1970 Broadway, Suite 740
Oakland, CA 94612
510.763.2061
www.dksassociates.com

DATE: March 6, 2017

TO: Brett Hondorp, AICP, Alta

FROM: David Mahama, PE, DKS

CC: Tal Stainer, DKS

SUBJECT: Contra Costa County I-680 / Treat Blvd Bicycle and Pedestrian Plan – Feasibility Study and Evaluation Traffic Analysis of Revised Concept 4 #14070-001

Introduction

With the goal of providing more livable communities, Contra Costa County Department of Conservation and Development has decided to complete the I-680/Treat Boulevard Bicycle and Pedestrian Plan. To finish the bicycle and pedestrian transportation network, Contra Costa County has targeted Treat Boulevard between Main Street and Jones Road to provide safe and convenient access from the Iron Horse Trail to businesses and restaurants on Main Street, focusing especially on the I-680 interchange. The Transportation for Livable Communities (TLC) program is the funding source for this project, which is managed by the Contra Costa Transportation Authority (CCTA).

This project includes the following intersections:

- Treat Boulevard/Geary Road and Main Street
- Treat Boulevard and Buskirk Avenue/I-680 northbound ramps
- Treat Boulevard and Oak Road
- Treat Boulevard and Jones Road/Iron Horse Trail

The field observations on this corridor indicate that there are high vehicle turning volumes that conflict with pedestrians, high weaving volumes that create a challenging environment for cyclists, and that the current infrastructure could be improved to better serve pedestrians and cyclists.

The performance of the four study intersections was evaluated for AM and PM peak periods for the current year (2014) traffic conditions and future year (2040) traffic conditions. Four initial study concept (Concept 1B, Concept 2, Concept 3, and Concept 4) geometric improvements as well as traffic signal timing improvements were evaluated to determine the performance of the network. Once the initial alternatives were evaluated by the stakeholders, a final concept (Revised Concept 4) was developed.

This report presents a traffic impact evaluation for the Revised Concept 4 pedestrian and bicycle related improvements to the transportation environment along Treat Boulevard. This final design is a modified version of Concept 4 and can be found in Appendix A. This revision includes the elimination of the free southbound right turn lane at the Treat

Boulevard/Oak Road intersection, which is expected to eliminate traffic weaving along the segment of Treat Boulevard between Oak Road and Buskirk Avenue in the westbound direction.

Current Year Analysis (2014)

For the current year (2014 volumes), overall network performance is not largely impacted as compared to the existing condition for the revised concept. Individual intersection level of service (LOS) was analyzed to assess the potential impacts of the revised concept. A queuing analysis was also included for traffic movements of concern and Table 1 presents the results of the analysis. As shown in Table 1, intersection delay is high in general under existing conditions. LOS generally remains the same, except at Oak Road, which deteriorates. The biggest impact occurs at the Treat Boulevard/Oak Road intersection in the P.M. This is due to the reconfiguration of the southbound movement – the free right is removed as well as one of the through lanes.

The queuing analysis shows little to no impact at the Treat Boulevard/Main Street intersection. At the Treat Boulevard/Oak Road intersection, southbound through queues are expected to increase in the A.M. and in the P.M. This is due to the reconfiguration of the southbound approach. It should be noted that the southbound right turning vehicles are expected to experience shorter queue lengths. This is due to the additional right turn lane. Furthermore, queuing is expected to increase for the westbound right turn at the Treat Boulevard/I-680 ramps/Buskirk Avenue intersection during the P.M. peak hour.

For the proposed alternatives the signal timing parameters were optimized to benefit the overall performance of the Treat Boulevard corridor in the westbound and eastbound directions. Optimization of the corridor is expected to result in improved performance of the Treat Boulevard/Jones Road intersection but decreased efficiency of the Treat Boulevard/Oak Road intersection.

Lastly, an alternate variation of the Revised Concept 4 was assessed. The variation includes the removal of one eastbound lane between the Treat Boulevard/I-680 ramps/Buskirk Avenue and Treat Boulevard/Oak Road intersections and modifying the two intersections described as follows: 1) Eliminate the northbound free right-turn at the Treat Boulevard/I-680 ramps/Buskirk Avenue intersection. 2) Remove the eastbound right turn lane at the Treat Boulevard/Oak Road intersection, which will result in converting the curbside through lane to a shared through-right lane. The traffic analysis results of this alternative are shown in Table 1. Because the Treat Boulevard/I-680 ramps/Buskirk Avenue intersection is expected to operate unacceptably in the A.M., the alternative was excluded from future considerations. Furthermore, the expected queues for the northbound right turning vehicles was shown to extend back on the ramp all the way to NB I-680 in the A.M. and extend almost all the way to the freeway in the P.M.

Table 1: Intersection LOS Comparison for Current Year (2014)

Intersection	*Peak Hour*	*Existing*				*Revised Concept 4*				*Revised Concept 4 - Alternative*			
		Control Delay (s)	*LOS*	*Movmt. of Interest*	*Queue Length (ft)*	*Control Delay (s)*	*LOS*	*Movmt. of Interest*	*Queue Length (ft)*	*Control Delay (s)*	*LOS*	*Movmt. of Interest*	*Queue Length (ft)*
Treat Boulevard and Main Street*	A.M.	55.7	E	WBLT	356	53.1	D	WBLT	378	Not Applicable			
				WBRT	0			WBRT	0				
	P.M.	42.9	D	WBLT	174	42.9	D	WBLT	160				
				WBRT	890			WBRT	0				
Treat Boulevard and I-680 Northbound Ramps/Buskirk Avenue	A.M.	30.3	C	WBRT	126	34.7	C	WBRT	130	112.9	F	WBRT	640
				NBRT	0			NBRT	0			NBRT	1446
	P.M.	17.5	B	WBRT	169	19.5	B	WBRT	638	62.1	E	WBRT	638
				NBRT	0			NBRT	0			NBRT	1308
Treat Boulevard and Oak Road	A.M.	46.8	D	SBRT	140	49.2	D	SBRT	68	49.7	D	SBRT	69
				SBTH	295			SBTH	681			SBTH	731
	P.M.	19.3	B	SBRT	382	36.8	D	SBRT	161	41.6	D	SBRT	163
				SBTH	127			SBTH	323			SBTH	323
Treat Boulevard and Jones Road*	A.M.	37.6	D	No movement of interest		32.8	C	No movement of interest		Not Applicable			
	P.M.	49.8	D			48.3	D						

Notes: HCM 2010 analysis unless specified by *.
*HCM 2000 analysis due to HCM 2010 limitations.
Queue Length = 95th Percentile Queue Length

Future Year Analysis (2040)

Individual intersection delay and LOS were analyzed to assess the potential impacts of the revised concept for the future year (2040). A queuing analysis was also completed for movements of concern. Table 2, on the next page, presents the findings for this analysis. As shown, intersection delay is high in general for the future year.

In general, the removal of the free right turn (revised concept 4) has a negative impact on delay and queuing at Oak Road during the morning and evening peak periods. Since the improvement involves the removal of the SB free right turn as well as a removal of one of the through lanes, SB through movements are subject to much queueing, especially in the A.M.

For the future year alternatives, the signal timings were optimized to benefit the overall performance of the Treat Boulevard corridor in the westbound and eastbound directions. This optimization results in higher delays for side street and left turn movements, as indicated by the high delay at Treat Boulevard/Jones Road during the p.m. peak hour. Although performance degrades slightly with the free right turn removal at Oak Road, the high weaving volumes observed between Oak Road and the I-680 ramps are mitigated. Removing the inefficient and unsafe weaving behavior on this segment reduces the potential negative impact of the improvements at the corridor level.

Table 2: Intersection LOS Comparison for Future Year (2040)

Intersection	*Peak Hour*	*Revised Concept 4*			
		Control Delay (s)	*LOS*	*Movmt. of Interest*	*Queue Length (ft)*
Treat Boulevard and Main Street*	A.M.	60.1	E	WBLT	410
				WBRT	0
	P.M.	60.0	E	WBLT	410
				WBRT	0
Treat Boulevard and I-680 Northbound Ramps/Buskirk Avenue	A.M.	36.5	D	WBRT	131
				NBRT	0
	P.M.	26.1	C	WBRT	193
				NBRT	0
Treat Boulevard and Oak Road	A.M.	53.8	D	SBRT	82
				SBTH	706
	P.M.	42.7	D	SBRT	189
				SBTH	557
Treat Boulevard and Jones Road*	A.M.	59.7	E	No movement of interest	
	P.M.	143.9	F		

Notes: HCM 2010 analysis unless specified by *.
*HCM 2000 analysis due to HCM 2010 limitations.
Queue Length = 95th Percentile Queue Length

Conclusion

Implementation of Revised Concept 4 is expected to result in some increased delay and queuing for motorists at specific intersections on Treat Boulevard. The alternative concept has been shown to be ineffective as it leads to unacceptable LOS levels even with 2014 volume levels. Therefore, these were not considered in future analysis. The reconfiguration of the southbound approach at the Treat Boulevard/Oak Road intersection is expected to result in increased delay and queuing. This is to be expected as one of the southbound through lanes is removed, the free southbound right turn is removed and replaced with two southbound right turn lanes. As a result, the southbound through queue is expected to increase and vehicles in this movement experience higher delays. It should be noted that the removal of free right-turn is expected to achieve the goal of eliminating the potentially dangerous weaving along Treat Boulevard between Oak Road and Buskirk. Furthermore, the queues for the southbound right turning vehicles are expected to decrease. When compared to the benefits for other transportation modes, the increased delay for motorists is relatively small.

STUDY PARTICIPANTS

Client

Jamar Stamps	Planner, Contra Costa County Department of Conservation and Development

Technical Advisory Committee

Jeremy Lochiro	City of Walnut Creek
Angela Villar	Engineer, Contra Costa County Public Works
Coire Reilly	Contra Costa County Health Services Department
Anh Phan Nguyen	Caltrans
Denise Seib	Contra Costa Centre Association
Laura Case	Contra Costa County Board of Supervisors Office
John Vallor	Contra Costa County MAC
Brad Beck	Contra Costa County Transportation Authority

Alta Planning + Design

Brett Hondorp	Principal-In-Charge
John Lieswyn, PTP, MET	Consultant Team Project Manager, Alta Planning
Alexandra Sweet	Planner, Alta Planning

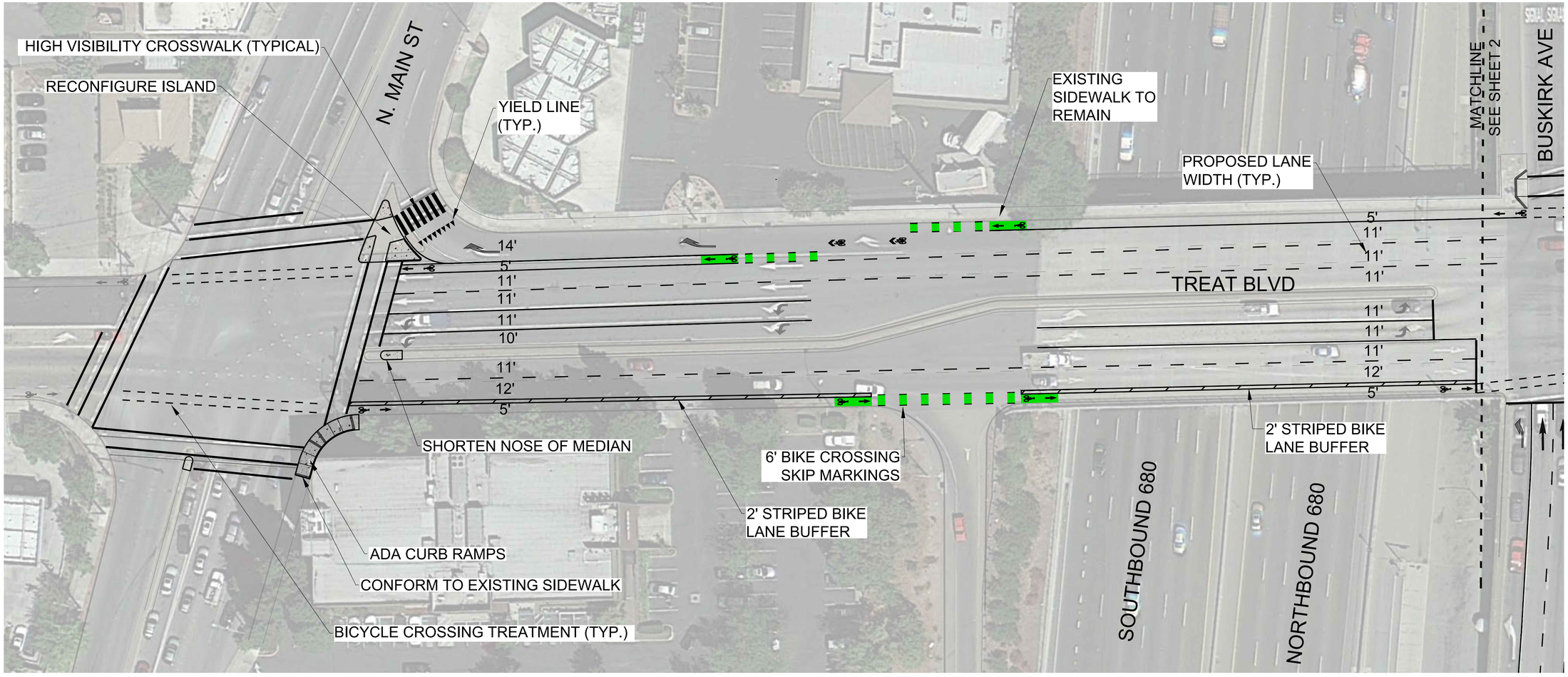
DKS

Peter Coffey, P.E.	Principal-In-Charge
David Mahama, P.E.	Project Manager
Tal Sztainer, E.I.T	Associate Transportation Engineer

Others

IDAX	Data Collection
Quality Counts, LLC	Data Collection

Appendix A – Revised Concept 4 Plans



0 15' 30' 60' 90'

DESIGNED:	LD
DRAWN:	JP
REVIEWED:	BH
PROJECT NO.:	2016-355

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TREAT BOULEVARD BICYCLE AND PEDESTRIAN PLAN
PROJECT NUMBER C49472
Concept 4 - PHASE 1

SHEET 1 OF 3

SCALE: AS SHOWN

DATE: JANUARY, 2017

CONVERT FREE RIGHT TURN LANE TO BIKE LANE
INSTALL ADDITIONAL RIGHT TURNING LANE
CONVERT SLIP LANE TO TWO-WAY BIKE LANE
SHORTEN NOSE OF MEDIAN
ADD "BIKES YIELD TO PEDESTRIANS" SIGNS
SIGNAL POLE TO BE RELOCATED
RECONFIGURE ISLAND
3' STREET WIDENING
PATH EDGE STRIPE
EXISTING 8' PATH TO BART STATION (PRIVATE PROPERTY)
RECONFIGURE ISLAND
DESIGNATE EXISTING 10' SIDEWALK FOR TWO-WAY SHARED USE. (PRIVATE PROPERTY)
HIGH VISIBILITY CROSSWALK (TYP.)
BIKE RAMP (TYP.)
YIELD LINE (TYPICAL)
PLANTER TO CLOSE SLIP LANE ACCESS
SEE SHEET 1 MATCHLINE
BUSKIRK AVE
OAK RD
MATCHLINE SEE SHEET 3
TREAT BLVD
BART
10'
12'
12'
11'
11'
40'
38'
6'
12'
11'
11'
40'
37'
14'
5'
11'
11'
10'
10'
10'
11'
11'
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11'
11'
11'
11'
12'
12'
12'
12'
36'
17'
6'
11'
17'
5'
12'
8'
SHORTEN NOSE OF MEDIAN
RECONFIGURE ISLAND
ADA CURB RAMP (TYP.)
APPROXIMATE ROW LINE
DASHED BIKE LANE FOR MERGING AREA (TYP.)
2' STREET WIDENING
2' STRIPED BIKE LANE BUFFER
PROPOSED LANE WIDTH (TYP.)
REMOVE EXISTING CROSSWALK
BICYCLE CROSSING TREATMENT (TYP.)

