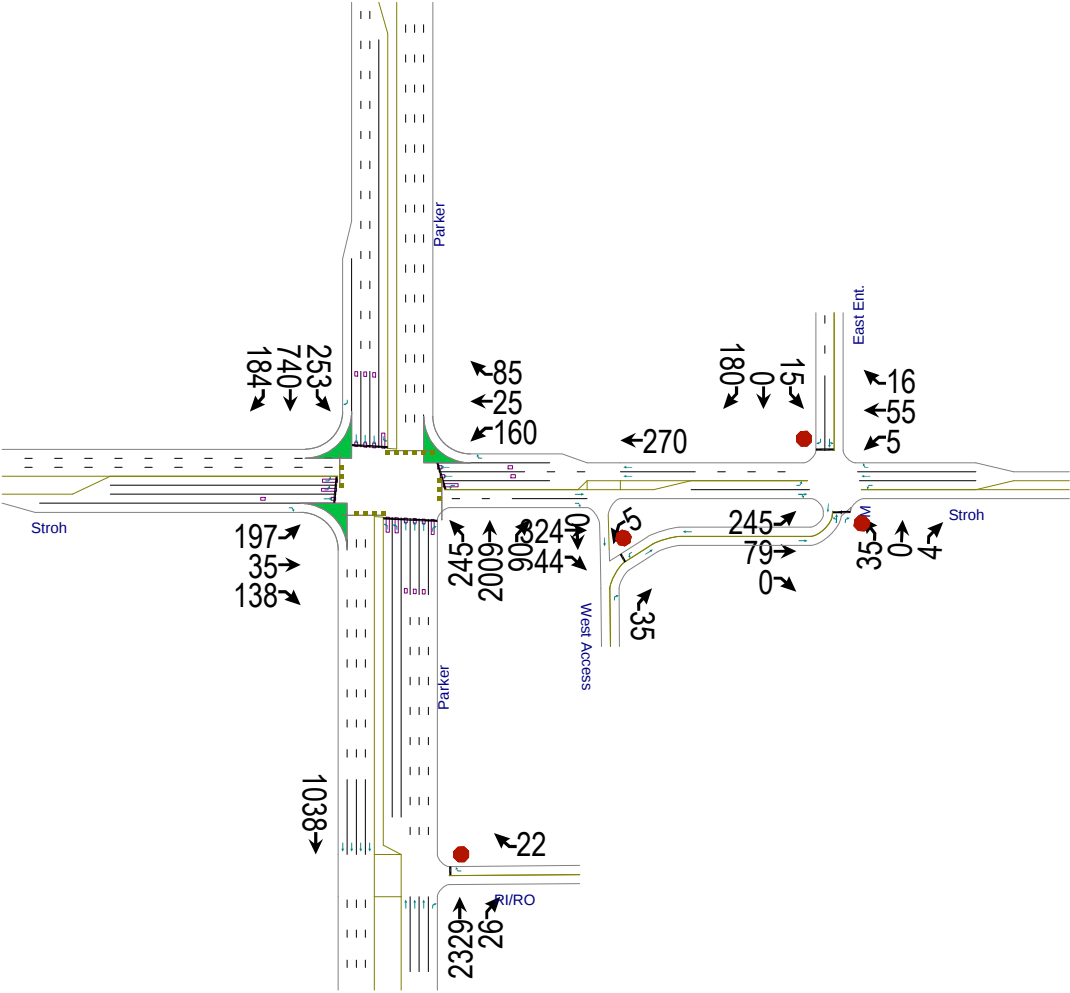
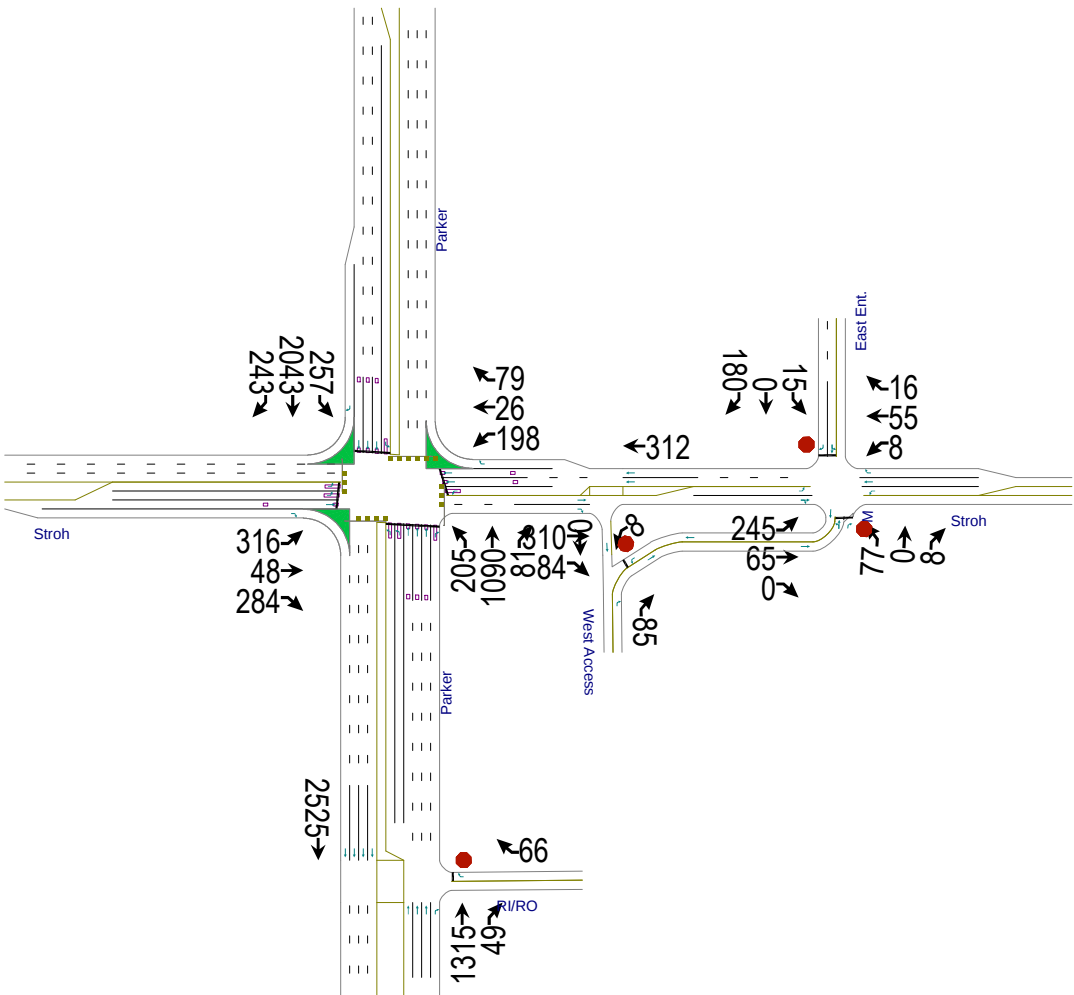


