Kimley-Horn
and Associates, Inc.

Memorandum

401 B Street
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San Diego, CA
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To: Faye Gilbert, Caltrans District 8

From: Mychal Loomis

Date: August 23, 2011

Subject: DRAFT Analysis Memorandum, Jackson Street/Dillon Avenue/ Market Street Traffic Signal [PES - CML 5275 (022)]

This is the third of four memos prepared to evaluate the traffic implications of the subject project. A previous memo, dated February 9, 2011, and approved by Caltrans on March 20, 2011, described the proposed methods for peak hour volume estimating and intersection capacity analysis. Another previous memo, dated August 22, 2011, presented the resulting peak hour volumes estimated. The current memo has been prepared to document the capacity analysis results using the methodology and volumes from the previous memos. Following City of Indio and Caltrans review and approval of all three memos, a final memo will be prepared that will integrate the methods, volumes and results into a single document that responds to Caltrans' request for the preparation of a traffic study, as noted in the July 21, 2010 review of the draft Preliminary Environmental Study (PES) form.

Background

The proposed project, located in the eastern portion of the City of Indio, would install a traffic signal at the Jackson Street intersection with Dillon Avenue/Market Street and would provide a wireless interconnection among this intersection and adjacent intersections to the north (Avenue 44) and to the south (Avenue 45). In February 2010, the City of Indio submitted the Draft PES form for Caltrans review, and on July 21, 2010 Caltrans indicated that the preparation of a traffic analysis for the proposed project is required. The proposed study intersections include:

- Jackson Street/Avenue 45
- Jackson Street/Dillon Avenue/Market Street
- Jackson Street/Avenue 44

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In February 2011, KHA prepared a memo describing the proposed approach for analyzing the traffic operations at these three intersections. This memo, approved by Caltrans on March 29, 2011, proposed to estimate year 2012 and 2035 traffic conditions, both with and without the proposed improvements, using year 2000 Highway Capacity manual procedures as implemented in the Synchro intersection analysis software package. In the second memo prepared, analysis of year 2011 was requested, replacing the previous 2008 existing conditions. All analyses will use the City of Indio's minimum performance standard of LOS D.

The "No Project" scenarios assume the existing stop sign control at the Jackson Street intersection with Dillon Avenue/Market Street. The Jackson Street intersections with Avenues 44 and 45 are assumed to be uncoordinated intersections. The "No Project" scenarios use traffic signal timing and phasing provided by the City of Indio (see attached). Year 2035 cycle lengths were optimized to their natural cycle length using the traffic volumes, peak-hour factors, and truck percentages previously approved. This accounts for natural adjustments to the cycle that would occur with increased volumes.

Under the "With Project" scenarios, the proposed signal installation at Jackson Street/Dillon Avenue/Market Street is assumed, and the three intersections would be coded in Synchro as a coordinated system. We would continue to use the same signal timing parameters as the "No Project" scenario, but the cycle lengths and split lengths will be optimized to function as a coordinated system using the traffic volumes, peak-hour factors, and truck percentages previously approved. The new signal proposed to be installed at Jackson Street and Dillon Avenue/Market Street is assumed to have similar signal timing parameters as the two adjacent signals. Further, a dedicated westbound left turn lane is being added on Dillon Avenue as a project feature and the existing shared left-through-right lane would be converted to a through-right lane.

Analysis Results

The following table summarizes the results of the intersection analyses. The Synchro calculation worksheets are attached to this document. As shown in the tables, the project decreases the delay at the intersection of Jackson Street and Dillon Avenue/Market Street with the installation of the traffic signal. Further, with the installation of the coordinated system the delays at each of the adjacent intersection would change. Without the project, the intersection of Jackson Street and Dillon Avenue/Market Street is shown to be LOS F for years 2011, 2012 and 2035. The intersection of Jackson Street at Avenue 44 was found to degrade to LOS E in the afternoon peak-hour by year 2035. With the project, the resulting LOS at each intersection is found to be LOS B for year 2011, LOS C or better for year 2012 analyses, and LOS D or better for year 2035 analyses. The analysis results indicate that each of the intersections would operate at an acceptable LOS during existing (2011), opening year (2012) and horizon year (2035) conditions with the proposed project. A comparison of the "No Project" and "With Project" analyses show no adverse traffic impacts.

Table 1. Intersection Operation Analysis Results.

INTERSECTION	PEAK	EXISTING (2011) DELAY (a)	EXISTING (2011) LOS (b)	EXISTING WITH PROJECT DELAY (a)	EXISTING WITH PROJECT LOS (b)	Δ (d)	IMPACT?
Ave 44 & Jackson St	AM	8.4	A	13.6	B	5.3	NO
	PM	10.4	B	13.0	B	2.6	NO
Dillon Ave/ Market St & Jackson St (c)	AM	20.9	C	14.3	B	-6.6	NO
	PM	89.7	**F**	19.9	B	-69.8	NO
Ave 45 & Jackson St	AM	14.6	B	14.5	B	-0.1	NO
	PM	11.5	B	10.6	B	-0.9	NO