7'
7'
11'
12'
ALTERNATIVE CONCEPT
BUFFERED BIKE LANE TO REPLACE OUTER LANE
ALTERNATIVE CONCEPT
REMOVE SLIP LANE AND CONSTRUCT CURB EXTENSION

ALTERNATIVE CONCEPT

0 15' 30' 60' 90'

N

THE SEAL OF CONTRA COSTA COUNTY CALIFORNIA

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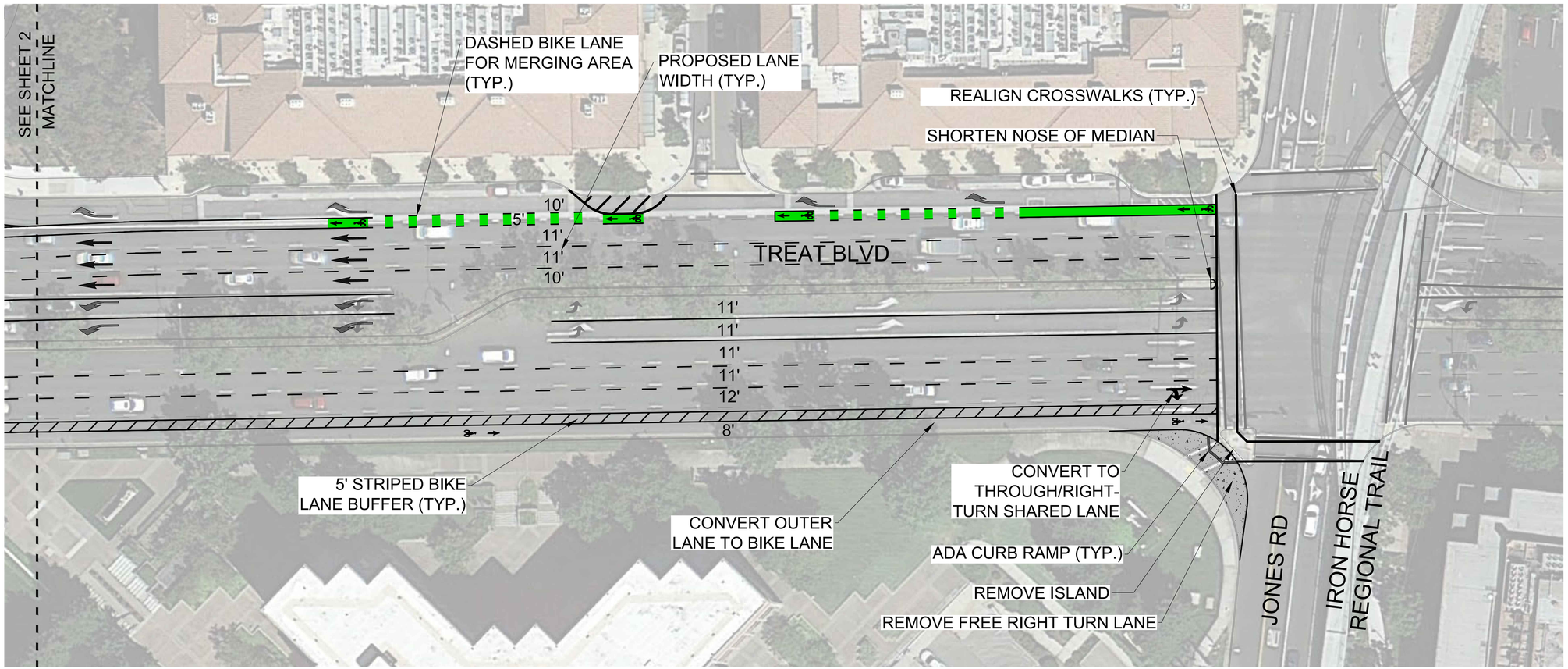
DRAWN:	JP
REVIEWED:	BH
PROJECT NO.:	2016-355

TREAT BOULEVARD BICYCLE AND PEDESTRIAN PLAN
PROJECT NUMBER C49472
Concept 4 - PHASE 1

SHEET 2 OF 3

SCALE: AS SHOWN
DATE: JANUARY, 2017



0 15' 30' 60' 90'

N

DESIGNED:	LD
DRAWN:	JP
REVIEWED:	BH
PROJECT NO.:	2016-355

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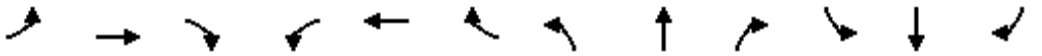
TREAT BOULEVARD BICYCLE AND PEDESTRIAN PLAN
PROJECT NUMBER C49472
Concept 4 - PHASE 1

SHEET 3 OF 3

SCALE: AS SHOWN | DATE: JANUARY, 2017

Appendix B – Current Year Synchro Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	646	149	514	290	792	56	103	328	532	885	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	12	16	12	12	16	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1678	3332		3236	3505	1776	1736	3539	1729	3286	3421	1494
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1678	3332		3236	3505	1776	1736	3539	1729	3286	3421	1494
Peak-hour factor, PHF	0.79	0.79	0.79	0.96	0.96	0.96	0.95	0.95	0.95	0.91	0.91	0.91
Adj. Flow (vph)	34	818	189	535	302	825	59	108	345	585	973	142
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	243	0	0	71
Lane Group Flow (vph)	34	993	0	535	302	825	59	108	102	585	973	71
Confl. Peds. (#/hr)	27		5	5		27	8		4	4		8
Confl. Bikes (#/hr)			2			1						1
Heavy Vehicles (%)	4%	1%	3%	1%	3%	1%	4%	2%	4%	3%	2%	2%
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1 9	6	
Permitted Phases						Free			2			6
Actuated Green, G (s)	5.3	41.7		24.9	61.3	140.0	6.4	27.6	27.6	23.8	49.0	49.0
Effective Green, g (s)	5.3	41.7		24.9	61.3	140.0	6.4	27.6	27.6	23.8	49.0	49.0
Actuated g/C Ratio	0.04	0.30		0.18	0.44	1.00	0.05	0.20	0.20	0.17	0.35	0.35
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	6.0		4.0	6.0		3.0	6.0	6.0		6.0	6.0
Lane Grp Cap (vph)	63	992		575	1534	1776	79	697	340	558	1197	522
v/s Ratio Prot	0.02	c0.30		c0.17	0.09		0.03	0.03		c0.18	c0.28	
v/s Ratio Perm						0.46			0.06			0.05
v/c Ratio	0.54	1.00		0.93	0.20	0.46	0.75	0.15	0.30	1.05	0.81	0.14
Uniform Delay, d1	66.2	49.1		56.7	24.2	0.0	66.0	46.5	47.9	58.1	41.3	31.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	28.8		22.1	0.2	0.9	31.4	0.5	2.2	51.4	6.1	0.5
Delay (s)	70.5	78.0		78.8	24.4	0.9	97.4	47.0	50.2	109.5	47.4	31.6
Level of Service	E	E		E	C	A	F	D	D	F	D	C
Approach Delay (s)		77.7			30.2			55.0			67.5	
Approach LOS		E			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	55.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	389	975	0	0	1402	516	143	474	913	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1918	0	0	1881	1918	1759	1881	1937			
Adj Flow Rate, veh/h	452	1134	0	0	1508	0	164	545	0			
Adj No. of Lanes	2	2	0	0	3	1	1	2	1			
Peak Hour Factor	0.86	0.86	0.86	0.93	0.93	0.93	0.87	0.87	0.87			
Percent Heavy Veh, %	3	3	0	0	1	3	8	1	2			
Cap, veh/h	503	2798	0	0	3049	968	287	613	282			
Arrive On Green	0.15	0.77	0.00	0.00	0.59	0.00	0.17	0.17	0.00			
Sat Flow, veh/h	3408	3741	0	0	5305	1631	1675	3574	1647			
Grp Volume(v), veh/h	452	1134	0	0	1508	0	164	545	0			
Grp Sat Flow(s),veh/h/ln	1704	1823	0	0	1712	1631	1675	1787	1647			
Q Serve(g_s), s	19.7	15.9	0.0	0.0	25.5	0.0	13.6	22.5	0.0			
Cycle Q Clear(g_c), s	19.7	15.9	0.0	0.0	25.5	0.0	13.6	22.5	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	503	2798	0	0	3049	968	287	613	282			
V/C Ratio(X)	0.90	0.41	0.00	0.00	0.49	0.00	0.57	0.89	0.00			
Avail Cap(c_a), veh/h	654	2798	0	0	3049	968	386	823	379			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.64	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	63.3	5.9	0.0	0.0	17.7	0.0	57.5	61.2	0.0			
Incr Delay (d2), s/veh	11.1	0.4	0.0	0.0	0.4	0.0	0.7	7.7	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			
%ile BackOfQ(50%),veh/ln	10.1	8.0	0.0	0.0	12.1	0.0	6.3	11.8	0.0			
LnGrp Delay(d),s/veh	74.4	6.4	0.0	0.0	18.0	0.0	58.2	68.9	0.0			
LnGrp LOS	E	A			B		E	E				
Approach Vol, veh/h		1586			1508			709				
Approach Delay, s/veh		25.7			18.0			66.4				
Approach LOS		C			B			E				

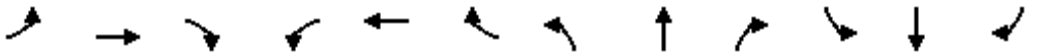
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		121.0			26.3	94.7		30.1
Change Period (Y+Rc), s		5.0			4.0	5.0		4.2
Max Green Setting (Gmax), s		116.0			29.0	83.0		34.8
Max Q Clear Time (g_c+I1), s		17.9			21.7	27.5		24.5
Green Ext Time (p_c), s		91.6			0.6	53.3		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	1446	269	430	1500	46	211	251	31	108	433	207
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.88	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	1866	1900	1900	1881	1900	1881	1881	1792	1827	1863	1918
Adj Flow Rate, veh/h	197	1643	306	489	1705	0	245	292	36	127	509	0
Adj No. of Lanes	2	4	0	2	3	1	2	2	1	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	0	1	4	1	1	6	4	2	3
Cap, veh/h	244	2133	397	542	2437	766	294	867	327	148	861	397
Arrive On Green	0.07	0.39	0.39	0.15	0.47	0.00	0.08	0.24	0.24	0.09	0.24	0.00
Sat Flow, veh/h	3442	5456	1016	3510	5136	1615	3476	3574	1348	1740	3539	1631
Grp Volume(v), veh/h	197	1449	500	489	1705	0	245	292	36	127	509	0
Grp Sat Flow(s),veh/h/ln	1721	1604	1659	1755	1712	1615	1738	1787	1348	1740	1770	1631
Q Serve(g_s), s	8.4	39.3	39.3	20.5	39.1	0.0	10.4	10.1	3.1	10.8	19.0	0.0
Cycle Q Clear(g_c), s	8.4	39.3	39.3	20.5	39.1	0.0	10.4	10.1	3.1	10.8	19.0	0.0
Prop In Lane	1.00		0.61	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	244	1882	649	542	2437	766	294	867	327	148	861	397
V/C Ratio(X)	0.81	0.77	0.77	0.90	0.70	0.00	0.83	0.34	0.11	0.86	0.59	0.00
Avail Cap(c_a), veh/h	299	1882	649	680	2437	766	441	955	360	198	899	414
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)	0.84	0.84	0.84	0.56	0.56	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	68.5	39.7	39.7	62.2	30.9	0.0	67.5	46.8	44.1	67.5	50.0	0.0
Incr Delay (d2), s/veh	10.9	2.6	7.3	7.1	1.0	0.0	5.2	0.1	0.1	19.0	2.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	17.9	19.4	10.5	18.7	0.0	5.2	5.0	1.2	6.0	9.6	0.0
LnGrp Delay(d),s/veh	79.4	42.4	47.0	69.3	31.9	0.0	72.7	46.8	44.2	86.5	52.5	0.0
LnGrp LOS	E	D	D	E	C		E	D	D	F	D	
Approach Vol, veh/h		2146			2194			573			636	
Approach Delay, s/veh		46.8			40.2			57.7			59.3	
Approach LOS		D			D			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	27.1	74.9	16.6	41.4	14.6	87.4	16.8	41.3
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	29.0	55.0	19.0	38.0	13.0	71.0	17.0	40.0
Max Q Clear Time (g_c+I1), s	22.5	41.3	12.4	21.0	10.4	41.1	12.8	12.1
Green Ext Time (p_c), s	0.6	13.7	0.3	7.5	0.2	29.8	0.1	9.7