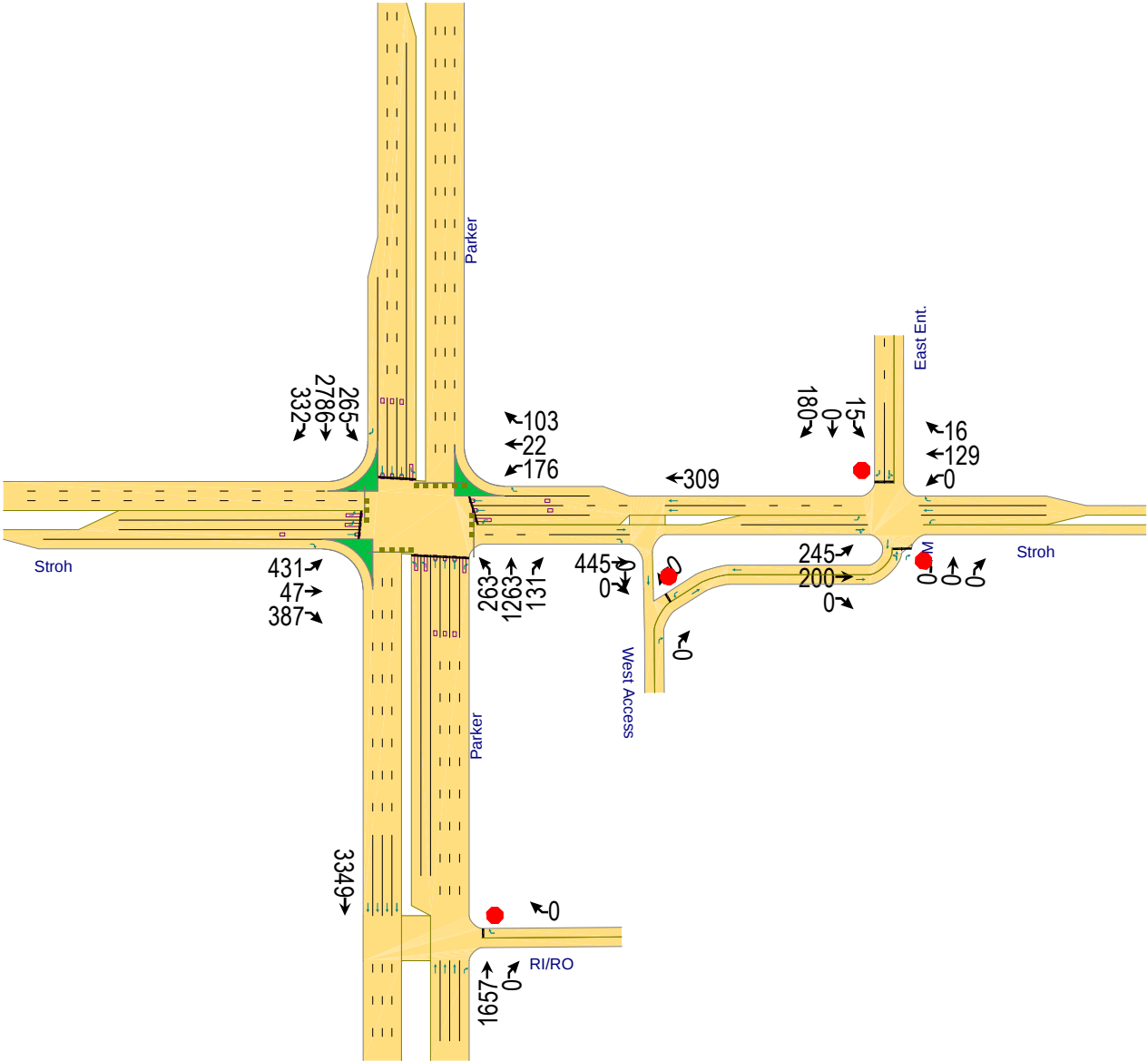
Figure 6
Near Term PM w/o Project

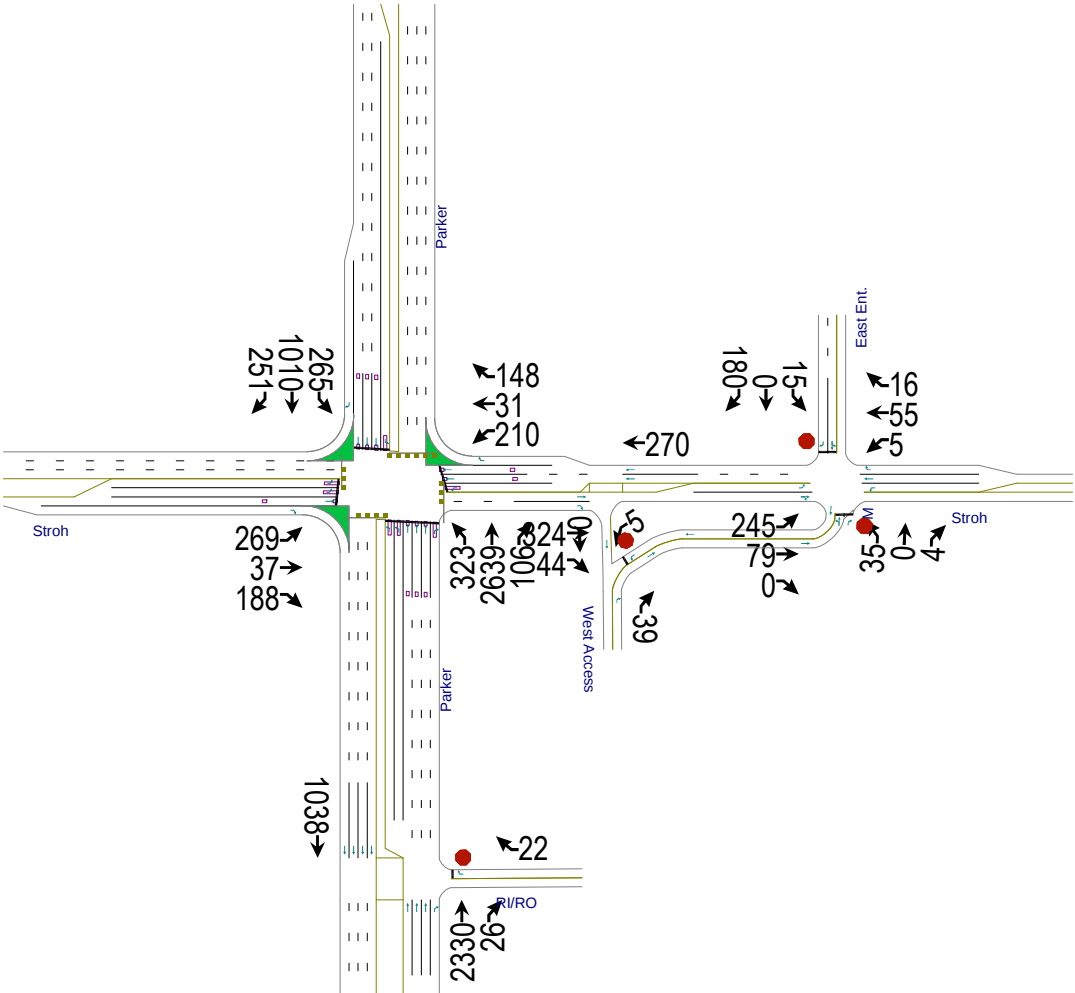


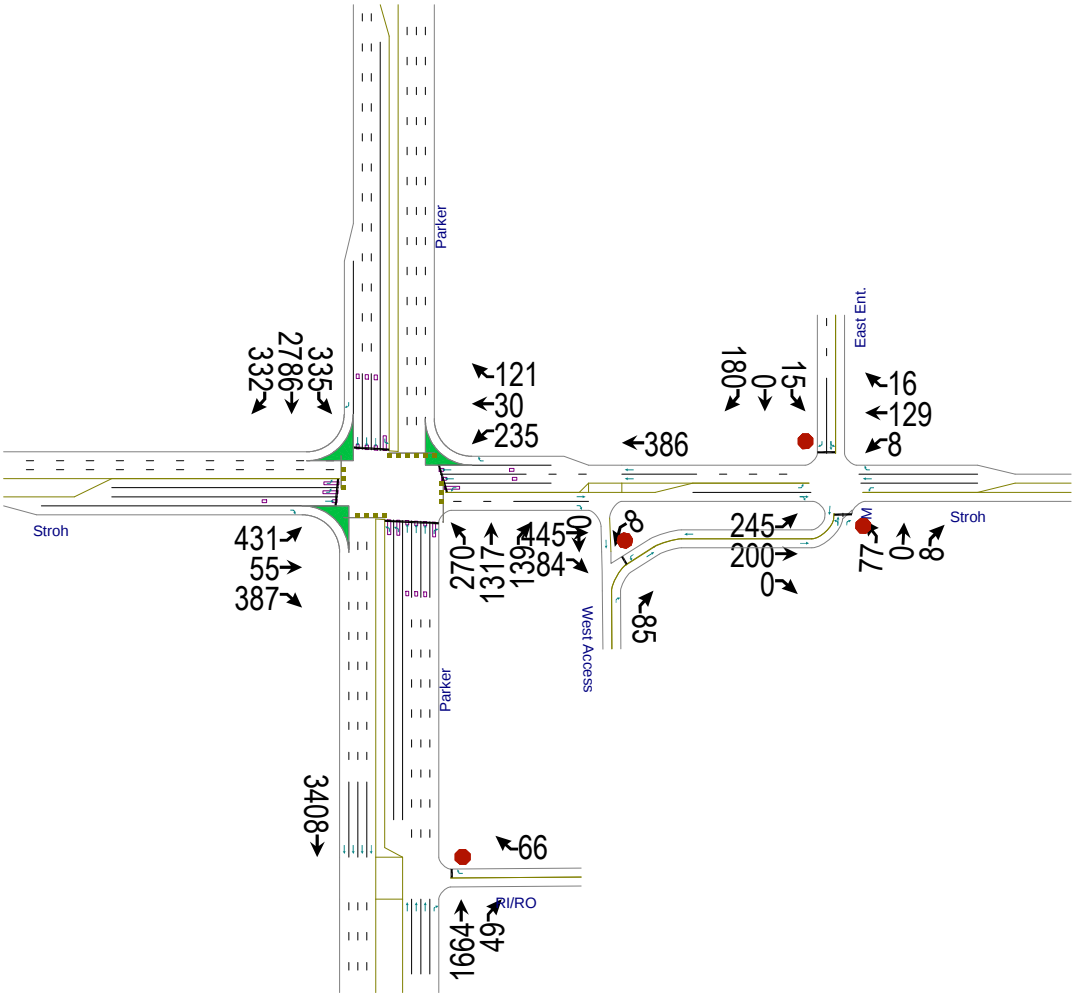












												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	14	125	9	5	35	215	1759	23	28	673	167
Future Volume (veh/h)	179	14	125	9	5	35	215	1759	23	28	673	167
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	206	0	0	10	5	38	234	1912	25	30	732	0
Adj No. of Lanes	2	0	1	0	1	0	2	3	0	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	0	121	13	6	48	295	3420	45	38	3033	944
Arrive On Green	0.08	0.00	0.00	0.04	0.04	0.04	0.09	0.66	0.66	0.02	0.60	0.00
Sat Flow, veh/h	3548	0	1583	309	155	1176	3442	5173	68	1774	5085	1583
Grp Volume(v), veh/h	206	0	0	53	0	0	234	1253	684	30	732	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1640	0	0	1721	1695	1851	1774	1695	1583
Q Serve(g_s), s	6.8	0.0	0.0	3.8	0.0	0.0	8.0	23.8	23.9	2.0	8.1	0.0
Cycle Q Clear(g_c), s	6.8	0.0	0.0	3.8	0.0	0.0	8.0	23.8	23.9	2.0	8.1	0.0
Prop In Lane	1.00		1.00	0.19		0.72	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	272	0	121	68	0	0	295	2241	1223	38	3033	944
V/C Ratio(X)	0.76	0.00	0.00	0.78	0.00	0.00	0.79	0.56	0.56	0.80	0.24	0.00
Avail Cap(c_a), veh/h	473	0	211	219	0	0	402	2241	1223	89	3033	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.3	0.0	0.0	57.0	0.0	0.0	53.8	10.9	10.9	58.5	11.4	0.0
Incr Delay (d2), s/veh	4.3	0.0	0.0	17.8	0.0	0.0	7.5	1.0	1.9	30.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	2.1	0.0	0.0	4.1	11.3	12.6	1.3	3.8	0.0
LnGrp Delay(d),s/veh	58.6	0.0	0.0	74.8	0.0	0.0	61.3	11.9	12.8	89.0	11.6	0.0
LnGrp LOS	E			E			E	B	B	F	B	
Approach Vol, veh/h		206			53			2171			762	
Approach Delay, s/veh		58.6			74.8			17.5			14.6	
Approach LOS		E			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	85.3		15.2	16.3	77.6		10.9				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	58.0		16.0	14.0	50.0		16.0				
Max Q Clear Time (g_c+I1), s	4.0	25.9		8.8	10.0	10.1		5.8				
Green Ext Time (p_c), s	0.0	25.3		0.4	0.3	29.9		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			20.4									
HCM 2010 LOS			C									
Notes												

SEC Parker Stroh
3: Parker & Stroh /Stroh

Existing PM
01/17/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	20	258	4	3	24	180	878	4	17	1857	221
Future Volume (veh/h)	287	20	258	4	3	24	180	878	4	17	1857	221
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	328	0	0	4	3	26	196	954	4	18	2018	0
Adj No. of Lanes	2	0	1	0	1	0	2	3	0	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	0	175	5	4	32	250	3396	14	27	3010	937
Arrive On Green	0.11	0.00	0.00	0.02	0.02	0.02	0.07	0.65	0.65	0.02	0.59	0.00
Sat Flow, veh/h	3548	0	1583	197	148	1282	3442	5227	22	1774	5085	1583
Grp Volume(v), veh/h	328	0	0	33	0	0	196	619	339	18	2018	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1627	0	0	1721	1695	1859	1774	1695	1583
Q Serve(g_s), s	10.9	0.0	0.0	2.4	0.0	0.0	6.7	9.4	9.4	1.2	32.2	0.0
Cycle Q Clear(g_c), s	10.9	0.0	0.0	2.4	0.0	0.0	6.7	9.4	9.4	1.2	32.2	0.0
Prop In Lane	1.00		1.00	0.12		0.79	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	392	0	175	41	0	0	250	2203	1208	27	3010	937
V/C Ratio(X)	0.84	0.00	0.00	0.81	0.00	0.00	0.78	0.28	0.28	0.67	0.67	0.00
Avail Cap(c_a), veh/h	473	0	211	217	0	0	258	2203	1208	74	3010	937
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.3	0.0	0.0	58.2	0.0	0.0	54.7	9.0	9.0	58.8	16.6	0.0
Incr Delay (d2), s/veh	10.7	0.0	0.0	30.6	0.0	0.0	14.1	0.3	0.6	25.7	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	0.0	0.0	1.4	0.0	0.0	3.7	4.5	5.0	0.8	15.3	0.0
LnGrp Delay(d),s/veh	63.1	0.0	0.0	88.9	0.0	0.0	68.8	9.3	9.6	84.5	17.8	0.0
LnGrp LOS	E			F			E	A	A	F	B	
Approach Vol, veh/h		328			33			1154			2036	
Approach Delay, s/veh		63.1			88.9			19.5			18.4	
Approach LOS		E			F			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	84.0		19.2	14.7	77.0		9.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	59.0		16.0	9.0	55.0		16.0				
Max Q Clear Time (g_c+l1), s	3.2	11.4		12.9	8.7	34.2		4.4				
Green Ext Time (p_c), s	0.0	38.2		0.4	0.0	18.7		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			23.5									
HCM 2010 LOS			C									
Notes												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	197	31	138	140	21	74	237	2000	85	196	740	184
Future Volume (veh/h)	197	31	138	140	21	74	237	2000	85	196	740	184
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	214	34	0	152	23	0	258	2174	92	213	804	0
Adj No. of Lanes	2	1	1	1	2	1	2	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	66	56	181	201	90	319	2776	864	207	2897	902
Arrive On Green	0.08	0.04	0.00	0.10	0.06	0.00	0.09	0.55	0.55	0.12	0.57	0.00
Sat Flow, veh/h	3442	1863	1583	1774	3539	1583	3442	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	214	34	0	152	23	0	258	2174	92	213	804	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1770	1583	1721	1695	1583	1774	1695	1583
Q Serve(g_s), s	7.3	2.2	0.0	10.1	0.7	0.0	8.8	40.7	3.4	14.0	9.7	0.0
Cycle Q Clear(g_c), s	7.3	2.2	0.0	10.1	0.7	0.0	8.8	40.7	3.4	14.0	9.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	277	66	56	181	201	90	319	2776	864	207	2897	902
V/C Ratio(X)	0.77	0.51	0.00	0.84	0.11	0.00	0.81	0.78	0.11	1.03	0.28	0.00
Avail Cap(c_a), veh/h	459	248	211	237	472	211	430	2776	864	207	2897	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	56.8	0.0	52.9	53.7	0.0	53.4	21.6	13.1	53.0	13.2	0.0
Incr Delay (d2), s/veh	4.5	6.0	0.0	18.4	0.2	0.0	8.1	2.3	0.2	70.4	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	1.2	0.0	5.9	0.4	0.0	4.6	19.5	1.5	10.9	4.6	0.0
LnGrp Delay(d),s/veh	58.6	62.8	0.0	71.4	54.0	0.0	61.5	23.9	13.4	123.5	13.4	0.0
LnGrp LOS	E	E		E	D		E	C	B	F	B	
Approach Vol, veh/h		248			175			2524			1017	
Approach Delay, s/veh		59.2			69.1			27.4			36.5	
Approach LOS		E			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	71.5	18.2	10.3	17.1	74.4	15.7	12.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	14.0	50.0	16.0	16.0	15.0	49.0	16.0	16.0				
Max Q Clear Time (g_c+l1), s	16.0	42.7	12.1	4.2	10.8	11.7	9.3	2.7				
Green Ext Time (p_c), s	0.0	6.8	0.1	0.1	0.3	29.4	0.4	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			33.5									
HCM 2010 LOS			C									