Intersection Summary	
HCM 2010 Ctrl Delay	46.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	1380	141	240	1985	593	44	43	106	234	78	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	11	12	12	11	11	10
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.86		1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	0.98		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	3224	6278		1745	5136	1544	1745	1638		1641	1693	1450
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	3224	6278		1745	5136	1544	1745	1638		1641	1693	1450
Peak-hour factor, PHF	0.83	0.83	0.83	0.84	0.84	0.84	0.83	0.83	0.83	0.84	0.84	0.84
Adj. Flow (vph)	77	1663	170	286	2363	706	53	52	128	279	93	45
RTOR Reduction (vph)	0	8	0	0	0	135	0	64	0	0	0	39
Lane Group Flow (vph)	77	1825	0	286	2363	571	53	116	0	184	188	6
Confl. Peds. (#/hr)	10		18	18		10	20		13	13		20
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	5%	2%	1%	0%	1%	1%	0%	5%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	8.3	67.1		34.8	93.6	93.6	15.6	15.6		22.5	22.5	22.5
Effective Green, g (s)	8.3	67.1		34.8	93.6	93.6	15.6	15.6		22.5	22.5	22.5
Actuated g/C Ratio	0.05	0.42		0.22	0.58	0.58	0.10	0.10		0.14	0.14	0.14
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	6.0		2.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	167	2632		379	3004	903	170	159		230	238	203
v/s Ratio Prot	0.02	0.29		c0.16	c0.46		0.03	c0.07		c0.11	0.11	
v/s Ratio Perm						0.37						0.00
v/c Ratio	0.46	0.69		0.75	0.79	0.63	0.31	0.73		0.80	0.79	0.03
Uniform Delay, d1	73.7	38.0		58.6	25.5	21.9	67.2	70.1		66.6	66.5	59.3
Progression Factor	0.89	0.88		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	1.0		7.4	2.2	3.4	0.4	13.2		16.9	14.8	0.0
Delay (s)	66.1	34.5		66.0	27.7	25.2	67.6	83.3		83.4	81.2	59.4
Level of Service	E	C		E	C	C	E	F		F	F	E
Approach Delay (s)		35.8			30.4			79.8			79.8	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	34	1007	535	302	825	59	108	345	585	973	142
v/c Ratio	0.39	1.04	0.93	0.20	0.46	0.62	0.14	0.57	1.09	0.77	0.23
Control Delay	76.0	87.0	80.4	25.7	0.9	91.7	45.2	11.9	100.4	45.0	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	87.0	80.4	25.7	0.9	91.7	45.2	11.9	100.4	45.0	10.1
Queue Length 50th (ft)	31	~514	250	92	0	53	42	31	~208	422	20
Queue Length 95th (ft)	59	#512	#356	131	0	#116	70	127	#295	510	69
Internal Link Dist (ft)		1359		306			1086			1080	
Turn Bay Length (ft)	68		243			225		102	196		90
Base Capacity (vph)	179	968	577	1535	1776	99	758	608	539	1256	617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	1.04	0.93	0.20	0.46	0.60	0.14	0.57	1.09	0.77	0.23

Intersection Summary

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	452	1134	1508	555	164	545	1049
v/c Ratio	0.85	0.40	0.51	0.61	0.56	0.84	0.65
Control Delay	81.0	7.4	10.4	11.5	66.6	75.3	2.0
Queue Delay	0.0	0.5	0.1	0.3	0.0	0.0	0.0
Total Delay	81.0	7.9	10.5	11.8	66.6	75.3	2.0
Queue Length 50th (ft)	239	195	111	95	158	292	0
Queue Length 95th (ft)	281	246	130	126	222	334	0
Internal Link Dist (ft)		258	655			1047	
Turn Bay Length (ft)	220				267		437
Base Capacity (vph)	616	2845	2976	910	351	777	1616
Starvation Cap Reductn	0	1132	424	68	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.66	0.59	0.66	0.47	0.70	0.65

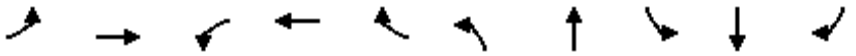
Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	197	1949	489	1705	52	245	292	36	127	509	244
v/c Ratio	0.72	0.82	0.88	0.74	0.07	0.74	0.34	0.09	0.80	0.60	0.46
Control Delay	89.3	44.0	88.0	13.1	0.5	84.1	51.2	0.5	104.3	57.6	20.6
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.3	44.0	88.0	13.3	0.5	84.1	51.2	0.5	104.3	57.6	20.6
Queue Length 50th (ft)	93	531	225	506	3	130	135	0	131	252	70
Queue Length 95th (ft)	140	586	287	62	m0	168	170	0	#203	295	140
Internal Link Dist (ft)		655		700			1075			548	
Turn Bay Length (ft)	164		235			264		202			125
Base Capacity (vph)	285	2389	613	2303	756	397	893	410	178	845	526
Starvation Cap Reductn	0	0	0	94	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.82	0.80	0.77	0.07	0.62	0.33	0.09	0.71	0.60	0.46

Intersection Summary

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

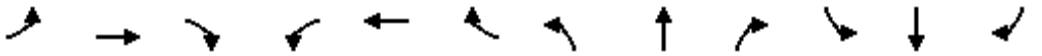
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	77	1833	286	2363	706	53	180	184	188	45
v/c Ratio	0.46	0.69	0.75	0.79	0.68	0.31	0.81	0.80	0.79	0.15
Control Delay	71.1	36.1	71.8	29.9	17.3	69.7	67.7	90.0	88.3	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.1	36.1	71.8	29.9	17.3	69.7	67.7	90.0	88.3	1.1
Queue Length 50th (ft)	43	233	284	670	268	53	115	198	203	0
Queue Length 95th (ft)	m55	345	352	847	459	87	172	257	261	0
Internal Link Dist (ft)		700		1282			449		751	
Turn Bay Length (ft)	341		175			295		228		
Base Capacity (vph)	178	2640	379	3005	1038	381	413	369	380	410
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.69	0.75	0.79	0.68	0.14	0.44	0.50	0.49	0.11

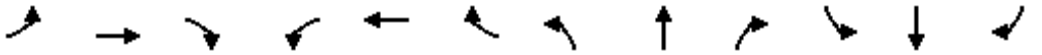
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	481	89	234	370	944	153	429	465	684	330	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	12	16	12	12	16	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1745	3335		3204	3574	1787	1805	3610	1761	3351	3490	1505
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1745	3335		3204	3574	1787	1805	3610	1761	3351	3490	1505
Peak-hour factor, PHF	0.94	0.94	0.94	0.85	0.85	0.85	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	79	512	95	275	435	1111	176	493	534	735	355	243
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	244	0	0	130
Lane Group Flow (vph)	79	596	0	275	435	1111	176	493	290	735	355	113
Confl. Peds. (#/hr)	36		7	7		36	17		4	4		17
Confl. Bikes (#/hr)						4			1			1
Heavy Vehicles (%)	0%	2%	1%	2%	1%	0%	0%	0%	2%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1 9	6	
Permitted Phases						Free			2			6
Actuated Green, G (s)	10.7	33.1		18.2	40.6	140.0	18.6	27.9	27.9	38.8	52.1	52.1
Effective Green, g (s)	10.7	33.1		18.2	40.6	140.0	18.6	27.9	27.9	38.8	52.1	52.1
Actuated g/C Ratio	0.08	0.24		0.13	0.29	1.00	0.13	0.20	0.20	0.28	0.37	0.37
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	6.0		4.0	6.0		3.0	6.0	6.0		6.0	6.0
Lane Grp Cap (vph)	133	788		416	1036	1787	239	719	350	928	1298	560
v/s Ratio Prot	0.05	c0.18		0.09	0.12		0.10	0.14		c0.22	0.10	
v/s Ratio Perm						c0.62			c0.16			0.08
v/c Ratio	0.59	0.76		0.66	0.42	0.62	0.74	0.69	0.83	0.79	0.27	0.20
Uniform Delay, d1	62.5	49.7		58.0	40.2	0.0	58.3	52.0	53.7	46.9	30.7	29.8
Progression Factor	1.00	1.00		1.38	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	5.5		3.9	0.7	1.5	11.2	5.3	19.7	4.7	0.5	0.8
Delay (s)	67.2	55.1		83.7	38.9	1.5	69.5	57.2	73.5	51.5	31.2	30.6
Level of Service	E	E		F	D	A	E	E	E	D	C	C
Approach Delay (s)		56.5			22.8			66.2			42.3	
Approach LOS		E			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	508	1045	0	0	1414	632	160	274	854	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1956	0	0	1881	1956	1881	1881	1956			
Adj Flow Rate, veh/h	540	1112	0	0	1488	0	167	285	0			
Adj No. of Lanes	2	2	0	0	3	1	1	2	1			
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.96	0.96	0.96			
Percent Heavy Veh, %	3	1	0	0	1	1	1	1	1			
Cap, veh/h	594	2998	0	0	3074	995	208	416	193			
Arrive On Green	0.17	0.81	0.00	0.00	1.00	0.00	0.12	0.12	0.00			
Sat Flow, veh/h	3408	3815	0	0	5305	1663	1792	3574	1663			
Grp Volume(v), veh/h	540	1112	0	0	1488	0	167	285	0			
Grp Sat Flow(s),veh/h/ln	1704	1859	0	0	1712	1663	1792	1787	1663			
Q Serve(g_s), s	18.5	9.8	0.0	0.0	0.0	0.0	10.8	9.1	0.0			
Cycle Q Clear(g_c), s	18.5	9.8	0.0	0.0	0.0	0.0	10.8	9.1	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	594	2998	0	0	3074	995	208	416	193			
V/C Ratio(X)	0.91	0.37	0.00	0.00	0.48	0.00	0.80	0.69	0.00			
Avail Cap(c_a), veh/h	630	2998	0	0	3074	995	524	1045	486			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.58	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	48.2	3.2	0.0	0.0	0.0	0.0	51.3	50.5	0.0			
Incr Delay (d2), s/veh	16.1	0.4	0.0	0.0	0.3	0.0	2.7	0.8	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	10.0	5.1	0.0	0.0	0.1	0.0	5.5	4.6	0.0			
LnGrp Delay(d),s/veh	64.3	3.5	0.0	0.0	0.3	0.0	54.0	51.3	0.0			
LnGrp LOS	E	A			A		D	D				
Approach Vol, veh/h		1652			1488			452				
Approach Delay, s/veh		23.4			0.3			52.3				
Approach LOS		C			A			D				

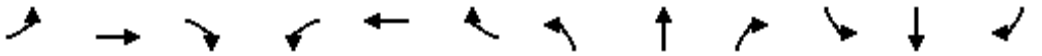
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		122.0			24.7	97.2		18.0
Change Period (Y+Rc), s		5.0			4.0	5.0		4.2
Max Green Setting (Gmax), s		96.0			22.0	70.0		34.8
Max Q Clear Time (g_c+I1), s		11.8			20.5	2.0		12.8
Green Ext Time (p_c), s		78.8			0.2	64.4		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	145	1620	134	152	1394	70	239	425	163	120	226	413
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.93	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	1883	1900	1881	1881	1976	1900	1863	1881	1845	1827	1937
Adj Flow Rate, veh/h	161	1800	149	157	1437	0	260	462	177	138	260	0
Adj No. of Lanes	2	4	0	2	3	1	2	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.92	0.92	0.92	0.87	0.87	0.87
Percent Heavy Veh, %	2	1	1	1	1	0	0	2	1	3	4	2
Cap, veh/h	217	2622	217	213	2189	716	326	887	374	166	876	416
Arrive On Green	0.13	0.86	0.86	0.12	0.85	0.00	0.09	0.25	0.25	0.09	0.25	0.00
Sat Flow, veh/h	3442	6125	507	3476	5136	1680	3510	3539	1491	1757	3471	1647
Grp Volume(v), veh/h	161	1427	522	157	1437	0	260	462	177	138	260	0
Grp Sat Flow(s),veh/h/ln	1721	1619	1774	1738	1712	1680	1755	1770	1491	1757	1736	1647
Q Serve(g_s), s	5.2	11.8	11.8	5.0	10.8	0.0	8.3	12.9	11.6	8.9	7.0	0.0
Cycle Q Clear(g_c), s	5.2	11.8	11.8	5.0	10.8	0.0	8.3	12.9	11.6	8.9	7.0	0.0
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	2080	760	213	2189	716	326	887	374	166	876	416
V/C Ratio(X)	0.74	0.69	0.69	0.74	0.66	0.00	0.80	0.52	0.47	0.83	0.30	0.00
Avail Cap(c_a), veh/h	299	2080	760	302	2189	716	611	1108	467	397	1268	602
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	0.60	0.60	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.3	5.6	5.6	49.6	5.7	0.0	51.1	37.1	36.6	51.1	34.7	0.0
Incr Delay (d2), s/veh	5.6	1.7	4.5	1.6	0.9	0.0	1.7	0.2	0.3	4.0	0.7	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	2.6	5.2	6.3	2.4	4.8	0.0	4.1	6.3	4.8	4.5	3.4	0.0
LnGrp Delay(d),s/veh	54.9	7.3	10.1	51.2	6.6	0.0	52.8	37.3	37.0	55.2	35.4	0.0
LnGrp LOS	D	A	B	D	A		D	D	D	E	D	
Approach Vol, veh/h		2110			1594			899			398	
Approach Delay, s/veh		11.6			11.0			41.7			42.3	
Approach LOS		B			B			D			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	11.0	55.2	14.7	34.0	11.3	55.0	14.9	33.8
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	10.0	49.0	20.0	42.0	10.0	49.0	26.0	36.0
Max Q Clear Time (g_c+I1), s	7.0	13.8	10.3	9.0	7.2	12.8	10.9	14.9
Green Ext Time (p_c), s	0.1	35.0	0.3	6.7	0.1	36.0	0.1	5.9

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1774	82	122	1476	269	112	28	369	299	46	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	11	12	12	11	11	10
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.86		1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.97		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3385	6407		1728	5136	1500	1745	1581		1641	1671	1457
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3385	6407		1728	5136	1500	1745	1581		1641	1671	1457
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.85	0.85	0.85	0.59	0.59	0.59
Adj. Flow (vph)	53	1993	92	133	1604	292	132	33	434	507	78	105
RTOR Reduction (vph)	0	4	0	0	0	120	0	142	0	0	0	83
Lane Group Flow (vph)	53	2081	0	133	1604	172	132	325	0	289	296	22
Confl. Peds. (#/hr)	13		23	23		13	19		17	17		19
Confl. Bikes (#/hr)						13			1			
Heavy Vehicles (%)	0%	1%	0%	1%	1%	3%	0%	4%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	5.7	45.7		13.6	53.6	53.6	31.4	31.4		29.3	29.3	29.3
Effective Green, g (s)	5.7	45.7		13.6	53.6	53.6	31.4	31.4		29.3	29.3	29.3
Actuated g/C Ratio	0.04	0.33		0.10	0.38	0.38	0.22	0.22		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	6.0		2.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	137	2091		167	1966	574	391	354		343	349	304
v/s Ratio Prot	0.02	c0.32		c0.08	0.31		0.08	c0.21		0.18	c0.18	
v/s Ratio Perm						0.11						0.02
v/c Ratio	0.39	1.00		0.80	0.82	0.30	0.34	0.92		0.84	0.85	0.07
Uniform Delay, d1	65.4	47.0		61.8	38.8	30.1	45.6	53.0		53.1	53.2	44.4
Progression Factor	1.47	0.58		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	15.3		21.2	3.9	1.3	0.2	27.4		16.3	16.5	0.0
Delay (s)	96.8	42.7		83.1	42.6	31.4	45.8	80.5		69.4	69.7	44.5
Level of Service	F	D		F	D	C	D	F		E	E	D
Approach Delay (s)		44.0			43.7			72.8			65.7	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	49.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	79	607	275	435	1111	176	493	534	735	355	243
v/c Ratio	0.59	0.76	0.66	0.42	0.62	0.74	0.68	0.90	0.79	0.27	0.35
Control Delay	79.8	54.8	86.5	38.9	7.0	75.9	57.4	41.9	36.2	34.1	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.8	54.8	86.5	38.9	7.0	75.9	57.4	41.9	36.2	34.1	9.4
Queue Length 50th (ft)	71	265	126	138	128	156	221	224	197	118	21
Queue Length 95th (ft)	124	317	174	114	890	222	273	#395	#409	190	102
Internal Link Dist (ft)		1359		309			1086			1080	
Turn Bay Length (ft)	68		243			225		102	196		90
Base Capacity (vph)	199	902	572	1178	1787	309	722	596	927	1300	690
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.67	0.48	0.37	0.62	0.57	0.68	0.90	0.79	0.27	0.35