Intersection												
Int Delay, s/veh	6.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	245	67	0	0	55	16	0	0	0	15	0	180
Future Vol, veh/h	245	67	0	0	55	16	0	0	0	15	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	150	-	-	100	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	266	73	0	0	60	17	0	0	0	16	0	196

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	60	0	0	73	0	0	665	665	73	665	665	60
Stage 1	-	-	-	-	-	-	605	605	-	60	60	-
Stage 2	-	-	-	-	-	-	60	60	-	605	605	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1544	-	-	1527	-	-	374	381	989	374	381	1005
Stage 1	-	-	-	-	-	-	485	487	-	951	845	-
Stage 2	-	-	-	-	-	-	951	845	-	485	487	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1544	-	-	1527	-	-	261	315	989	325	315	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	261	315	-	356	356	-
Stage 1	-	-	-	-	-	-	401	403	-	787	845	-
Stage 2	-	-	-	-	-	-	766	845	-	401	403	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.1	0	0	9.9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	1544	-	-	1527	-	-	356	1005
HCM Lane V/C Ratio	-	-	0.172	-	-	-	-	-	0.046	0.195
HCM Control Delay (s)	0	0	7.8	-	-	0	-	-	15.6	9.4
HCM Lane LOS	A	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.6	-	-	0	-	-	0.1	0.7

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	316	40	284	139	18	61	198	1036	74	194	2043	243
Future Volume (veh/h)	316	40	284	139	18	61	198	1036	74	194	2043	243
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	343	43	0	151	20	0	215	1126	80	211	2221	0
Adj No. of Lanes	2	1	1	1	2	1	2	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	402	91	77	180	118	53	229	2615	814	241	2966	923
Arrive On Green	0.12	0.05	0.00	0.10	0.03	0.00	0.07	0.51	0.51	0.14	0.58	0.00
Sat Flow, veh/h	3442	1863	1583	1774	3539	1583	3442	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	343	43	0	151	20	0	215	1126	80	211	2221	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1770	1583	1721	1695	1583	1774	1695	1583
Q Serve(g_s), s	11.7	2.7	0.0	10.0	0.7	0.0	7.5	16.6	3.1	14.0	38.8	0.0
Cycle Q Clear(g_c), s	11.7	2.7	0.0	10.0	0.7	0.0	7.5	16.6	3.1	14.0	38.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	402	91	77	180	118	53	229	2615	814	241	2966	923
V/C Ratio(X)	0.85	0.47	0.00	0.84	0.17	0.00	0.94	0.43	0.10	0.88	0.75	0.00
Avail Cap(c_a), veh/h	459	248	211	237	472	211	229	2615	814	340	2966	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.0	55.6	0.0	53.0	56.4	0.0	55.7	18.2	14.9	50.9	18.5	0.0
Incr Delay (d2), s/veh	13.1	3.8	0.0	18.2	0.7	0.0	42.2	0.5	0.2	16.5	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	1.5	0.0	5.8	0.3	0.0	4.9	7.8	1.4	8.0	18.6	0.0
LnGrp Delay(d),s/veh	65.1	59.3	0.0	71.2	57.1	0.0	98.0	18.7	15.2	67.4	20.3	0.0
LnGrp LOS	E	E		E	E		F	B	B	E	C	
Approach Vol, veh/h		386			171			1421			2432	
Approach Delay, s/veh		64.4			69.5			30.5			24.4	
Approach LOS		E			E			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.3	67.7	18.2	11.9	14.0	76.0	20.0	10.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	23.0	41.0	16.0	16.0	8.0	56.0	16.0	16.0				
Max Q Clear Time (g_c+I1), s	16.0	18.6	12.0	4.7	9.5	40.8	13.7	2.7				
Green Ext Time (p_c), s	0.3	20.3	0.1	0.1	0.0	14.1	0.3	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			31.6									
HCM 2010 LOS			C									

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	265	43	0	0	33	17	0	0	0	15	0	185
Future Vol, veh/h	265	43	0	0	33	17	0	0	0	15	0	185
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	150	-	-	100	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	288	47	0	0	36	18	0	0	0	16	0	201

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	36	0	0	47	0	0	659	659	47	659	659	36
Stage 1	-	-	-	-	-	-	623	623	-	36	36	-
Stage 2	-	-	-	-	-	-	36	36	-	623	623	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1575	-	-	1560	-	-	377	384	1022	377	384	1037
Stage 1	-	-	-	-	-	-	474	478	-	980	865	-
Stage 2	-	-	-	-	-	-	980	865	-	474	478	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1575	-	-	1560	-	-	261	314	1022	324	314	1037
Mov Cap-2 Maneuver	-	-	-	-	-	-	261	314	-	347	348	-
Stage 1	-	-	-	-	-	-	387	391	-	801	865	-
Stage 2	-	-	-	-	-	-	790	865	-	387	391	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.7	0	0	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	1575	-	-	1560	-	-	347	1037
HCM Lane V/C Ratio	-	-	0.183	-	-	-	-	-	0.047	0.194
HCM Control Delay (s)	0	0	7.8	-	-	0	-	-	15.9	9.3
HCM Lane LOS	A	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	-	-	0	-	-	0.1	0.7

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Near Term AM w/ project
04/11/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↑	↱	↰	↑↑↑	↱	↰	↑↑↑	↱
Traffic Volume (veh/h)	197	35	138	160	25	85	245	2009	90	253	740	184
Future Volume (veh/h)	197	35	138	160	25	85	245	2009	90	253	740	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	214	38	0	174	27	0	266	2184	98	275	804	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	278	70		202	250		327	2592	805	252	2832	
Arrive On Green	0.08	0.04	0.00	0.11	0.07	0.00	0.09	0.51	0.51	0.14	0.55	0.00
Sat Flow, veh/h	3456	1870	1585	1781	3554	1585	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	214	38	0	174	27	0	266	2184	98	275	804	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1777	1585	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	7.3	2.4	0.0	11.5	0.9	0.0	9.1	44.2	3.9	17.0	10.0	0.0
Cycle Q Clear(g_c), s	7.3	2.4	0.0	11.5	0.9	0.0	9.1	44.2	3.9	17.0	10.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	278	70		202	250		327	2592	805	252	2832	
V/C Ratio(X)	0.77	0.55		0.86	0.11		0.81	0.84	0.12	1.09	0.28	
Avail Cap(c_a), veh/h	461	249		238	474		432	2592	805	252	2832	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	56.8	0.0	52.3	52.3	0.0	53.3	25.4	15.5	51.5	14.1	0.0
Incr Delay (d2), s/veh	4.5	6.5	0.0	23.3	0.2	0.0	8.6	3.5	0.3	82.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	1.2	0.0	6.4	0.4	0.0	4.2	16.6	1.4	13.0	3.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.6	63.3	0.0	75.5	52.4	0.0	61.9	29.0	15.8	134.2	14.4	0.0
LnGrp LOS	E	E		E	D		E	C	B	F	B	
Approach Vol, veh/h	252		A	201		A	2548		1079		A	
Approach Delay, s/veh	59.3			72.4			31.9		44.9			
Approach LOS	E			E			C		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	33.0	66.9	19.6	10.5	17.4	72.5	15.6	14.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	47.0	47.0	16.0	16.0	15.0	49.0	16.0	16.0				
Max Q Clear Time (g_c+1/19), s	46.2	46.2	13.5	4.4	11.1	12.0	9.3	2.9				
Green Ext Time (p_c), s	0.0	0.8	0.1	0.1	0.3	5.4	0.4	0.0				

Intersection Summary

HCM 6th Ctrl Delay	39.0
HCM 6th LOS	D

Notes

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

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	245	79	0	5	55	16	35	0	4	15	0	180
Future Vol, veh/h	245	79	0	5	55	16	35	0	4	15	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	150	-	-	100	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	266	86	0	5	60	17	38	0	4	16	0	196
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	86	0	0	795	705	86	690	688	60
Stage 1	-	-	-	-	-	-	618	618	-	70	70	-
Stage 2	-	-	-	-	-	-	177	87	-	620	618	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1522	-	-	1510	-	-	305	361	973	359	369	1005
Stage 1	-	-	-	-	-	-	477	481	-	940	837	-
Stage 2	-	-	-	-	-	-	825	823	-	476	481	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1522	-	-	1510	-	-	212	297	973	309	304	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	212	297	-	342	346	-
Stage 1	-	-	-	-	-	-	394	397	-	776	834	-
Stage 2	-	-	-	-	-	-	662	821	-	391	397	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	5.9			0.5			24			9.9		
HCM LOS							C			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	212	973	1522	-	-	1510	-	-	342	1005		
HCM Lane V/C Ratio	0.179	0.004	0.175	-	-	0.004	-	-	0.048	0.195		
HCM Control Delay (s)	25.7	8.7	7.9	-	-	7.4	-	-	16.1	9.4		
HCM Lane LOS	D	A	A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	0.6	0	0.6	-	-	0	-	-	0.1	0.7		

Parker Pointe
3: Parker & Stroh

Near Term PM w/ Project
04/11/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	316	48	284	198	26	79	205	1090	81	257	2043	243	
Future Volume (veh/h)	316	48	284	198	26	79	205	1090	81	257	2043	243	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No			No			No			
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	343	52	0	215	28	0	223	1185	88	279	2221	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	402	84		238	219		230	2297	713	307	2835		
Arrive On Green	0.12	0.04	0.00	0.13	0.06	0.00	0.07	0.45	0.45	0.17	0.56	0.00	
Sat Flow, veh/h	3456	1870	1585	1781	3554	1585	3456	5106	1585	1781	5106	1585	
Grp Volume(v), veh/h	343	52	0	215	28	0	223	1185	88	279	2221	0	
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1777	1585	1728	1702	1585	1781	1702	1585	
Q Serve(g_s), s	11.7	3.3	0.0	14.3	0.9	0.0	7.7	20.0	3.9	18.5	41.1	0.0	
Cycle Q Clear(g_c), s	11.7	3.3	0.0	14.3	0.9	0.0	7.7	20.0	3.9	18.5	41.1	0.0	
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	402	84		238	219		230	2297	713	307	2835		
V/C Ratio(X)	0.85	0.62		0.91	0.13		0.97	0.52	0.12	0.91	0.78		
Avail Cap(c_a), veh/h	461	249		238	474		230	2297	713	341	2835		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	52.0	56.3	0.0	51.3	53.2	0.0	55.9	23.7	19.2	48.8	21.0	0.0	
Incr Delay (d2), s/veh	12.9	7.3	0.0	34.2	0.3	0.0	50.1	0.8	0.4	25.9	2.2	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	5.7	1.7	0.0	8.5	0.4	0.0	4.8	7.6	1.5	10.0	14.8	0.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	64.9	63.6	0.0	85.5	53.5	0.0	106.0	24.5	19.6	74.6	23.3	0.0	
LnGrp LOS	E	E		F	D		F	C	B	E	C		
Approach Vol, veh/h	395		A		243		A		1496		2500		A
Approach Delay, s/veh	64.8				81.8				36.3		29.0		
Approach LOS	E		F		D				C				
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	36.7	60.0	22.0	11.4	14.0	72.6	20.0	13.4					
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Green Setting (Gmax), s	23.0	41.0	16.0	16.0	8.0	56.0	16.0	16.0					
Max Q Clear Time (g_c+20.5), s	20.5	22.0	16.3	5.3	9.7	43.1	13.7	2.9					
Green Ext Time (p_c), s	0.2	7.5	0.0	0.1	0.0	10.3	0.3	0.1					

Intersection Summary

HCM 6th Ctrl Delay	37.2
HCM 6th LOS	D

Notes

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

Intersection												
Int Delay, s/veh	9.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	245	65	0	8	55	16	77	0	8	15	0	180
Future Vol, veh/h	245	65	0	8	55	16	77	0	8	15	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	150	-	-	100	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	266	71	0	9	60	17	84	0	9	16	0	196
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	71	0	0	788	698	71	686	681	60
Stage 1	-	-	-	-	-	-	603	603	-	78	78	-
Stage 2	-	-	-	-	-	-	185	95	-	608	603	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1522	-	-	1529	-	-	309	364	991	362	373	1005
Stage 1	-	-	-	-	-	-	486	488	-	931	830	-
Stage 2	-	-	-	-	-	-	817	816	-	483	488	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1522	-	-	1529	-	-	214	298	991	309	306	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	214	298	-	342	348	-
Stage 1	-	-	-	-	-	-	401	403	-	768	825	-
Stage 2	-	-	-	-	-	-	654	811	-	395	403	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	6.2			0.7			30			9.9		
HCM LOS							D			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	214	991	1522	-	-	1529	-	-	342	1005		
HCM Lane V/C Ratio	0.391	0.009	0.175	-	-	0.006	-	-	0.048	0.195		
HCM Control Delay (s)	32.2	8.7	7.9	-	-	7.4	-	-	16.1	9.4		
HCM Lane LOS	D	A	A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	1.7	0	0.6	-	-	0	-	-	0.1	0.7		

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	269	33	188	190	27	137	321	2630	102	228	1010	251
Future Volume (veh/h)	269	33	188	190	27	137	321	2630	102	228	1010	251
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	292	36	0	207	29	0	349	2859	111	248	1098	0
Adj No. of Lanes	2	1	1	1	2	1	2	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	352	68	58	229	224	100	412	2727	849	186	2652	826
Arrive On Green	0.10	0.04	0.00	0.13	0.06	0.00	0.12	0.54	0.54	0.10	0.52	0.00
Sat Flow, veh/h	3442	1863	1583	1774	3539	1583	3442	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	292	36	0	207	29	0	349	2859	111	248	1098	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1770	1583	1721	1695	1583	1774	1695	1583
Q Serve(g_s), s	10.3	2.4	0.0	14.3	1.0	0.0	12.3	66.5	4.3	13.0	16.3	0.0
Cycle Q Clear(g_c), s	10.3	2.4	0.0	14.3	1.0	0.0	12.3	66.5	4.3	13.0	16.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	352	68	58	229	224	100	412	2727	849	186	2652	826
V/C Ratio(X)	0.83	0.53	0.00	0.90	0.13	0.00	0.85	1.05	0.13	1.33	0.41	0.00
Avail Cap(c_a), veh/h	444	240	204	229	457	204	527	2727	849	186	2652	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.6	58.7	0.0	53.2	54.9	0.0	53.5	28.8	14.3	55.5	18.1	0.0
Incr Delay (d2), s/veh	10.2	6.3	0.0	34.9	0.3	0.0	10.0	31.7	0.3	182.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	1.3	0.0	9.2	0.5	0.0	6.4	39.0	2.0	15.8	7.7	0.0
LnGrp Delay(d),s/veh	64.8	65.0	0.0	88.1	55.1	0.0	63.5	60.4	14.7	237.5	18.6	0.0
LnGrp LOS	E	E		F	E		E	F	B	F	B	
Approach Vol, veh/h		328			236			3319			1346	
Approach Delay, s/veh		64.9			84.1			59.2			58.9	
Approach LOS		E			F			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	72.5	22.0	10.5	20.8	70.7	18.7	13.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	13.0	55.0	16.0	16.0	19.0	49.0	16.0	16.0				
Max Q Clear Time (g_c+I1), s	15.0	68.5	16.3	4.4	14.3	18.3	12.3	3.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.5	29.2	0.3	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			60.6									
HCM 2010 LOS			E									

Intersection

Int Delay, s/veh 5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	245	120	0	0	174	16	0	0	0	15	0	180
Future Vol, veh/h	245	120	0	0	174	16	0	0	0	15	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	150	-	-	100	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	266	130	0	0	189	17	0	0	0	16	0	196

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	189	0	0	130	0	0	852	852	130	852	852	189
Stage 1	-	-	-	-	-	-	663	663	-	189	189	-
Stage 2	-	-	-	-	-	-	189	189	-	663	663	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1385	-	-	1455	-	-	280	297	920	280	297	853
Stage 1	-	-	-	-	-	-	450	459	-	813	744	-
Stage 2	-	-	-	-	-	-	813	744	-	450	459	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1455	-	-	184	240	920	239	240	853
Mov Cap-2 Maneuver	-	-	-	-	-	-	184	240	-	306	314	-
Stage 1	-	-	-	-	-	-	364	371	-	657	744	-
Stage 2	-	-	-	-	-	-	627	744	-	364	371	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.5	0	0	11
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	1385	-	-	1455	-	-	306	853
HCM Lane V/C Ratio	-	-	0.192	-	-	-	-	-	0.053	0.229
HCM Control Delay (s)	0	0	8.2	-	-	0	-	-	17.4	10.5
HCM Lane LOS	A	A	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.7	-	-	0	-	-	0.2	0.9