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	540	1112	1488	665	167	285	890
v/c Ratio	0.76	0.36	0.51	0.68	0.75	0.61	0.54
Control Delay	56.2	6.2	13.3	12.0	77.9	62.7	1.3
Queue Delay	0.0	0.3	0.0	0.4	0.0	0.0	0.0
Total Delay	56.2	6.4	13.3	12.4	77.9	62.7	1.3
Queue Length 50th (ft)	261	166	158	133	149	131	0
Queue Length 95th (ft)	m270	m244	181	169	218	170	0
Internal Link Dist (ft)		255	655			1047	
Turn Bay Length (ft)	220				267		437
Base Capacity (vph)	710	3066	2911	981	428	888	1652
Starvation Cap Reductn	0	1144	0	61	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.58	0.51	0.72	0.39	0.32	0.54

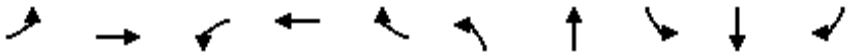
Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	161	1949	157	1437	72	260	462	177	138	260	475
v/c Ratio	0.64	0.77	0.68	0.74	0.10	0.71	0.45	0.32	0.73	0.26	0.78
Control Delay	71.8	40.4	91.4	29.3	5.1	71.4	42.3	6.6	80.5	38.1	38.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	40.4	91.4	29.3	5.1	71.4	42.3	6.6	80.5	38.1	38.9
Queue Length 50th (ft)	72	462	77	182	3	120	180	0	123	94	268
Queue Length 95th (ft)	107	540	m99	275	m16	163	236	57	181	127	382
Internal Link Dist (ft)		655		700			1075			548	
Turn Bay Length (ft)	164		235			264		202			125
Base Capacity (vph)	257	2524	243	1936	707	483	1021	557	314	1060	624
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.77	0.65	0.74	0.10	0.54	0.45	0.32	0.44	0.25	0.76

Intersection Summary

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



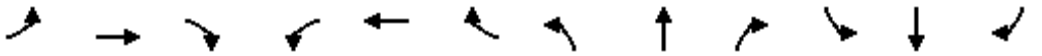
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	53	2085	133	1604	292	132	467	289	296	105
v/c Ratio	0.32	1.00	0.79	0.80	0.42	0.34	0.94	0.84	0.85	0.26
Control Delay	97.9	46.6	92.2	43.9	14.6	46.9	60.1	73.9	74.3	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.9	46.6	92.2	43.9	14.6	46.9	60.1	73.9	74.3	5.7
Queue Length 50th (ft)	26	~645	119	506	62	98	267	266	273	0
Queue Length 95th (ft)	m36	#756	#214	#693	162	150	#403	215	221	0
Internal Link Dist (ft)		700		1282			449		751	
Turn Bay Length (ft)	341		175			295		228		
Base Capacity (vph)	241	2093	186	1996	700	440	535	421	429	467
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	1.00	0.72	0.80	0.42	0.30	0.87	0.69	0.69	0.22

Intersection Summary

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

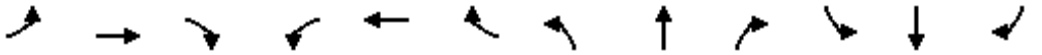
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	646	149	514	290	792	56	103	328	532	885	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	14	12	12	16	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1678	3333		3236	3388	1671	1736	3539	1730	3286	3421	1496
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1678	3333		3236	3388	1671	1736	3539	1730	3286	3421	1496
Peak-hour factor, PHF	0.79	0.79	0.79	0.96	0.96	0.96	0.95	0.95	0.95	0.91	0.91	0.91
Adj. Flow (vph)	34	818	189	535	302	825	59	108	345	585	973	142
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	220	0	0	71
Lane Group Flow (vph)	34	993	0	535	302	825	59	108	125	585	973	71
Confl. Peds. (#/hr)	27		5	5		27	8		4	4		8
Confl. Bikes (#/hr)			2			1						1
Heavy Vehicles (%)	4%	1%	3%	1%	3%	1%	4%	2%	4%	3%	2%	2%
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1 9	6	
Permitted Phases						Free			2			6
Actuated Green, G (s)	5.3	43.6		23.0	61.3	140.0	7.1	25.6	25.6	25.8	48.3	48.3
Effective Green, g (s)	5.3	43.6		23.0	61.3	140.0	7.1	25.6	25.6	25.8	48.3	48.3
Actuated g/C Ratio	0.04	0.31		0.16	0.44	1.00	0.05	0.18	0.18	0.18	0.34	0.34
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	6.0		4.0	6.0		3.0	6.0	6.0		6.0	6.0
Lane Grp Cap (vph)	63	1037		531	1483	1671	88	647	316	605	1180	516
v/s Ratio Prot	0.02	c0.30		c0.17	0.09		0.03	0.03		c0.18	c0.28	
v/s Ratio Perm						0.49			0.07			0.05
v/c Ratio	0.54	0.96		1.01	0.20	0.49	0.67	0.17	0.40	0.97	0.82	0.14
Uniform Delay, d1	66.2	47.3		58.5	24.3	0.0	65.3	48.2	50.4	56.7	42.0	31.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	19.1		40.9	0.2	1.0	18.2	0.6	3.7	28.2	6.6	0.6
Delay (s)	70.5	66.4		99.4	24.5	1.0	83.5	48.8	54.1	84.8	48.6	32.1
Level of Service	E	E		F	C	A	F	D	D	F	D	C
Approach Delay (s)		66.5			37.0			56.4			59.7	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	53.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	389	975	0	0	1402	516	143	474	913	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1881	1845	1759	1881	1937			
Adj Flow Rate, veh/h	452	1134	0	0	1508	0	164	545	0			
Adj No. of Lanes	2	2	0	0	3	1	1	2	1			
Peak Hour Factor	0.86	0.86	0.86	0.93	0.93	0.93	0.87	0.87	0.87			
Percent Heavy Veh, %	3	3	0	0	1	3	8	1	2			
Cap, veh/h	500	2519	0	0	2810	858	293	625	288			
Arrive On Green	0.15	0.72	0.00	0.00	0.55	0.00	0.17	0.17	0.00			
Sat Flow, veh/h	3408	3597	0	0	5305	1568	1675	3574	1647			
Grp Volume(v), veh/h	452	1134	0	0	1508	0	164	545	0			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1712	1568	1675	1787	1647			
Q Serve(g_s), s	20.9	21.5	0.0	0.0	30.1	0.0	14.3	23.7	0.0			
Cycle Q Clear(g_c), s	20.9	21.5	0.0	0.0	30.1	0.0	14.3	23.7	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	500	2519	0	0	2810	858	293	625	288			
V/C Ratio(X)	0.90	0.45	0.00	0.00	0.54	0.00	0.56	0.87	0.00			
Avail Cap(c_a), veh/h	639	2519	0	0	2810	858	371	791	364			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.57	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	67.2	9.4	0.0	0.0	23.2	0.0	60.4	64.2	0.0			
Incr Delay (d2), s/veh	12.3	0.6	0.0	0.0	0.4	0.0	0.6	7.4	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(-26165%),veh/ln	10.7	10.6	0.0	0.0	14.4	0.0	6.7	12.4	0.0			
LnGrp Delay(d),s/veh	79.4	9.9	0.0	0.0	23.7	0.0	61.0	71.6	0.0			
LnGrp LOS	E	A			C		E	E				
Approach Vol, veh/h		1586			1508			709				
Approach Delay, s/veh		29.7			23.7			69.2				
Approach LOS		C			C			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		120.0			27.5	92.5		32.6
Change Period (Y+Rc), s		5.0			4.0	5.0		4.6
Max Green Setting (Gmax), s		115.0			30.0	81.0		35.4
Max Q Clear Time (g_c+I1), s		23.5			22.9	32.1		25.7
Green Ext Time (p_c), s		85.8			0.6	47.2		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	34.7
HCM 2010 LOS	C

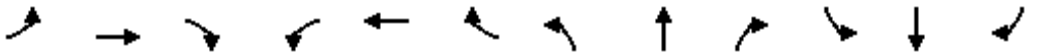
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	1446	269	430	1500	46	211	251	31	108	433	207
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.90	1.00		0.91
Parking 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	1881	1900	1881	1900	1881	1881	1792	1827	1863	1918
Adj Flow Rate, veh/h	197	1643	306	489	1705	0	245	292	36	127	509	244
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	1	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	1	0	1	4	1	1	6	4	2	3
Cap, veh/h	239	1843	566	982	3006	945	261	1009	387	147	532	947
Arrive On Green	0.07	0.36	0.36	0.28	0.59	0.00	0.08	0.28	0.28	0.08	0.29	0.29
Sat Flow, veh/h	3442	5085	1561	3510	5136	1615	3476	3574	1370	1740	1863	2617
Grp Volume(v), veh/h	197	1643	306	489	1705	0	245	292	36	127	509	244
Grp Sat Flow(s),veh/h/ln	1721	1695	1561	1755	1712	1615	1738	1787	1370	1740	1863	1308
Q Serve(g_s), s	9.0	48.7	24.9	18.7	33.0	0.0	11.2	10.2	2.2	11.5	43.0	10.2
Cycle Q Clear(g_c), s	9.0	48.7	24.9	18.7	33.0	0.0	11.2	10.2	2.2	11.5	43.0	10.2
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	239	1843	566	982	3006	945	261	1009	387	147	532	947
V/C Ratio(X)	0.83	0.89	0.54	0.50	0.57	0.00	0.94	0.29	0.09	0.86	0.96	0.26
Avail Cap(c_a), veh/h	258	1843	566	982	3006	945	261	1009	387	174	536	951
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)	0.82	0.82	0.82	0.58	0.58	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	73.5	48.0	40.4	48.2	20.6	0.0	73.6	44.9	21.3	72.3	56.2	35.2
Incr Delay (d2), s/veh	15.4	5.9	3.0	0.1	0.5	0.0	39.2	0.1	0.0	27.1	29.2	0.5
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(-26165%),veh/ln	4.8	23.8	11.2	9.0	15.6	0.0	6.8	5.1	0.8	6.6	26.4	3.8
LnGrp Delay(d),s/veh	88.9	53.9	43.5	48.3	21.1	0.0	112.8	44.9	21.4	99.4	85.4	35.7
LnGrp LOS	F	D	D	D	C		F	D	C	F	F	D
Approach Vol, veh/h		2146			2194			573			880	
Approach Delay, s/veh		55.6			27.1			72.5			73.6	
Approach LOS		E			C			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	51.1	64.0	17.0	50.7	15.1	100.0	17.5	50.2
Change Period (Y+Rc), s	6.0	* 6	5.0	* 5	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	25.0	* 58	12.0	* 46	12.0	71.0	16.0	42.0
Max Q Clear Time (g_c+I1), s	20.7	50.7	13.2	45.0	11.0	35.0	13.5	12.2
Green Ext Time (p_c), s	2.0	7.0	0.0	0.7	0.1	31.2	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	49.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	1380	141	240	1985	593	44	43	106	234	78	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	12	11	12	12	11	11	10
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	0.98		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	3224	4817		1745	5136	1552	1745	1639		1641	1693	1454
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	3224	4817		1745	5136	1552	1745	1639		1641	1693	1454
Peak-hour factor, PHF	0.83	0.83	0.83	0.84	0.84	0.84	0.83	0.83	0.83	0.84	0.84	0.84
Adj. Flow (vph)	77	1663	170	286	2363	706	53	52	128	279	93	45
RTOR Reduction (vph)	0	5	0	0	0	126	0	65	0	0	0	39
Lane Group Flow (vph)	77	1828	0	286	2363	580	53	115	0	184	188	6
Confl. Peds. (#/hr)	10		18	18		10	20		13	13		20
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	5%	2%	1%	0%	1%	1%	0%	5%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	6.0	74.5		27.0	95.5	95.5	15.9	15.9		22.6	22.6	22.6
Effective Green, g (s)	6.0	74.5		27.0	95.5	95.5	15.9	15.9		22.6	22.6	22.6
Actuated g/C Ratio	0.04	0.47		0.17	0.60	0.60	0.10	0.10		0.14	0.14	0.14
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	6.0		2.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	120	2242		294	3065	926	173	162		231	239	205
v/s Ratio Prot	0.02	c0.38		c0.16	0.46		0.03	c0.07		c0.11	0.11	
v/s Ratio Perm						0.37						0.00
v/c Ratio	0.64	0.82		0.97	0.77	0.63	0.31	0.71		0.80	0.79	0.03
Uniform Delay, d1	75.9	36.8		66.1	24.1	20.8	66.9	69.8		66.5	66.4	59.3
Progression Factor	0.77	0.36		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.4	1.8		44.6	1.9	3.2	0.4	11.5		16.1	14.5	0.0
Delay (s)	62.7	15.1		110.7	26.0	24.0	67.3	81.4		82.6	80.8	59.3
Level of Service	E	B		F	C	C	E	F		F	F	E
Approach Delay (s)		17.0			32.8			78.2			79.3	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	34	1007	535	302	825	59	108	345	585	973	142
v/c Ratio	0.39	0.99	1.01	0.20	0.49	0.57	0.15	0.61	1.00	0.79	0.23
Control Delay	76.0	74.3	98.4	25.9	1.0	85.6	46.9	17.2	76.0	46.1	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	74.3	98.4	25.9	1.0	85.6	46.9	17.2	76.0	46.1	10.4
Queue Length 50th (ft)	31	474	~256	92	0	53	43	59	183	427	20
Queue Length 95th (ft)	59	473	#378	132	0	103	71	165	#304	516	70
Internal Link Dist (ft)		1359		306			1086			1080	
Turn Bay Length (ft)	68		243			225		102	196		90
Base Capacity (vph)	215	1014	531	1484	1671	111	707	561	586	1238	611
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.99	1.01	0.20	0.49	0.53	0.15	0.61	1.00	0.79	0.23

Intersection Summary

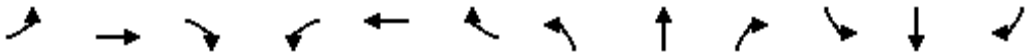
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	452	1134	1508	555	164	545	1049
v/c Ratio	0.85	0.44	0.53	0.68	0.56	0.84	0.65
Control Delay	81.0	8.1	5.9	7.7	66.4	74.9	2.0
Queue Delay	0.0	0.5	0.1	0.2	0.0	0.0	0.0
Total Delay	81.0	8.6	6.0	7.9	66.4	74.9	2.1
Queue Length 50th (ft)	239	206	115	96	158	292	0
Queue Length 95th (ft)	281	265	m139	m130	221	332	0
Internal Link Dist (ft)		258	655			1047	
Turn Bay Length (ft)	220			330	267		437
Base Capacity (vph)	616	2567	2836	822	357	790	1616
Starvation Cap Reductn	0	900	314	23	0	0	0
Spillback Cap Reductn	0	55	0	0	0	0	26
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.68	0.60	0.69	0.46	0.69	0.66