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	431	47	387	176	22	103	263	1263	131	265	2786	332
Future Volume (veh/h)	431	47	387	176	22	103	263	1263	131	265	2786	332
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	468	51	0	191	24	0	286	1373	142	288	3028	0
Adj No. of Lanes	2	1	1	1	2	1	2	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	444	83	70	217	134	60	222	2349	732	315	2925	911
Arrive On Green	0.13	0.04	0.00	0.12	0.04	0.00	0.06	0.46	0.46	0.18	0.58	0.00
Sat Flow, veh/h	3442	1863	1583	1774	3539	1583	3442	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	468	51	0	191	24	0	286	1373	142	288	3028	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1774	1770	1583	1721	1695	1583	1774	1695	1583
Q Serve(g_s), s	16.0	3.3	0.0	13.1	0.8	0.0	8.0	24.7	6.6	19.8	71.3	0.0
Cycle Q Clear(g_c), s	16.0	3.3	0.0	13.1	0.8	0.0	8.0	24.7	6.6	19.8	71.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	444	83	70	217	134	60	222	2349	732	315	2925	911
V/C Ratio(X)	1.05	0.62	0.00	0.88	0.18	0.00	1.29	0.58	0.19	0.91	1.04	0.00
Avail Cap(c_a), veh/h	444	240	204	229	457	204	222	2349	732	358	2925	911
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.0	58.2	0.0	53.5	57.8	0.0	58.0	24.6	19.7	50.1	26.3	0.0
Incr Delay (d2), s/veh	57.6	7.2	0.0	29.2	0.6	0.0	159.1	1.1	0.6	25.5	26.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.1	1.9	0.0	8.2	0.4	0.0	8.7	11.8	3.0	11.9	40.3	0.0
LnGrp Delay(d),s/veh	111.6	65.4	0.0	82.7	58.4	0.0	217.1	25.7	20.3	75.5	53.0	0.0
LnGrp LOS	F	E		F	E		F	C	C	E	F	
Approach Vol, veh/h		519			215			1801			3316	
Approach Delay, s/veh		107.1			80.0			55.6			55.0	
Approach LOS		F			E			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.0	63.3	21.2	11.5	14.0	77.3	22.0	10.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	25.0	43.0	16.0	16.0	8.0	60.0	16.0	16.0				
Max Q Clear Time (g_c+l1), s	21.8	26.7	15.1	5.3	10.0	73.3	18.0	2.8				
Green Ext Time (p_c), s	0.3	16.1	0.0	0.2	0.0	0.0	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			60.7									
HCM 2010 LOS			E									

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	245	200	0	0	129	16	0	0	0	15	0	180
Future Vol, veh/h	245	200	0	0	129	16	0	0	0	15	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	150	-	-	100	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	266	217	0	0	140	17	0	0	0	16	0	196
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	140	0	0	217	0	0	890	890	217	890	890	140
Stage 1	-	-	-	-	-	-	750	750	-	140	140	-
Stage 2	-	-	-	-	-	-	140	140	-	750	750	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1443	-	-	1353	-	-	264	282	823	264	282	908
Stage 1	-	-	-	-	-	-	403	419	-	863	781	-
Stage 2	-	-	-	-	-	-	863	781	-	403	419	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1443	-	-	1353	-	-	178	230	823	227	230	908
Mov Cap-2 Maneuver	-	-	-	-	-	-	178	230	-	284	295	-
Stage 1	-	-	-	-	-	-	329	342	-	704	781	-
Stage 2	-	-	-	-	-	-	677	781	-	329	342	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.4			0			0			10.7		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	-	-	1443	-	-	1353	-	-	284	908		
HCM Lane V/C Ratio	-	-	0.185	-	-	-	-	-	0.057	0.215		
HCM Control Delay (s)	0	0	8.1	-	-	0	-	-	18.4	10.1		
HCM Lane LOS	A	A	A	-	-	A	-	-	C	B		
HCM 95th %tile Q(veh)	-	-	0.7	-	-	0	-	-	0.2	0.8		

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2037 AM TOTAL

04/11/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖↗	↑	↗	↖	↑↑	↗	↖↗	↑↑↑	↗	↖	↑↑↑	↗	
Traffic Volume (veh/h)	269	37	188	210	31	148	323	2639	106	265	1010	251	
Future Volume (veh/h)	269	37	188	210	31	148	323	2639	106	265	1010	251	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No				No				No				
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	292	40	0	228	34	0	351	2868	115	288	1098	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	352	71		230	231		414	2649	822	215	2655		
Arrive On Green	0.10	0.04	0.00	0.13	0.06	0.00	0.12	0.52	0.52	0.12	0.52	0.00	
Sat Flow, veh/h	3456	1870	1585	1781	3554	1585	3456	5106	1585	1781	5106	1585	
Grp Volume(v), veh/h	292	40	0	228	34	0	351	2868	115	288	1098	0	
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1777	1585	1728	1702	1585	1781	1702	1585	
Q Serve(g_s), s	10.3	2.6	0.0	15.9	1.1	0.0	12.3	64.3	4.7	15.0	16.3	0.0	
Cycle Q Clear(g_c), s	10.3	2.6	0.0	15.9	1.1	0.0	12.3	64.3	4.7	15.0	16.3	0.0	
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	352	71		230	231		414	2649	822	215	2655		
V/C Ratio(X)	0.83	0.57		0.99	0.15		0.85	1.08	0.14	1.34	0.41		
Avail Cap(c_a), veh/h	446	241		230	459		530	2649	822	215	2655		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	54.6	58.7	0.0	53.9	54.7	0.0	53.5	29.8	15.5	54.5	18.2	0.0	
Incr Delay (d2), s/veh	10.1	7.0	0.0	57.0	0.3	0.0	10.0	44.7	0.4	179.4	0.5	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	4.9	1.4	0.0	10.6	0.5	0.0	5.7	34.0	1.7	17.2	6.0	0.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	64.7	65.6	0.0	110.9	55.0	0.0	63.4	74.5	15.8	233.9	18.7	0.0	
LnGrp LOS	E	E		F	E		E	F	B	F	B		
Approach Vol, veh/h	332		A		262		A		3334		1386		A
Approach Delay, s/veh	64.8				103.7				71.3		63.4		
Approach LOS	E				F				E				E
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	31.0	70.3	22.0	10.7	20.9	70.5	18.6	14.0					
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Green Setting (Gmax), s	15.0	53.0	16.0	16.0	19.0	49.0	16.0	16.0					
Max Q Clear Time (g_c+117), s	117.0	66.3	17.9	4.6	14.3	18.3	12.3	3.1					
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.5	7.7	0.4	0.1					

Intersection Summary

HCM 6th Ctrl Delay	70.4
HCM 6th LOS	E

Notes

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

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	245	79	0	5	55	16	35	0	4	15	0	180
Future Vol, veh/h	245	79	0	5	55	16	35	0	4	15	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	150	-	-	100	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	266	86	0	5	60	17	38	0	4	16	0	196
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	86	0	0	795	705	86	690	688	60
Stage 1	-	-	-	-	-	-	618	618	-	70	70	-
Stage 2	-	-	-	-	-	-	177	87	-	620	618	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1522	-	-	1510	-	-	305	361	973	359	369	1005
Stage 1	-	-	-	-	-	-	477	481	-	940	837	-
Stage 2	-	-	-	-	-	-	825	823	-	476	481	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1522	-	-	1510	-	-	212	297	973	309	304	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	212	297	-	342	346	-
Stage 1	-	-	-	-	-	-	394	397	-	776	834	-
Stage 2	-	-	-	-	-	-	662	821	-	391	397	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	5.9			0.5			24			9.9		
HCM LOS							C			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	212	973	1522	-	-	1510	-	-	342	1005		
HCM Lane V/C Ratio	0.179	0.004	0.175	-	-	0.004	-	-	0.048	0.195		
HCM Control Delay (s)	25.7	8.7	7.9	-	-	7.4	-	-	16.1	9.4		
HCM Lane LOS	D	A	A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	0.6	0	0.6	-	-	0	-	-	0.1	0.7		