Intersection Summary

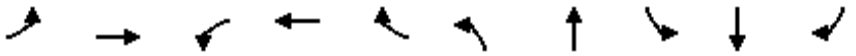
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	197	1643	306	489	1705	52	245	292	36	127	509	244
v/c Ratio	0.80	0.92	0.44	0.96	0.80	0.07	0.98	0.30	0.08	0.83	0.95	0.21
Control Delay	95.4	53.3	11.4	68.7	19.5	0.5	123.1	47.7	0.4	109.1	84.0	15.0
Queue Delay	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.4	53.5	11.4	68.7	19.6	0.5	123.1	47.7	0.4	109.1	84.0	15.0
Queue Length 50th (ft)	98	602	42	265	516	1	134	130	0	132	525	46
Queue Length 95th (ft)	#159	648	78	#361	145	m2	#212	166	0	#215	#681	68
Internal Link Dist (ft)		655			700			1075			548	
Turn Bay Length (ft)	164			235		600	264		202			200
Base Capacity (vph)	248	1782	693	510	2131	751	251	969	450	167	535	1179
Starvation Cap Reductn	0	8	0	0	59	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.93	0.44	0.96	0.82	0.07	0.98	0.30	0.08	0.76	0.95	0.21

Intersection Summary

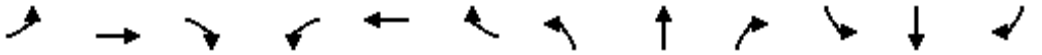
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	77	1833	286	2363	706	53	180	184	188	45
v/c Ratio	0.64	0.82	0.97	0.77	0.67	0.31	0.79	0.80	0.79	0.14
Control Delay	71.1	16.9	110.8	28.0	16.5	69.5	65.2	89.4	87.9	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.1	16.9	110.8	28.0	16.5	69.5	65.2	89.4	87.9	1.0
Queue Length 50th (ft)	43	138	302	645	267	53	113	198	203	0
Queue Length 95th (ft)	m50	#438	#442	799	444	87	171	256	261	0
Internal Link Dist (ft)		700		1282			449		751	
Turn Bay Length (ft)	341		175			295		228		
Base Capacity (vph)	120	2248	294	3066	1051	403	434	410	423	455
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.82	0.97	0.77	0.67	0.13	0.41	0.45	0.44	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	389	975	0	0	1402	516	143	474	913	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1881	1845	1759	1881	1937			
Adj Flow Rate, veh/h	452	1134	0	0	1508	0	164	545	1049			
Adj No. of Lanes	2	2	0	0	3	1	1	2	1			
Peak Hour Factor	0.86	0.86	0.86	0.93	0.93	0.93	0.87	0.87	0.87			
Percent Heavy Veh, %	3	3	0	0	1	3	8	1	2			
Cap, veh/h	447	1336	0	0	1156	353	936	1997	919			
Arrive On Green	0.13	0.38	0.00	0.00	0.22	0.00	0.56	0.56	0.56			
Sat Flow, veh/h	3408	3597	0	0	5305	1568	1675	3574	1645			
Grp Volume(v), veh/h	452	1134	0	0	1508	0	164	545	1049			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1712	1568	1675	1787	1645			
Q Serve(g_s), s	21.0	47.4	0.0	0.0	36.0	0.0	7.7	12.7	89.4			
Cycle Q Clear(g_c), s	21.0	47.4	0.0	0.0	36.0	0.0	7.7	12.7	89.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	447	1336	0	0	1156	353	936	1997	919			
V/C Ratio(X)	1.01	0.85	0.00	0.00	1.31	0.00	0.18	0.27	1.14			
Avail Cap(c_a), veh/h	447	1336	0	0	1156	353	936	1997	919			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.60	0.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	69.5	45.3	0.0	0.0	62.0	0.0	17.3	18.4	35.3			
Incr Delay (d2), s/veh	45.2	6.9	0.0	0.0	141.1	0.0	0.0	0.0	76.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(-26165%),veh/ln	12.7	24.1	0.0	0.0	32.1	0.0	3.6	6.3	59.9			
LnGrp Delay(d),s/veh	114.7	52.1	0.0	0.0	203.1	0.0	17.3	18.4	112.0			
LnGrp LOS	F	D			F		B	B	F			
Approach Vol, veh/h		1586			1508			1758				
Approach Delay, s/veh		70.0			203.1			74.2				
Approach LOS		E			F			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		66.0			25.0	41.0		94.0
Change Period (Y+Rc), s		5.0			4.0	5.0		4.6
Max Green Setting (Gmax), s		61.0			21.0	36.0		89.4
Max Q Clear Time (g_c+I1), s		49.4			23.0	38.0		91.4
Green Ext Time (p_c), s		11.5			0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	112.9
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	1446	269	430	1500	46	211	251	31	108	433	207
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.89	1.00		0.90
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	1866	1900	1900	1881	1900	1881	1881	1792	1827	1863	1918
Adj Flow Rate, veh/h	197	1643	306	489	1705	0	245	292	36	127	509	244
Adj No. of Lanes	2	3	0	2	3	1	2	2	1	1	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	0	1	4	1	1	6	4	2	3
Cap, veh/h	241	1722	318	1000	3222	1013	261	905	343	147	489	681
Arrive On Green	0.07	0.40	0.40	0.28	0.63	0.00	0.08	0.25	0.25	0.08	0.26	0.26
Sat Flow, veh/h	3442	4304	796	3510	5136	1615	3476	3574	1354	1740	1863	2594
Grp Volume(v), veh/h	197	1293	656	489	1705	0	245	292	36	127	509	244
Grp Sat Flow(s),veh/h/ln	1721	1698	1704	1755	1712	1615	1738	1787	1354	1740	1863	1297
Q Serve(g_s), s	9.0	59.1	60.0	18.5	29.6	0.0	11.2	10.6	2.4	11.5	42.0	12.2
Cycle Q Clear(g_c), s	9.0	59.1	60.0	18.5	29.6	0.0	11.2	10.6	2.4	11.5	42.0	12.2
Prop In Lane	1.00		0.47	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	1358	682	1000	3222	1013	261	905	343	147	489	681
V/C Ratio(X)	0.82	0.95	0.96	0.49	0.53	0.00	0.94	0.32	0.11	0.86	1.04	0.36
Avail Cap(c_a), veh/h	301	1358	682	1000	3222	1013	261	905	343	163	489	681
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)	0.09	0.09	0.09	0.55	0.55	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	73.4	46.5	46.8	47.5	16.6	0.0	73.6	48.6	24.6	72.3	59.0	48.0
Incr Delay (d2), s/veh	1.4	2.2	4.7	0.1	0.3	0.0	39.2	0.1	0.0	30.8	51.8	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	4.3	28.1	29.1	9.0	14.0	0.0	6.8	5.3	0.9	6.8	28.6	4.5
LnGrp Delay(d),s/veh	74.7	48.7	51.5	47.6	17.0	0.0	112.8	48.7	24.6	103.1	110.8	49.2
LnGrp LOS	E	D	D	D	B		F	D	C	F	F	D
Approach Vol, veh/h		2146			2194			573			880	
Approach Delay, s/veh		51.9			23.8			74.6			92.6	
Approach LOS		D			C			E			F	

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	51.6	70.0	16.0	47.0	15.2	106.4	17.5	45.5
Change Period (Y+Rc), s	6.0	* 6	4.0	5.0	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	23.0	* 64	12.0	42.0	14.0	73.0	15.0	39.0
Max Q Clear Time (g_c+I1), s	20.5	62.0	13.2	44.0	11.0	31.6	13.5	12.6
Green Ext Time (p_c), s	0.5	2.0	0.0	0.0	0.2	35.2	0.0	12.9

Intersection Summary	
HCM 2010 Ctrl Delay	49.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	452	1134	1508	555	164	545	1049
v/c Ratio	1.05	0.88	1.35	1.09	0.18	0.27	1.14
Control Delay	121.5	55.1	200.5	81.4	18.0	18.8	109.5
Queue Delay	0.0	17.7	0.0	0.0	0.0	0.0	0.0
Total Delay	121.5	72.8	200.5	81.4	18.0	18.8	109.5
Queue Length 50th (ft)	~263	579	~739	~420	82	152	~1261
Queue Length 95th (ft)	#352	632	m#832	m#640	120	181	#1446
Internal Link Dist (ft)		258	655			1047	
Turn Bay Length (ft)	220			330	267		437
Base Capacity (vph)	431	1291	1116	509	902	1996	918
Starvation Cap Reductn	0	108	0	0	0	0	0
Spillback Cap Reductn	0	181	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	1.02	1.35	1.09	0.18	0.27	1.14

Intersection Summary

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

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

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

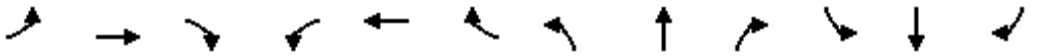
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	197	1949	489	1705	52	245	292	36	127	509	244
v/c Ratio	0.72	1.01	1.04	0.77	0.07	0.98	0.33	0.09	0.85	1.04	0.27
Control Delay	80.5	46.2	92.7	16.7	0.9	123.1	50.7	0.4	113.7	107.6	16.7
Queue Delay	0.0	10.4	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.5	56.7	92.7	17.2	0.9	123.1	50.7	0.4	113.7	107.6	16.7
Queue Length 50th (ft)	106	~689	~291	581	6	134	133	0	133	~573	37
Queue Length 95th (ft)	m108	m638	#400	96	m0	#212	171	0	#226	#731	69
Internal Link Dist (ft)		655		700			1075			548	
Turn Bay Length (ft)	164		235		600	264		202			200
Base Capacity (vph)	290	1933	469	2211	757	251	888	422	157	489	900
Starvation Cap Reductn	0	59	0	181	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	1.04	1.04	0.84	0.07	0.98	0.33	0.09	0.81	1.04	0.27

Intersection Summary

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

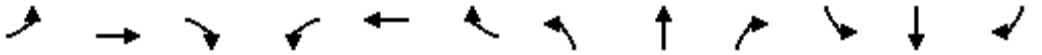
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	481	89	234	370	944	153	429	465	684	330	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	14	12	12	16	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1745	3336		3204	3455	1682	1805	3610	1762	3351	3490	1508
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1745	3336		3204	3455	1682	1805	3610	1762	3351	3490	1508
Peak-hour factor, PHF	0.94	0.94	0.94	0.85	0.85	0.85	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	79	512	95	275	435	1111	176	493	534	735	355	243
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	199	0	0	134
Lane Group Flow (vph)	79	596	0	275	435	1111	176	493	335	735	355	109
Confl. Peds. (#/hr)	36		7	7		36	17		4	4		17
Confl. Bikes (#/hr)						4			1			1
Heavy Vehicles (%)	0%	2%	1%	2%	1%	0%	0%	0%	2%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1 9	6	
Permitted Phases						Free			2			6
Actuated Green, G (s)	10.7	32.8		17.6	39.7	140.0	18.6	35.0	35.0	32.6	53.0	53.0
Effective Green, g (s)	10.7	32.8		17.6	39.7	140.0	18.6	35.0	35.0	32.6	53.0	53.0
Actuated g/C Ratio	0.08	0.23		0.13	0.28	1.00	0.13	0.25	0.25	0.23	0.38	0.38
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	6.0		4.0	6.0		3.0	6.0	6.0		6.0	6.0
Lane Grp Cap (vph)	133	781		402	979	1682	239	902	440	780	1321	570
v/s Ratio Prot	0.05	c0.18		0.09	0.13		0.10	0.14		c0.22	0.10	
v/s Ratio Perm						c0.66			c0.19			0.07
v/c Ratio	0.59	0.76		0.68	0.44	0.66	0.74	0.55	0.76	0.94	0.27	0.19
Uniform Delay, d1	62.5	50.0		58.5	41.1	0.0	58.3	45.6	48.6	52.8	30.1	29.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	5.7		5.2	0.9	2.1	11.2	2.4	11.8	19.5	0.5	0.7
Delay (s)	67.2	55.7		63.7	42.0	2.1	69.5	48.0	60.4	72.2	30.6	29.9
Level of Service	E	E		E	D	A	E	D	E	E	C	C
Approach Delay (s)		57.0			20.9			56.7			53.4	
Approach LOS		E			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	508	1045	0	0	1414	632	160	274	854	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1881	0	0	1881	1881	1881	1881	1956			
Adj Flow Rate, veh/h	540	1112	0	0	1488	0	167	285	0			
Adj No. of Lanes	2	2	0	0	3	1	1	2	1			
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.96	0.96	0.96			
Percent Heavy Veh, %	3	1	0	0	1	1	1	1	1			
Cap, veh/h	1090	2953	0	0	2439	760	204	407	189			
Arrive On Green	0.32	0.83	0.00	0.00	0.16	0.00	0.11	0.11	0.00			
Sat Flow, veh/h	3408	3668	0	0	5305	1599	1792	3574	1663			
Grp Volume(v), veh/h	540	1112	0	0	1488	0	167	285	0			
Grp Sat Flow(s),veh/h/ln	1704	1787	0	0	1712	1599	1792	1787	1663			
Q Serve(g_s), s	20.5	12.6	0.0	0.0	43.2	0.0	14.6	12.3	0.0			
Cycle Q Clear(g_c), s	20.5	12.6	0.0	0.0	43.2	0.0	14.6	12.3	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1090	2953	0	0	2439	760	204	407	189			
V/C Ratio(X)	0.50	0.38	0.00	0.00	0.61	0.00	0.82	0.70	0.00			
Avail Cap(c_a), veh/h	1090	2953	0	0	2439	760	394	786	366			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.74	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	44.0	3.5	0.0	0.0	53.6	0.0	69.3	68.2	0.0			
Incr Delay (d2), s/veh	0.1	0.4	0.0	0.0	0.8	0.0	3.1	0.8	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(-26165%),veh/ln	9.7	6.3	0.0	0.0	20.7	0.0	7.4	6.1	0.0			
LnGrp Delay(d),s/veh	44.1	3.9	0.0	0.0	54.5	0.0	72.3	69.1	0.0			
LnGrp LOS	D	A			D		E	E				
Approach Vol, veh/h		1652			1488			452				
Approach Delay, s/veh		17.0			54.5			70.3				
Approach LOS		B			D			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		137.2			56.2	81.0		22.8
Change Period (Y+Rc), s		5.0			5.0	* 5		4.6
Max Green Setting (Gmax), s		115.2			35.2	* 76		35.2
Max Q Clear Time (g_c+I1), s		14.6			22.5	45.2		16.6
Green Ext Time (p_c), s		37.1			10.3	24.5		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

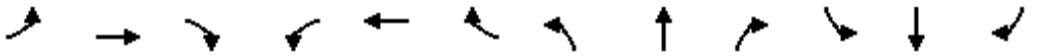
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	145	1620	134	152	1394	70	239	425	163	120	226	413
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.93	1.00		0.94
Parking 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	1881	1900	1881	1881	1900	1900	1863	1881	1845	1827	1937
Adj Flow Rate, veh/h	161	1800	149	157	1437	0	260	462	177	138	260	475
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.92	0.92	0.92	0.87	0.87	0.87
Percent Heavy Veh, %	2	1	0	1	1	0	0	2	1	3	4	2
Cap, veh/h	206	2247	685	201	2302	724	315	847	356	159	427	810
Arrive On Green	0.04	0.29	0.29	0.12	0.90	0.00	0.09	0.24	0.24	0.09	0.23	0.23
Sat Flow, veh/h	3442	5136	1567	3476	5136	1615	3510	3539	1487	1757	1827	2727
Grp Volume(v), veh/h	161	1800	149	157	1437	0	260	462	177	138	260	475
Grp Sat Flow(s),veh/h/ln	1721	1712	1567	1738	1712	1615	1755	1770	1487	1757	1827	1363
Q Serve(g_s), s	7.4	51.8	11.5	7.0	10.5	0.0	11.6	18.3	12.8	12.4	20.3	16.4
Cycle Q Clear(g_c), s	7.4	51.8	11.5	7.0	10.5	0.0	11.6	18.3	12.8	12.4	20.3	16.4
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	206	2247	685	201	2302	724	315	847	356	159	427	810
V/C Ratio(X)	0.78	0.80	0.22	0.78	0.62	0.00	0.82	0.55	0.50	0.87	0.61	0.59
Avail Cap(c_a), veh/h	280	2247	685	261	2302	724	395	847	356	231	468	872
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	0.73	0.73	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.8	50.1	35.9	69.7	5.1	0.0	71.6	53.3	31.7	71.8	54.8	24.3
Incr Delay (d2), s/veh	8.6	2.8	0.6	5.8	0.9	0.0	9.0	0.4	0.4	15.5	5.2	2.5
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(-26165%),veh/ln	3.8	25.1	5.1	3.5	4.7	0.0	6.1	9.0	5.3	6.7	10.9	6.5
LnGrp Delay(d),s/veh	84.4	52.9	36.5	75.6	6.1	0.0	80.6	53.7	32.1	87.4	60.0	26.8
LnGrp LOS	F	D	D	E	A		F	D	C	F	E	C
Approach Vol, veh/h		2110			1594			899			873	
Approach Delay, s/veh		54.1			12.9			57.2			46.2	
Approach LOS		D			B			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	15.3	76.0	19.4	42.4	13.6	77.7	18.5	43.3
Change Period (Y+Rc), s	6.0	* 6	5.0	* 5	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	12.0	* 70	18.0	* 41	13.0	69.0	21.0	38.0
Max Q Clear Time (g_c+I1), s	9.0	53.8	13.6	22.3	9.4	12.5	14.4	20.3
Green Ext Time (p_c), s	0.3	15.3	0.7	8.4	0.1	37.8	0.1	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	41.4
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1774	82	122	1476	269	112	28	369	299	46	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	12	12	11	12	12	11	11	10
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.97		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3385	4914		1728	5136	1505	1745	1577		1641	1671	1456
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3385	4914		1728	5136	1505	1745	1577		1641	1671	1456
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.85	0.85	0.85	0.59	0.59	0.59
Adj. Flow (vph)	53	1993	92	133	1604	292	132	33	434	507	78	105
RTOR Reduction (vph)	0	2	0	0	0	108	0	263	0	0	0	85
Lane Group Flow (vph)	53	2083	0	133	1604	184	132	204	0	289	296	20
Confl. Peds. (#/hr)	13		23	23		13	19		17	17		19
Confl. Bikes (#/hr)						13			1			
Heavy Vehicles (%)	0%	1%	0%	1%	1%	3%	0%	4%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	12.0	69.4		16.7	74.1	74.1	23.4	23.4		30.5	30.5	30.5
Effective Green, g (s)	12.0	69.4		16.7	74.1	74.1	23.4	23.4		30.5	30.5	30.5
Actuated g/C Ratio	0.08	0.43		0.10	0.46	0.46	0.15	0.15		0.19	0.19	0.19
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	6.0		2.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	253	2131		180	2378	697	255	230		312	318	277
v/s Ratio Prot	0.02	c0.42		c0.08	0.31		0.08	c0.13		0.18	c0.18	
v/s Ratio Perm						0.12						0.01
v/c Ratio	0.21	0.98		0.74	0.67	0.26	0.52	0.89		0.93	0.93	0.07
Uniform Delay, d1	69.5	44.5		69.5	33.5	26.3	63.1	67.0		63.6	63.7	53.1
Progression Factor	0.69	0.51		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	11.2		12.8	1.6	0.9	0.7	30.2		31.7	32.5	0.0
Delay (s)	48.2	33.7		82.3	35.1	27.2	63.8	97.2		95.4	96.3	53.2
Level of Service	D	C		F	D	C	E	F		F	F	D
Approach Delay (s)		34.1			37.0			89.9			89.3	
Approach LOS		C			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	48.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: N. Main St. & Treat Blvd

2/7/2017

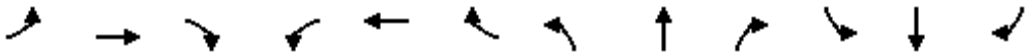
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	79	607	275	435	1111	176	493	534	735	355	243
v/c Ratio	0.59	0.77	0.68	0.44	0.66	0.74	0.55	0.84	0.94	0.27	0.35
Control Delay	79.8	55.3	67.4	42.2	2.1	75.9	48.3	37.2	53.4	33.1	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.8	55.3	67.4	42.2	2.1	75.9	48.3	37.2	53.4	33.1	8.2
Queue Length 50th (ft)	71	265	124	169	0	156	206	250	197	118	16
Queue Length 95th (ft)	124	321	160	203	0	222	255	377	#436	182	90
Internal Link Dist (ft)		1359		309			1086			1080	
Turn Bay Length (ft)	68		243			225		102	196		90
Base Capacity (vph)	199	916	457	1046	1682	309	902	639	779	1321	704
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.66	0.60	0.42	0.66	0.57	0.55	0.84	0.94	0.27	0.35

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	540	1112	1488	665	167	285	890
v/c Ratio	0.75	0.39	0.53	0.75	0.78	0.64	0.54
Control Delay	65.6	4.8	11.1	14.8	90.9	72.8	1.3
Queue Delay	0.0	0.4	0.2	1.5	0.0	0.0	0.0
Total Delay	65.6	5.3	11.3	16.3	90.9	72.8	1.3
Queue Length 50th (ft)	274	141	156	133	172	152	0
Queue Length 95th (ft)	343	216	241	638	247	194	0
Internal Link Dist (ft)		255	655			1047	
Turn Bay Length (ft)	220			330	267		437
Base Capacity (vph)	722	2817	2832	882	380	786	1652
Starvation Cap Reductn	0	1082	515	86	0	0	0
Spillback Cap Reductn	0	5	0	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.64	0.64	0.84	0.44	0.36	0.54

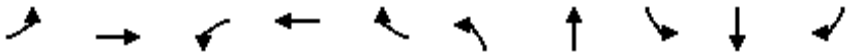
Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	161	1800	149	157	1437	72	260	462	177	138	260	475
v/c Ratio	0.65	0.80	0.20	0.63	0.67	0.10	0.78	0.52	0.35	0.78	0.56	0.43
Control Delay	83.6	39.2	8.0	48.3	8.8	0.2	86.3	54.4	8.5	97.5	56.9	22.8
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.6	39.5	8.0	48.3	8.8	0.2	86.3	54.4	8.5	97.5	56.9	22.8
Queue Length 50th (ft)	87	497	20	84	73	0	138	221	2	143	238	128
Queue Length 95th (ft)	130	541	65	121	83	m0	188	286	67	210	323	161
Internal Link Dist (ft)		655			700			1075			548	
Turn Bay Length (ft)	164			235		600	264		202			125
Base Capacity (vph)	269	2238	759	251	2160	703	380	887	503	222	468	1115
Starvation Cap Reductn	0	101	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	19	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.84	0.20	0.63	0.67	0.10	0.68	0.52	0.35	0.62	0.56	0.43

Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	53	2085	133	1604	292	132	467	289	296	105
v/c Ratio	0.19	0.98	0.74	0.67	0.36	0.52	0.95	0.93	0.93	0.28
Control Delay	47.6	36.6	92.4	37.6	11.6	68.7	51.2	97.8	98.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	36.6	92.4	37.6	11.6	68.7	51.2	97.8	98.6	7.1
Queue Length 50th (ft)	28	~875	137	514	58	127	183	312	321	0
Queue Length 95th (ft)	m38	#1091	207	608	145	181	283	262	267	0
Internal Link Dist (ft)		700		1282			449		751	
Turn Bay Length (ft)	341		175			295		228		
Base Capacity (vph)	317	2135	302	2406	811	338	554	328	334	389
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.98	0.44	0.67	0.36	0.39	0.84	0.88	0.89	0.27

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	508	1045	0	0	1414	632	160	274	854	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1881	0	0	1881	1881	1881	1881	1956			
Adj Flow Rate, veh/h	540	1112	0	0	1488	0	167	285	890			
Adj No. of Lanes	2	2	0	0	3	1	1	2	1			
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.96	0.96	0.96			
Percent Heavy Veh, %	3	1	0	0	1	1	1	1	1			
Cap, veh/h	1064	2300	0	0	1541	480	833	1662	773			
Arrive On Green	0.31	0.64	0.00	0.00	0.20	0.00	0.47	0.47	0.47			
Sat Flow, veh/h	3408	3668	0	0	5305	1599	1792	3574	1662			
Grp Volume(v), veh/h	540	1112	0	0	1488	0	167	285	890			
Grp Sat Flow(s),veh/h/ln	1704	1787	0	0	1712	1599	1792	1787	1662			
Q Serve(g_s), s	20.7	25.8	0.0	0.0	46.0	0.0	8.8	7.4	74.4			
Cycle Q Clear(g_c), s	20.7	25.8	0.0	0.0	46.0	0.0	8.8	7.4	74.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1064	2300	0	0	1541	480	833	1662	773			
V/C Ratio(X)	0.51	0.48	0.00	0.00	0.97	0.00	0.20	0.17	1.15			
Avail Cap(c_a), veh/h	1064	2300	0	0	1541	480	833	1662	773			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.74	0.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	45.0	14.8	0.0	0.0	63.1	0.0	25.3	24.9	42.8			
Incr Delay (d2), s/veh	0.2	0.7	0.0	0.0	13.1	0.0	0.0	0.0	82.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(-26165%),veh/ln	9.8	12.9	0.0	0.0	23.6	0.0	4.4	3.6	51.9			
LnGrp Delay(d),s/veh	45.1	15.5	0.0	0.0	76.2	0.0	25.3	24.9	125.6			
LnGrp LOS	D	B			E		C	C	F			
Approach Vol, veh/h		1652			1488			1342				
Approach Delay, s/veh		25.2			76.2			91.8				
Approach LOS		C			E			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		108.2			55.2	53.0		79.0
Change Period (Y+Rc), s		5.0			5.0	* 5		4.6
Max Green Setting (Gmax), s		76.0			24.0	* 48		74.4
Max Q Clear Time (g_c+I1), s		27.8			22.7	48.0		76.4
Green Ext Time (p_c), s		27.4			0.6	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	62.1
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	145	1620	134	152	1394	70	239	425	163	120	226	413
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.93	1.00		0.94
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	1883	1900	1881	1881	1900	1900	1863	1881	1845	1827	1937
Adj Flow Rate, veh/h	161	1800	149	157	1437	0	260	462	177	138	260	475
Adj No. of Lanes	2	3	0	2	3	1	2	2	1	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.92	0.92	0.92	0.87	0.87	0.87
Percent Heavy Veh, %	2	1	1	1	1	0	0	2	1	3	4	2
Cap, veh/h	206	2172	179	200	2364	743	313	845	355	159	427	810
Arrive On Green	0.04	0.30	0.30	0.11	0.92	0.00	0.09	0.24	0.24	0.09	0.23	0.23
Sat Flow, veh/h	3442	4826	398	3476	5136	1615	3510	3539	1487	1757	1827	2727
Grp Volume(v), veh/h	161	1276	673	157	1437	0	260	462	177	138	260	475
Grp Sat Flow(s),veh/h/ln	1721	1713	1798	1738	1712	1615	1755	1770	1487	1757	1827	1363
Q Serve(g_s), s	7.4	55.5	55.8	7.0	8.1	0.0	11.7	18.3	13.0	12.4	20.3	16.8
Cycle Q Clear(g_c), s	7.4	55.5	55.8	7.0	8.1	0.0	11.7	18.3	13.0	12.4	20.3	16.8
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	206	1542	809	200	2364	743	313	845	355	159	427	810
V/C Ratio(X)	0.78	0.83	0.83	0.79	0.61	0.00	0.83	0.55	0.50	0.87	0.61	0.59
Avail Cap(c_a), veh/h	280	1542	809	239	2364	743	373	845	355	220	468	872
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.36	0.73	0.73	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.8	50.1	50.2	69.8	3.8	0.0	71.7	53.3	33.0	71.8	54.8	25.4
Incr Delay (d2), s/veh	3.7	2.0	3.8	8.2	0.9	0.0	10.8	0.4	0.4	18.2	5.2	2.5
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(-26165%),veh/ln	3.6	26.8	28.6	3.6	3.6	0.0	6.1	9.0	5.4	6.8	10.9	6.6
LnGrp Delay(d),s/veh	79.5	52.1	54.0	78.1	4.6	0.0	82.5	53.7	33.4	90.1	60.0	27.9
LnGrp LOS	E	D	D	E	A		F	D	C	F	E	C
Approach Vol, veh/h		2110			1594			899			873	
Approach Delay, s/veh		54.8			11.9			58.1			47.3	
Approach LOS		D			B			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	15.2	78.0	19.3	42.4	13.6	79.6	18.5	43.2
Change Period (Y+Rc), s	6.0	* 6	5.0	* 5	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	* 72	17.0	* 41	13.0	70.0	20.0	38.0
Max Q Clear Time (g_c+I1), s	9.0	57.8	13.7	22.3	9.4	10.1	14.4	20.3
Green Ext Time (p_c), s	0.2	13.5	0.6	8.4	0.1	39.3	0.1	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	41.6
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	540	1112	1488	665	167	285	890
v/c Ratio	1.10	0.68	1.00	0.95	0.21	0.17	1.12
Control Delay	130.4	35.1	61.5	31.2	26.2	25.2	108.7
Queue Delay	0.0	1.7	0.0	10.5	0.0	0.0	0.1
Total Delay	130.4	36.8	61.5	41.7	26.2	25.2	108.7
Queue Length 50th (ft)	~327	467	567	145	102	90	~1043
Queue Length 95th (ft)	#449	548	#678	#264	155	122	#1308
Internal Link Dist (ft)		255	655			1047	
Turn Bay Length (ft)	220			330	267		437
Base Capacity (vph)	492	1641	1489	702	803	1661	793
Starvation Cap Reductn	0	340	0	40	0	0	0
Spillback Cap Reductn	0	43	0	0	0	0	10
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.10	0.85	1.00	1.00	0.21	0.17	1.14