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04/11/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	431	55	387	235	30	121	270	1317	139	335	2786	332		
Future Volume (veh/h)	431	55	387	235	30	121	270	1317	139	335	2786	332		
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870		
Adj Flow Rate, veh/h	468	60	0	255	33	0	293	1432	151	364	3028	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2		
Cap, veh/h	446	91		230	173		223	2140	664	373	2881			
Arrive On Green	0.13	0.05	0.00	0.13	0.05	0.00	0.06	0.42	0.42	0.21	0.56	0.00		
Sat Flow, veh/h	3456	1870	1585	1781	3554	1585	3456	5106	1585	1781	5106	1585		
Grp Volume(v), veh/h	468	60	0	255	33	0	293	1432	151	364	3028	0		
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1777	1585	1728	1702	1585	1781	1702	1585		
Q Serve(g_s), s	16.0	3.9	0.0	16.0	1.1	0.0	8.0	28.1	7.6	25.2	70.0	0.0		
Cycle Q Clear(g_c), s	16.0	3.9	0.0	16.0	1.1	0.0	8.0	28.1	7.6	25.2	70.0	0.0		
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	446	91		230	173		223	2140	664	373	2881			
V/C Ratio(X)	1.05	0.66		1.11	0.19		1.31	0.67	0.23	0.97	1.05			
Avail Cap(c_a), veh/h	446	241		230	459		223	2140	664	373	2881			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	54.0	58.0	0.0	54.0	56.6	0.0	58.0	29.1	23.1	48.7	27.0	0.0		
Incr Delay (d2), s/veh	56.2	7.9	0.0	91.8	0.5	0.0	169.6	1.7	0.8	39.7	32.1	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.3	2.0	0.0	12.9	0.5	0.0	8.6	10.9	2.9	14.7	32.8	0.0		
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	110.2	65.9	0.0	145.8	57.2	0.0	227.6	30.8	23.9	88.4	59.1	0.0		
LnGrp LOS	F	E		F	E		F	C	C	F	F			
Approach Vol, veh/h	528		A		288		A		1876		3392		A	
Approach Delay, s/veh	105.2				135.7				60.9		62.3			
Approach LOS	F				F				E		E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8						
Phs Duration (G+Y+Rc), s	32.0	58.0	22.0	12.0	14.0	76.0	22.0	12.0						
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0						
Max Green Setting (Gmax), s	26.0	42.0	16.0	16.0	8.0	60.0	16.0	16.0						
Max Q Clear Time (g_c+Y), s	27.2	30.1	18.0	5.9	10.0	72.0	18.0	3.1						
Green Ext Time (p_c), s	0.0	7.1	0.0	0.1	0.0	0.0	0.0	0.1						

Intersection Summary

HCM 6th Ctrl Delay	69.1
HCM 6th LOS	E

Notes

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

Intersection												
Int Delay, s/veh	10											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	245	200	0	8	129	16	77	0	8	15	0	180
Future Vol, veh/h	245	200	0	8	129	16	77	0	8	15	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	150	-	-	100	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	266	217	0	9	140	17	84	0	9	16	0	196

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	157	0	0	217	0	0	1014	924	217	912	907	140
Stage 1	-	-	-	-	-	-	749	749	-	158	158	-
Stage 2	-	-	-	-	-	-	265	175	-	754	749	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1423	-	-	1353	-	-	217	269	823	255	276	908
Stage 1	-	-	-	-	-	-	404	419	-	844	767	-
Stage 2	-	-	-	-	-	-	740	754	-	401	419	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1423	-	-	1353	-	-	145	217	823	215	223	908
Mov Cap-2 Maneuver	-	-	-	-	-	-	145	217	-	271	286	-
Stage 1	-	-	-	-	-	-	328	341	-	686	762	-
Stage 2	-	-	-	-	-	-	577	749	-	323	341	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.5			0.4			54.5			10.8		
HCM LOS							F			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	145	823	1423	-	-	1353	-	-	271	908
HCM Lane V/C Ratio	0.577	0.011	0.187	-	-	0.006	-	-	0.06	0.215
HCM Control Delay (s)	59.2	9.4	8.1	-	-	7.7	-	-	19.1	10.1
HCM Lane LOS	F	A	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	3	0	0.7	-	-	0	-	-	0.2	0.8

COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: PARKER RD
E/W STREET: STROH RD
CITY: PARKER
COUNTY: DOUGLAS

File Name : PARKSTROA
Site Code : 00000008
Start Date : 2/25/2016
Page No : 1

Groups Printed- 1 - VEHICLES

	PARKER RD Southbound				STROH RD Westbound				PARKER RD Northbound				STROH RD Eastbound				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:45 AM	11	169	22	0	1	1	1	0	37	377	4	0	39	5	21	0	688
Total	11	169	22	0	1	1	1	0	37	377	4	0	39	5	21	0	688
07:00 AM	7	190	35	0	0	3	4	0	38	441	2	0	47	2	32	0	801
07:15 AM	1	161	39	0	0	3	2	0	47	558	2	0	49	5	27	0	894
07:30 AM	4	144	42	0	2	1	7	0	60	551	3	0	62	1	9	0	886
07:45 AM	8	180	31	0	1	2	4	0	25	404	3	0	44	1	13	0	716
Total	20	675	147	0	3	9	17	0	170	1954	10	0	202	9	81	0	3297
08:00 AM	12	182	25	0	1	1	7	0	42	388	2	0	44	4	17	0	725
Total	12	182	25	0	1	1	7	0	42	388	2	0	44	4	17	0	725
11:45 AM	3	206	35	0	1	0	8	4	34	202	0	0	40	4	29	0	566
Total	3	206	35	0	1	0	8	4	34	202	0	0	40	4	29	0	566
12:00 PM	7	193	34	0	1	3	4	1	38	174	0	0	50	4	14	0	523
12:15 PM	8	206	33	0	2	4	7	0	54	191	2	0	40	4	22	0	573
12:30 PM	7	222	37	0	1	3	7	0	36	178	0	0	52	5	21	0	569
12:45 PM	7	213	35	0	2	1	7	1	51	219	1	0	40	8	29	0	614
Total	29	834	139	0	6	11	25	2	179	762	3	0	182	21	86	0	2279
01:00 PM	8	255	37	0	3	0	4	0	50	215	2	0	35	2	33	0	644
Total	8	255	37	0	3	0	4	0	50	215	2	0	35	2	33	0	644
04:45 PM	3	443	46	0	1	0	7	0	38	216	1	0	81	4	57	0	897
Total	3	443	46	0	1	0	7	0	38	216	1	0	81	4	57	0	897
05:00 PM	6	443	58	0	1	1	10	0	53	239	0	0	71	6	67	0	955
05:15 PM	4	461	50	0	2	1	3	0	48	214	2	0	78	2	69	0	934
05:30 PM	4	510	67	0	0	1	4	0	41	209	1	0	37	8	63	0	945
05:45 PM	5	482	69	0	1	3	8	0	36	199	3	0	40	2	48	0	896
Total	19	1896	244	0	4	6	25	0	178	861	6	0	226	18	247	0	3730
06:00 PM	1	456	44	0	1	0	4	0	32	202	1	0	43	5	61	0	850
Grand Total	106	5116	739	0	21	28	98	6	760	5177	29	0	892	72	632	0	13676
Apprch %	1.8	85.8	12.4	0.0	13.7	18.3	64.1	3.9	12.7	86.8	0.5	0.0	55.9	4.5	39.6	0.0	
Total %	0.8	37.4	5.4	0.0	0.2	0.2	0.7	0.0	5.6	37.9	0.2	0.0	6.5	0.5	4.6	0.0	