Intersection Summary

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

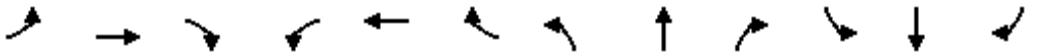
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	161	1949	157	1437	72	260	462	177	138	260	475
v/c Ratio	0.65	0.86	0.68	0.66	0.10	0.80	0.52	0.36	0.79	0.56	0.45
Control Delay	83.5	40.0	52.7	8.4	0.2	88.7	54.7	11.8	99.4	56.9	22.5
Queue Delay	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.5	41.4	52.7	8.4	0.2	88.7	54.7	11.8	99.4	56.9	22.5
Queue Length 50th (ft)	85	585	85	70	0	138	221	16	143	238	128
Queue Length 95th (ft)	m105	m617	125	79	m0	189	286	85	211	323	163
Internal Link Dist (ft)		655		700			1075			548	
Turn Bay Length (ft)	164		235		600	264		202			125
Base Capacity (vph)	269	2256	230	2172	707	359	883	488	211	468	1081
Starvation Cap Reductn	0	149	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.93	0.68	0.66	0.10	0.72	0.52	0.36	0.65	0.56	0.44

Intersection Summary

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

Appendix C – Future Year Synchro Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	789	167	554	363	1095	70	136	356	585	890	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	14	12	12	16	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1678	3342		3236	3388	1671	1736	3539	1730	3286	3421	1496
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1678	3342		3236	3388	1671	1736	3539	1730	3286	3421	1496
Peak-hour factor, PHF	0.79	0.79	0.79	0.96	0.96	0.96	0.95	0.95	0.95	0.91	0.91	0.91
Adj. Flow (vph)	51	999	211	577	378	1141	74	143	375	643	978	179
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	256	0	0	82
Lane Group Flow (vph)	51	1198	0	577	378	1141	74	143	119	643	978	97
Confl. Peds. (#/hr)	27		5	5		27	8		4	4		8
Confl. Bikes (#/hr)			2			1						1
Heavy Vehicles (%)	4%	1%	3%	1%	3%	1%	4%	2%	4%	3%	2%	2%
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1 9	6	
Permitted Phases						Free			2			6
Actuated Green, G (s)	7.7	48.0		24.8	65.1	140.0	7.9	17.2	17.2	28.0	41.3	41.3
Effective Green, g (s)	7.7	48.0		24.8	65.1	140.0	7.9	17.2	17.2	28.0	41.3	41.3
Actuated g/C Ratio	0.06	0.34		0.18	0.46	1.00	0.06	0.12	0.12	0.20	0.29	0.29
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	6.0		4.0	6.0		3.0	6.0	6.0		6.0	6.0
Lane Grp Cap (vph)	92	1145		573	1575	1671	97	434	212	657	1009	441
v/s Ratio Prot	0.03	c0.36		c0.18	0.11		0.04	0.04		c0.20	c0.29	
v/s Ratio Perm						0.68			0.07			0.06
v/c Ratio	0.55	1.05		1.01	0.24	0.68	0.76	0.33	0.56	0.98	0.97	0.22
Uniform Delay, d1	64.5	46.0		57.6	22.6	0.0	65.1	56.1	57.8	55.7	48.7	37.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1	39.4		39.3	0.2	2.3	29.2	2.0	10.3	29.4	21.8	1.1
Delay (s)	68.5	85.4		96.9	22.8	2.3	94.4	58.2	68.1	85.1	70.5	38.3
Level of Service	E	F		F	C	A	F	E	E	F	E	D
Approach Delay (s)		84.7			32.0			69.0			72.6	
Approach LOS		F			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	60.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	389	1189	0	0	1767	531	187	500	1171	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1881	1845	1759	1881	1937			
Adj Flow Rate, veh/h	452	1383	0	0	1900	0	215	575	0			
Adj No. of Lanes	2	2	0	0	3	1	1	2	1			
Peak Hour Factor	0.86	0.86	0.86	0.93	0.93	0.93	0.87	0.87	0.87			
Percent Heavy Veh, %	3	3	0	0	1	3	8	1	2			
Cap, veh/h	499	2444	0	0	2701	825	306	654	301			
Arrive On Green	0.15	0.70	0.00	0.00	0.53	0.00	0.18	0.18	0.00			
Sat Flow, veh/h	3408	3597	0	0	5305	1568	1675	3574	1647			
Grp Volume(v), veh/h	452	1383	0	0	1900	0	215	575	0			
Grp Sat Flow(s),veh/h/ln	1704	1752	0	0	1712	1568	1675	1787	1647			
Q Serve(g_s), s	20.9	31.6	0.0	0.0	44.5	0.0	19.2	25.1	0.0			
Cycle Q Clear(g_c), s	20.9	31.6	0.0	0.0	44.5	0.0	19.2	25.1	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	499	2444	0	0	2701	825	306	654	301			
V/C Ratio(X)	0.91	0.57	0.00	0.00	0.70	0.00	0.70	0.88	0.00			
Avail Cap(c_a), veh/h	618	2523	0	0	2701	825	369	786	362			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.38	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	67.2	12.1	0.0	0.0	28.5	0.0	61.3	63.7	0.0			
Incr Delay (d2), s/veh	13.4	0.8	0.0	0.0	0.6	0.0	3.2	8.8	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(-26165%),veh/ln	10.8	15.4	0.0	0.0	21.1	0.0	9.2	13.2	0.0			
LnGrp Delay(d),s/veh	80.6	12.9	0.0	0.0	29.1	0.0	64.4	72.4	0.0			
LnGrp LOS	F	B			C		E	E				
Approach Vol, veh/h		1835			1900			790				
Approach Delay, s/veh		29.6			29.1			70.3				
Approach LOS		C			C			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		116.6			27.4	89.1		33.9
Change Period (Y+Rc), s		5.0			4.0	5.0		4.6
Max Green Setting (Gmax), s		115.2			29.0	82.2		35.2
Max Q Clear Time (g_c+I1), s		33.6			22.9	46.5		27.1
Green Ext Time (p_c), s		78.0			0.5	35.4		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.5
HCM 2010 LOS	D

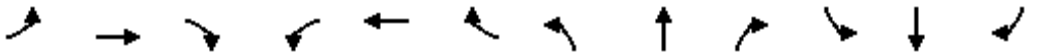
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	195	1859	306	412	1745	44	318	317	44	116	408	235
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.89	1.00		0.90
Parking 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	1881	1900	1881	1900	1881	1881	1792	1827	1863	1918
Adj Flow Rate, veh/h	222	2112	348	468	1983	0	370	369	51	136	480	276
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	1	1	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	1	0	1	4	1	1	6	4	2	3
Cap, veh/h	263	2066	636	1475	3915	1231	348	931	354	156	454	847
Arrive On Green	0.08	0.41	0.41	0.42	0.76	0.00	0.10	0.26	0.26	0.09	0.24	0.24
Sat Flow, veh/h	3442	5085	1565	3510	5136	1615	3476	3574	1359	1740	1863	2573
Grp Volume(v), veh/h	222	2112	348	468	1983	0	370	369	51	136	480	276
Grp Sat Flow(s),veh/h/ln	1721	1695	1565	1755	1712	1615	1738	1787	1359	1740	1863	1287
Q Serve(g_s), s	10.2	65.0	27.2	14.3	23.9	0.0	16.0	13.6	3.5	12.4	39.0	15.4
Cycle Q Clear(g_c), s	10.2	65.0	27.2	14.3	23.9	0.0	16.0	13.6	3.5	12.4	39.0	15.4
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	263	2066	636	1475	3915	1231	348	931	354	156	454	847
V/C Ratio(X)	0.84	1.02	0.55	0.32	0.51	0.00	1.06	0.40	0.14	0.87	1.06	0.33
Avail Cap(c_a), veh/h	280	2066	636	1475	3915	1231	348	931	354	174	454	847
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)	0.67	0.67	0.67	0.20	0.20	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.9	47.5	36.3	31.0	7.4	0.0	72.0	48.8	25.9	71.9	60.5	58.9
Incr Delay (d2), s/veh	13.8	22.1	2.3	0.0	0.1	0.0	66.4	0.1	0.1	30.7	58.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	5.3	34.6	12.1	6.9	11.2	0.0	10.9	6.7	1.3	7.3	27.4	5.6
LnGrp Delay(d),s/veh	86.8	69.6	38.5	31.0	7.4	0.0	138.4	48.9	26.0	102.6	118.7	59.7
LnGrp LOS	F	F	D	C	A		F	D	C	F	F	E
Approach Vol, veh/h		2682			2451			790			892	
Approach Delay, s/veh		67.0			12.0			89.3			98.0	
Approach LOS		E			B			F			F	

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	74.0	71.0	21.0	44.0	16.2	128.7	18.3	46.7
Change Period (Y+Rc), s	6.0	* 6	5.0	* 5	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	21.0	* 65	16.0	* 39	13.0	73.0	16.0	39.0
Max Q Clear Time (g_c+I1), s	16.3	67.0	18.0	41.0	12.2	25.9	14.4	15.6
Green Ext Time (p_c), s	2.5	0.0	0.0	0.0	0.1	42.8	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	53.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1664	218	233	2051	811	63	80	106	236	106	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	12	12	11	12	12	11	11	10
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	0.98		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	3224	4793		1745	5136	1552	1745	1673		1641	1705	1454
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	3224	4793		1745	5136	1552	1745	1673		1641	1705	1454
Peak-hour factor, PHF	0.83	0.83	0.83	0.84	0.84	0.84	0.83	0.83	0.83	0.84	0.84	0.84
Adj. Flow (vph)	165	2005	263	277	2442	965	76	96	128	281	126	65
RTOR Reduction (vph)	0	9	0	0	0	237	0	31	0	0	0	55
Lane Group Flow (vph)	165	2259	0	277	2442	728	76	193	0	200	207	10
Confl. Peds. (#/hr)	10		18	18		10	20		13	13		20
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	5%	2%	1%	0%	1%	1%	0%	5%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	18.0	73.6		21.0	76.6	76.6	21.8	21.8		23.6	23.6	23.6
Effective Green, g (s)	18.0	73.6		21.0	76.6	76.6	21.8	21.8		23.6	23.6	23.6
Actuated g/C Ratio	0.11	0.46		0.13	0.48	0.48	0.14	0.14		0.15	0.15	0.15
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	6.0		2.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	362	2204		229	2458	743	237	227		242	251	214
v/s Ratio Prot	0.05	0.47		c0.16	c0.48		0.04	c0.12		c0.12	0.12	
v/s Ratio Perm						0.47						0.01
v/c Ratio	0.46	1.02		1.21	0.99	0.98	0.32	0.85		0.83	0.82	0.04
Uniform Delay, d1	66.4	43.2		69.5	41.5	41.0	62.4	67.5		66.2	66.2	58.5
Progression Factor	0.88	0.35		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	17.5		127.8	16.7	28.6	0.3	23.7		19.2	18.5	0.0
Delay (s)	58.8	32.7		197.3	58.1	69.5	62.7	91.2		85.4	84.7	58.6
Level of Service	E	C		F	E	E	E	F		F	F	E
Approach Delay (s)		34.4			71.6			84.0			81.4	
Approach LOS		C			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	59.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	106.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	51	1210	577	378	1141	74	143	375	643	978	179
v/c Ratio	0.49	1.04	1.04	0.24	0.68	0.76	0.31	0.79	0.98	0.95	0.34
Control Delay	78.5	82.7	104.8	24.0	2.3	105.8	57.5	26.8	70.9	66.6	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.5	82.7	104.8	24.0	2.3	105.8	57.5	26.8	70.9	66.6	15.7
Queue Length 50th (ft)	46	~621	~291	110	0	68	63	70	226	460	41
Queue Length 95th (ft)	78	#596	#410	154	0	#154	98	#205	#277	#598	106
Internal Link Dist (ft)		1359		306			1086			1080	
Turn Bay Length (ft)	68		243			225		102	196		90
Base Capacity (vph)	263	1158	554	1575	1671	99	455	476	657	1027	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	1.04	1.04	0.24	0.68	0.75	0.31	0.79	0.98	0.95	0.34

Intersection Summary

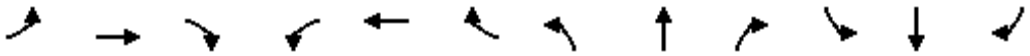
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	452	1383	1900	571	215	575	1346
v/c Ratio	0.87	0.54	0.71	0.72	0.70	0.85	0.83
Control Delay	75.7	9.8	9.9	9.3	72.7	74.5	5.2
Queue Delay	0.0	0.9	0.3	0.5	0.0	0.0	2.4
Total Delay	75.7	10.7	10.2	9.8	72.7	74.5	7.6
Queue Length 50th (ft)	173	294	184	114	212	308	0
Queue Length 95th (ft)	218	354	m256	m131	287	353	0
Internal Link Dist (ft)		258	655			1047	
Turn Bay Length (ft)	220				267		437
Base Capacity (vph)	578	2540	2685	794	355	786	1616
Starvation Cap Reductn	0	785	243	40	0	0	0
Spillback Cap Reductn	0	332	0	0	0	0	158
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.79	0.78	0.76	0.61	0.73	0.92

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	222	2112	348	468	1983	50	370	369	51	136	480	276
v/c Ratio	0.83	1.06	0.47	1.09	0.91	0.07	1.10	0.41	0.12	0.86	1.06	0.26
Control Delay	102.4	76.2	13.5	98.7	25.5	1.9	143.6	52.2	0.6	113.1	114.5	17.6
Queue Delay	0.0	18.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.4	94.5	13.5	98.7	26.2	1.9	143.6	52.2	0.6	113.1	114.5	17.6
Queue Length 50th (ft)	116	~885	68	~277	252	0	~226	173	0	142	~548	58
Queue Length 95th (ft)	m#163	#934	m112	m#283	m285	m2	#312	214	0	#236	#706	82
Internal Link Dist (ft)		655			700			1075			548	
Turn Bay Length (ft)	164			235		600	264		202			125
Base Capacity (vph)	269	1997	748	428	2191	769	335	891	423	167	454	1069
Starvation Cap Reductn	0	53	0	0	50	0	0	0	0	0	0	0
Spillback Cap Reductn	0	419	0	0	0	0	0	0	14	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	1.34	0.47	1.09	0.93	0.07	1.10	0.41	0.12	0.81	1.06	0.26