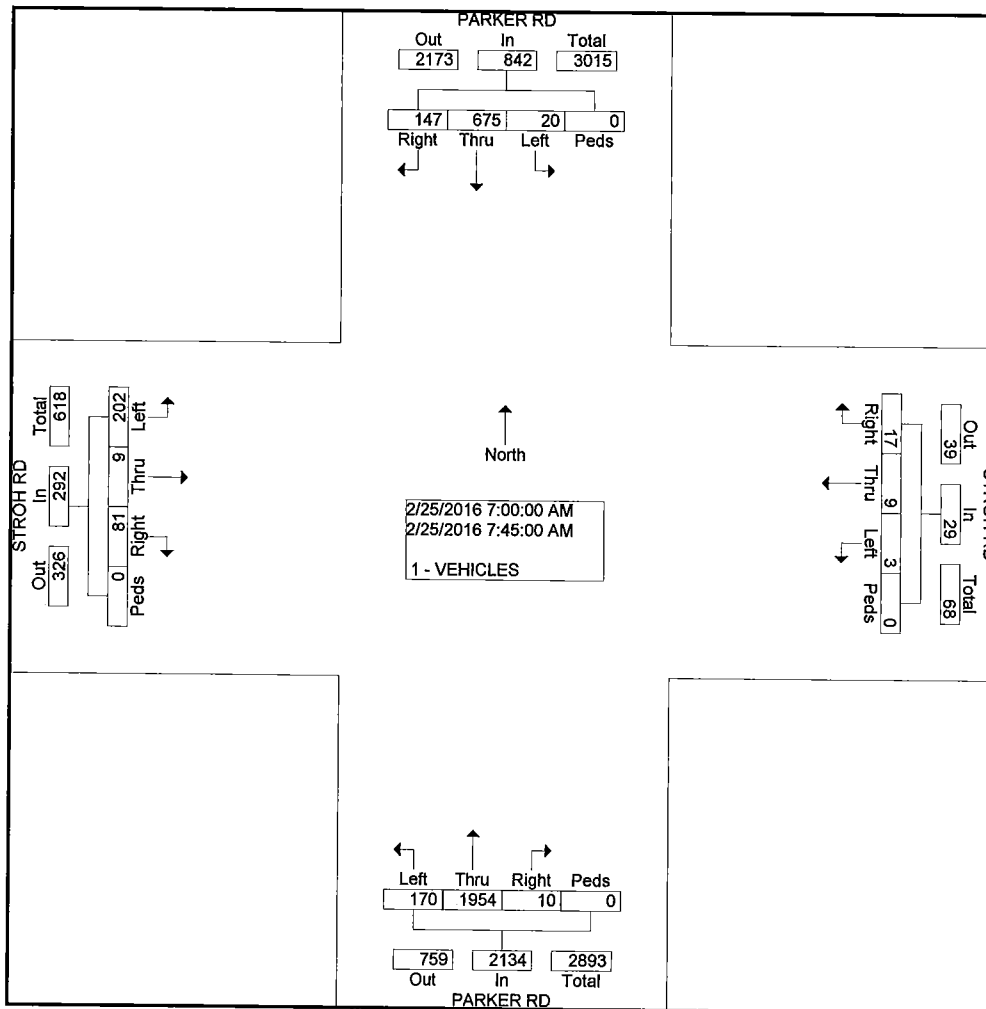
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: PARKER RD
E/W STREET: STROH RD
CITY: PARKER
COUNTY: DOUGLAS

File Name : PARKSTROA
Site Code : 00000008
Start Date : 2/25/2016
Page No : 2

	PARKER RD Southbound					STROH RD Westbound					PARKER RD Northbound					STROH RD Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 06:45 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:00 AM																				
Volume	20	675	147	0	842	3	9	17	0	29	170	1954	10	0	2134	202	9	81	0	292	3297
Percent	2.4	80.2	17.5	0.0		10.3	31.0	58.6	0.0		8.0	91.6	0.5	0.0		69.2	3.1	27.7	0.0		
07:15 Volume	1	161	39	0	201	0	3	2	0	5	47	558	2	0	607	49	5	27	0	81	894
Peak Factor																					0.922
High Int. Volume	07:00 AM					07:30 AM					07:30 AM					07:00 AM					
Peak Factor	7	190	35	0	232	2	1	7	0	10	60	551	3	0	614	47	2	32	0	81	
	0.90					0.72					0.86					0.90					1
	7					5					9					1					



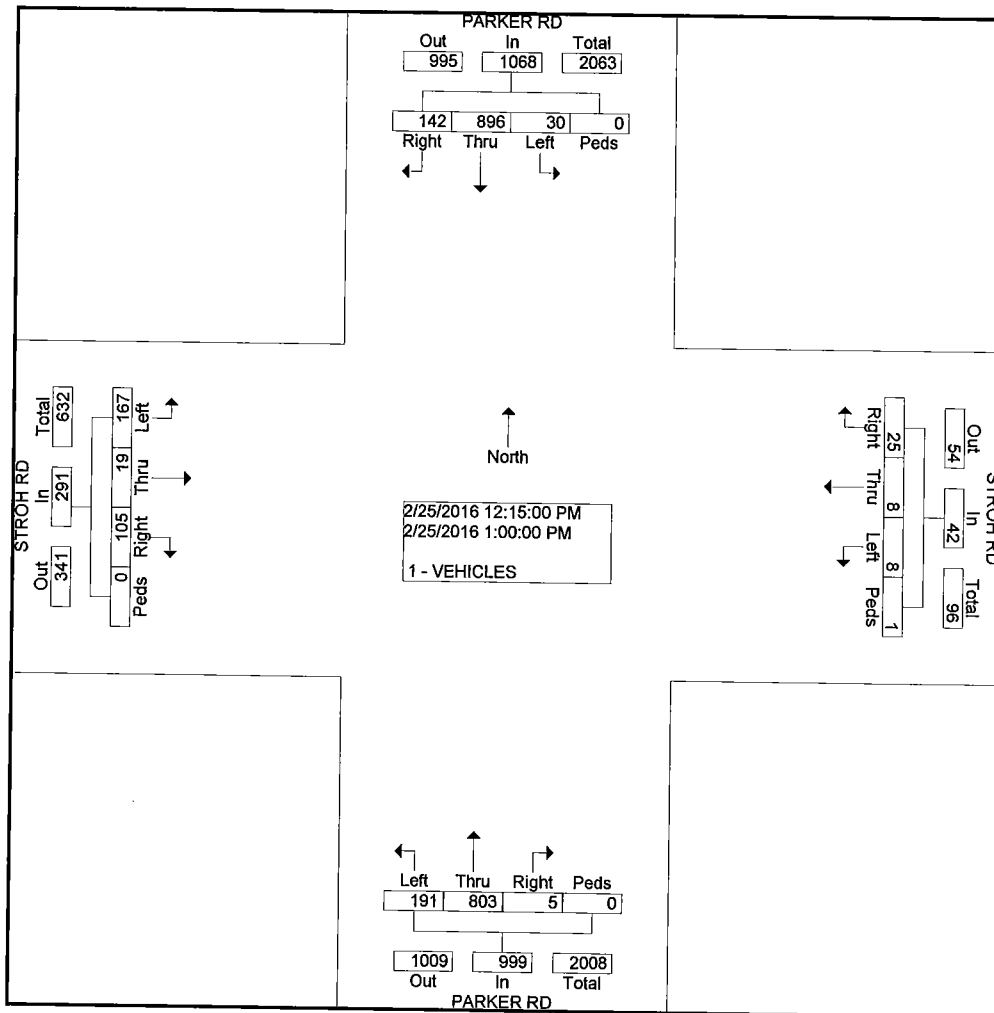
COUNTER MEASURES INC.

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	PARKER RD Southbound					STROH RD Westbound					PARKER RD Northbound					STROH RD Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour	From 11:45 AM to 01:15 PM - Peak 1 of 1																				
Intersection	12:15 PM																				
Volume	30	896	142	0	1068	8	8	25	1	42	191	803	5	0	999	167	19	105	0	291	2400
Percent	2.8	83.9	13.3	0.0		19.0	19.0	59.5	2.4		19.1	80.4	0.5	0.0		57.4	6.5	36.1	0.0		
01:00 Volume	8	255	37	0	300	3	0	4	0	7	50	215	2	0	267	35	2	33	0	70	644
Peak Factor																					0.932
High Int. Volume	01:00 PM					12:15 PM					12:45 PM					12:30 PM					
Peak Factor	8	255	37	0	300	2	4	7	0	13	51	219	1	0	271	52	5	21	0	78	
	0.89					0.80					0.92					0.93					3
	0					8					2										



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File Name : PARKSTROA
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	PARKER RD Southbound					STROH RD Westbound					PARKER RD Northbound					STROH RD Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:45 PM to 06:00 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	17	185 7	221	0	2095	4	3	24	0	31	180	878	4	0	1062	267	20	256	0	543	3731
Percent	0.8	88. 6	10. 5	0.0		12. 9	9.7	77. 4	0.0		16. 9	82. 7	0.4	0.0		49. 2	3.7	47. 1	0.0		
05:00 Volume	6	443	58	0	507	1	1	10	0	12	53	239	0	0	292	71	6	67	0	144	955
Peak Factor																					0.977
High Int.	05:30 PM					05:00 PM					05:00 PM					05:15 PM					
Volume	4	510	67	0	581	1	1	10	0	12	53	239	0	0	292	78	2	69	0	149	
Peak Factor																					0.911