Intersection Summary

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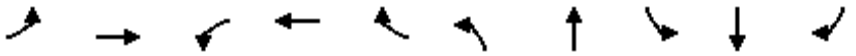
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	165	2268	277	2442	965	76	224	200	207	65
v/c Ratio	0.46	1.02	1.21	0.99	0.99	0.32	0.86	0.83	0.82	0.23
Control Delay	60.2	35.9	183.3	57.5	47.8	64.7	86.0	92.1	91.0	7.7
Queue Delay	0.0	30.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.2	66.2	183.3	57.5	47.8	64.7	86.0	92.1	91.0	7.7
Queue Length 50th (ft)	89	~957	~352	~954	691	72	196	216	224	0
Queue Length 95th (ft)	m89	m#973	#493	#1045	#922	115	263	280	288	23
Internal Link Dist (ft)		700		1282			449		751	
Turn Bay Length (ft)	341		175			295		228		
Base Capacity (vph)	362	2214	229	2458	978	284	302	307	319	339
Starvation Cap Reductn	0	176	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	1.11	1.21	0.99	0.99	0.27	0.74	0.65	0.65	0.19

Intersection Summary

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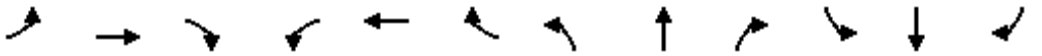
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	614	223	589	501	1030	179	401	509	626	625	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	14	12	12	16	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1745	3276		3204	3455	1682	1805	3610	1761	3351	3490	1508
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1745	3276		3204	3455	1682	1805	3610	1761	3351	3490	1508
Peak-hour factor, PHF	0.94	0.94	0.94	0.85	0.85	0.85	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	86	653	237	693	589	1212	206	461	585	673	672	238
RTOR Reduction (vph)	0	26	0	0	0	0	0	0	314	0	0	112
Lane Group Flow (vph)	86	864	0	693	589	1212	206	461	271	673	672	126
Confl. Peds. (#/hr)	36		7	7		36	17		4	4		17
Confl. Bikes (#/hr)						4			1			1
Heavy Vehicles (%)	0%	2%	1%	2%	1%	0%	0%	0%	2%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1 9	6	
Permitted Phases						Free			2			6
Actuated Green, G (s)	11.3	37.0		31.0	56.7	140.0	19.9	22.0	22.0	28.0	34.1	34.1
Effective Green, g (s)	11.3	37.0		31.0	56.7	140.0	19.9	22.0	22.0	28.0	34.1	34.1
Actuated g/C Ratio	0.08	0.26		0.22	0.41	1.00	0.14	0.16	0.16	0.20	0.24	0.24
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	6.0		4.0	6.0		3.0	6.0	6.0		6.0	6.0
Lane Grp Cap (vph)	140	865		709	1399	1682	256	567	276	670	850	367
v/s Ratio Prot	0.05	c0.26		c0.22	0.17		0.11	0.13		c0.20	0.19	
v/s Ratio Perm						c0.72			c0.15			0.08
v/c Ratio	0.61	1.00		0.98	0.42	0.72	0.80	0.81	0.98	1.00	0.79	0.34
Uniform Delay, d1	62.2	51.5		54.2	29.9	0.0	58.2	57.0	58.8	56.0	49.6	43.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	30.1		28.0	0.6	2.7	16.6	12.1	49.4	35.9	7.4	2.5
Delay (s)	67.8	81.6		82.2	30.5	2.7	74.7	69.1	108.2	91.9	57.0	46.3
Level of Service	E	F		F	C	A	E	E	F	F	E	D
Approach Delay (s)		80.4			31.3			88.3			70.2	
Approach LOS		F			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	60.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	523	1155	0	0	1924	657	201	260	847	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1881	0	0	1881	1881	1881	1881	1956			
Adj Flow Rate, veh/h	556	1229	0	0	2025	0	209	271	0			
Adj No. of Lanes	2	2	0	0	3	1	1	2	1			
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.96	0.96	0.96			
Percent Heavy Veh, %	3	1	0	0	1	1	1	1	1			
Cap, veh/h	921	2874	0	0	2581	804	244	486	226			
Arrive On Green	0.27	0.80	0.00	0.00	0.67	0.00	0.14	0.14	0.00			
Sat Flow, veh/h	3408	3668	0	0	5305	1599	1792	3574	1663			
Grp Volume(v), veh/h	556	1229	0	0	2025	0	209	271	0			
Grp Sat Flow(s),veh/h/ln	1704	1787	0	0	1712	1599	1792	1787	1663			
Q Serve(g_s), s	22.8	16.4	0.0	0.0	44.0	0.0	18.3	11.3	0.0			
Cycle Q Clear(g_c), s	22.8	16.4	0.0	0.0	44.0	0.0	18.3	11.3	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	921	2874	0	0	2581	804	244	486	226			
V/C Ratio(X)	0.60	0.43	0.00	0.00	0.78	0.00	0.86	0.56	0.00			
Avail Cap(c_a), veh/h	921	2874	0	0	2581	804	392	782	364			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.51	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	50.9	4.7	0.0	0.0	20.5	0.0	67.6	64.6	0.0			
Incr Delay (d2), s/veh	0.8	0.5	0.0	0.0	1.3	0.0	5.8	0.4	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(-26165%),veh/ln	10.8	8.2	0.0	0.0	20.8	0.0	9.4	5.6	0.0			
LnGrp Delay(d),s/veh	51.7	5.2	0.0	0.0	21.8	0.0	73.4	65.0	0.0			
LnGrp LOS	D	A			C		E	E				
Approach Vol, veh/h		1785			2025			480				
Approach Delay, s/veh		19.7			21.8			68.6				
Approach LOS		B			C			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		133.6			48.2	85.4		26.4
Change Period (Y+Rc), s		5.0			5.0	* 5		4.6
Max Green Setting (Gmax), s		115.4			31.0	* 80		35.0
Max Q Clear Time (g_c+I1), s		18.4			24.8	46.0		20.3
Green Ext Time (p_c), s		44.4			5.3	31.9		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	26.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

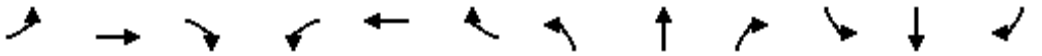
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	144	1657	201	292	1877	93	259	448	174	128	354	445
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.93	1.00		0.94
Parking 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	1881	1900	1881	1881	1976	1900	1863	1881	1845	1827	1937
Adj Flow Rate, veh/h	160	1841	223	301	1935	0	282	487	189	147	407	511
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.92	0.92	0.92	0.87	0.87	0.87
Percent Heavy Veh, %	2	1	0	1	1	0	0	2	1	3	4	2
Cap, veh/h	202	2118	646	343	2387	781	326	893	376	167	454	850
Arrive On Green	0.04	0.28	0.28	0.20	0.93	0.00	0.09	0.25	0.25	0.10	0.25	0.25
Sat Flow, veh/h	3442	5136	1565	3476	5136	1680	3510	3539	1492	1757	1827	2737
Grp Volume(v), veh/h	160	1841	223	301	1935	0	282	487	189	147	407	511
Grp Sat Flow(s),veh/h/ln	1721	1712	1565	1738	1712	1680	1755	1770	1492	1757	1827	1369
Q Serve(g_s), s	7.4	54.6	18.2	13.5	17.2	0.0	12.7	19.1	13.2	13.2	34.5	18.4
Cycle Q Clear(g_c), s	7.4	54.6	18.2	13.5	17.2	0.0	12.7	19.1	13.2	13.2	34.5	18.4
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	202	2118	646	343	2387	781	326	893	376	167	454	850
V/C Ratio(X)	0.79	0.87	0.35	0.88	0.81	0.00	0.87	0.55	0.50	0.88	0.90	0.60
Avail Cap(c_a), veh/h	215	2118	646	391	2387	781	351	893	376	198	468	872
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	0.09	0.09	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.9	53.8	40.6	63.3	3.6	0.0	71.6	51.9	29.8	71.5	58.1	26.3
Incr Delay (d2), s/veh	15.1	4.5	1.3	1.9	0.3	0.0	17.7	0.4	0.4	27.3	22.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	4.0	26.8	8.1	6.5	6.8	0.0	6.9	9.4	5.5	7.7	20.2	7.3
LnGrp Delay(d),s/veh	91.0	58.3	41.9	65.2	3.9	0.0	89.3	52.3	30.2	98.8	80.1	28.9
LnGrp LOS	F	E	D	E	A		F	D	C	F	F	C
Approach Vol, veh/h		2224			2236			958			1065	
Approach Delay, s/veh		59.0			12.2			58.8			58.1	
Approach LOS		E			B			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	21.8	72.0	19.8	44.8	13.4	80.4	19.2	45.4
Change Period (Y+Rc), s	6.0	* 6	5.0	* 5	4.0	6.0	4.0	5.0
Max Green Setting (Gmax), s	18.0	* 66	16.0	* 41	10.0	74.0	18.0	39.0
Max Q Clear Time (g_c+I1), s	15.5	56.6	14.7	36.5	9.4	19.2	15.2	21.1
Green Ext Time (p_c), s	0.3	9.1	0.2	3.3	0.0	48.1	0.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	42.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	1774	135	210	2008	307	153	32	392	505	118	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	11	12	12	11	11	10
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.97		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3385	5051		1728	5136	1503	1745	1579		1641	1681	1456
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3385	5051		1728	5136	1503	1745	1579		1641	1681	1456
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.85	0.85	0.85	0.59	0.59	0.59
Adj. Flow (vph)	56	1993	152	228	2183	334	180	38	461	856	200	220
RTOR Reduction (vph)	0	5	0	0	0	100	0	148	0	0	0	102
Lane Group Flow (vph)	56	2140	0	228	2183	234	180	351	0	522	534	118
Confl. Peds. (#/hr)	13		23	23		13	19		17	17		19
Confl. Bikes (#/hr)						13			1			
Heavy Vehicles (%)	0%	1%	0%	1%	1%	3%	0%	4%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	12.8	54.0		17.0	58.2	58.2	26.0	26.0		43.0	43.0	43.0
Effective Green, g (s)	12.8	54.0		17.0	58.2	58.2	26.0	26.0		43.0	43.0	43.0
Actuated g/C Ratio	0.08	0.34		0.11	0.36	0.36	0.16	0.16		0.27	0.27	0.27
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	6.0		2.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	270	1704		183	1868	546	283	256		441	451	391
v/s Ratio Prot	0.02	c0.42		0.13	c0.43		0.10	c0.22		c0.32	0.32	
v/s Ratio Perm						0.16						0.08
v/c Ratio	0.21	1.26		1.25	1.17	0.43	0.64	1.37		1.18	1.18	0.30
Uniform Delay, d1	68.9	53.0		71.5	50.9	38.4	62.6	67.0		58.5	58.5	46.6
Progression Factor	0.64	0.55		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	117.8		147.9	82.1	2.5	3.4	189.5		103.6	103.4	0.2
Delay (s)	44.2	146.9		219.4	133.0	40.8	66.0	256.5		162.1	161.9	46.7
Level of Service	D	F		F	F	D	E	F		F	F	D
Approach Delay (s)		144.3			128.9			206.0			142.1	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	143.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	119.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	86	890	693	589	1212	206	461	585	673	672	238
v/c Ratio	0.61	1.00	0.98	0.42	0.72	0.80	0.81	0.99	1.00	0.79	0.50
Control Delay	80.1	78.6	82.6	31.6	2.7	80.8	69.3	55.7	74.8	57.9	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.1	78.6	82.6	31.6	2.7	80.8	69.3	55.7	74.8	57.9	21.7
Queue Length 50th (ft)	77	414	326	200	0	182	216	224	~227	307	68
Queue Length 95th (ft)	132	#564	#410	250	0	260	269	#433	#297	#410	159
Internal Link Dist (ft)		1359		309			1086			1080	
Turn Bay Length (ft)	68		243			225		102	196		90
Base Capacity (vph)	211	892	709	1400	1682	296	567	591	670	849	479
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	1.00	0.98	0.42	0.72	0.70	0.81	0.99	1.00	0.79	0.50

Intersection Summary

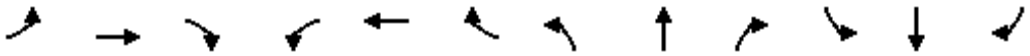
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	556	1229	2025	692	209	271	882
v/c Ratio	0.87	0.45	0.71	0.78	0.81	0.51	0.53
Control Delay	78.0	6.6	11.8	12.6	88.3	65.0	1.2
Queue Delay	0.0	0.5	0.3	0.6	0.0	0.0	0.0
Total Delay	78.0	7.1	12.1	13.2	88.3	65.0	1.3
Queue Length 50th (ft)	294	191	224	132	215	139	0
Queue Length 95th (ft)	#388	294	361	m193	294	176	0
Internal Link Dist (ft)		255	655			1047	
Turn Bay Length (ft)	220				267		437
Base Capacity (vph)	636	2731	2838	885	378	781	1652
Starvation Cap Reductn	0	966	270	38	0	0	0
Spillback Cap Reductn	0	34	0	0	0	0	16
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.70	0.79	0.82	0.55	0.35	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

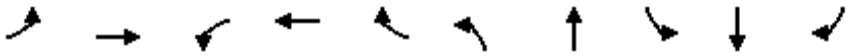


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	160	1841	223	301	1935	96	282	487	189	147	407	511
v/c Ratio	0.78	0.88	0.31	0.83	0.86	0.12	0.86	0.56	0.37	0.85	0.88	0.49
Control Delay	102.4	45.6	12.3	34.3	9.1	0.0	95.4	55.6	8.1	107.2	78.3	25.6
Queue Delay	0.0	0.6	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.4	46.1	12.3	34.3	9.8	0.0	95.4	55.6	8.1	107.2	78.3	25.6
Queue Length 50th (ft)	89	655	49	153	100	0	152	237	0	152	411	151
Queue Length 95th (ft)	#146	563	103	m141	m76	m0	#226	299	65	#251	#557	189
Internal Link Dist (ft)		655			700			1075			548	
Turn Bay Length (ft)	164			235		600	264		202			125
Base Capacity (vph)	207	2081	727	364	2250	825	338	873	509	190	468	1060
Starvation Cap Reductn	0	53	0	0	101	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.91	0.31	0.83	0.90	0.12	0.83	0.56	0.37	0.77	0.87	0.48

Intersection Summary

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

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	56	2145	228	2183	334	180	499	522	534	220
v/c Ratio	0.19	1.26	1.25	1.15	0.51	0.64	1.24	1.18	1.18	0.45
Control Delay	43.4	145.6	202.9	119.5	24.1	73.8	159.2	152.9	151.7	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.4	145.6	202.9	119.5	24.1	73.8	159.2	152.9	151.7	20.7
Queue Length 50th (ft)	30	~1046	~295	~1032	148	178	~481	~687	~703	67
Queue Length 95th (ft)	m35	#1116	#475	#1119	253	250	#641	447	455	47
Internal Link Dist (ft)		700		1282			449		751	
Turn Bay Length (ft)	341		175			295		228		
Base Capacity (vph)	338	1709	183	1893	653	283	404	441	452	492
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	1.26	1.25	1.15	0.51	0.64	1.24	1.18	1.18	0.45

Intersection Summary

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

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

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