	INTERSECTION	PEAK	2012 BASELINE DELAY (a)	2012 BASELINE LOS (b)	2012 WITH PROJECT DELAY (a)	2012 WITH PROJECT LOS (b)	Δ (d)	IMPACT?
1	Ave 44 & Jackson St	AM	8.5	A	13.5	B	5.0	NO
		PM	10.7	B	12.9	B	2.2	NO
2	Dillon Ave/ Market St & Jackson St (c)	AM	22.5	C	14.2	B	-8.3	NO
		PM	97.2	**F**	20.4	C	-76.8	NO
3	Ave 45 & Jackson St	AM	14.5	B	14.4	B	-0.1	NO
		PM	11.6	B	10.7	B	-0.9	NO

	INTERSECTION	PEAK	2035 BASELINE DELAY (a)	2035 BASELINE LOS (b)	2035 WITH PROJECT DELAY (a)	2035 WITH PROJECT LOS (b)	Δ (d)	IMPACT?
1	Ave 44 & Jackson St	AM	12.3	B	14.6	B	2.3	NO
		PM	56.5	**E**	53.4	D	-3.1	NO
2	Dillon Ave/ Market St & Jackson St (c)	AM	167.4	**F**	17.7	B	-149.7	NO
		PM	447.9	**F**	32.4	C	-415.5	NO
3	Ave 45 & Jackson St	AM	19.3	B	22.0	C	2.7	NO
		PM	16.8	B	16.0	B	-0.8	NO

Notes:
Bold values indicate intersections operating at LOS E or F.
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 7.0
(c) Synchro and HCM methodology are not capable of analyzing the intersection geometrics that exist at this intersection when it is an all-way stop controlled intersection. The results shown for Baseline Conditions are worse than what is expected to occur, as the analysis must assume fewer lanes than are actually available. For the With Project Conditions, the intersection is signalized and can analyze the actual intersection geometrics.
(d) Change in delay due to addition of project. Project consists of signalizing the intersection of Market St/Dillon Ave & Jackson St, as well as implementing coordination of the three study intersections

We are prepared to move forward with the final of the four memos immediately upon Caltrans' approval of this analysis. Please contact me at 619-744-0161 or Mychal.Loomis@kimley-horn.com with any questions or comments.

Copies to:
Tom Rafferty, City of Indio
Joel Montalvo, NAI Consulting
Jean Fares, Kimley-Horn and Associates, Inc.

Attachments:
- Signal Timing Sheets
- Intersection worksheets for this analysis

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ATTACHMENTS

INTERSECTION: **Jackson & Avenue 44**

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street Name: **Jackson**
E/W Street Name: **Avenue 44**

Last Database Change:

Change Record					
Change	By	Date	Change	By	Date

Notes:

Drop Number		<C+0+0>
Zone Number		<C+0+1>
Area Number		<C+0+2>
Area Address		<C+0+3>
QuicNet Channel		(QuicNet)

Communication Addresses

Manual Plan		<C+A+1>
Manual Offset		<C+B+1>

Manual Selection

Max Initial	12	<F+0+E>
Red Revert	2.0	<F+0+F>
All Red Start	2.0	<F+C+0>

Start / Revert Times

Row	Column Numbers —>	Phase 1	2	3	4	5	6	7	8
	Phase Names —>								
0	Ped Walk		7		7				
1	Ped FDW		15		16				
2	Min Green		6		6				
3	Type 3 Limit								
4	Added Initial		0.5		0.5				
5	Veh Extension		5.0		4.0				
6	Max Gap		5.0		4.0				
7	Min Gap		5.0		4.0				
8	Max Limit		25		25				
9	Max Limit 2								
A	- - - - - -								
B	Call To Phase								
C	Reduce By								
D	Reduce Every								
E	Yellow Change		4.0		4.0				
F	Red Clear		1.0		1.0				

Phase Timing - Bank 1 <F Page>

	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	5
EV-A Clear	
EV-B Delay	5
EV-B Clear	
EV-C Delay	5
EV-C Clear	
EV-D Delay	5
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
View EV Delay	
View EV Clear	
View RR Delay	
View RR Clear	

Preempt Timing

	F	Row
Permit	2 4	0
Red Lock		1
Yellow Lock		2
Min Recall	2	3
Ped Recall		4
View Set Peds		5
Rest In Walk		6
Red Rest		7
Dual Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond. Service		C
Man Cntrl Calls		D
Yellow Start	4	E
First Phases	2	F

Phase Functions <F Page>

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

INTERSECTION Avenue 45 at Jackson Street, Indio, California

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street Name: Jackson Street
E/W Street Name: Avenue 45

Last Database Change:

Change Record					
Change	By	Date	Change	By	Date

Notes:

Drop Number		<C+0+0>
Zone Number		<C+0+1>
Area Number		<C+0+2>
Area Address		<C+0+3>
QuicNet Channel		(QuicNet)

Communication Addresses

Manual Plan		<C+A+1>
Manual Offset		<C+B+1>

Manual Selection

Max Initial	5	<F+0+E>
Red Revert	5.0	<F+0+F>
All Red Start	5.0	<F+G+0>

Start / Revert Times

OK
Tom Brokaw
10/30/06

Row	Column Numbers -->	Phase							
	Phase Names -->								
30	Ped Walk	-	7	-	7	-	7	-	7
31	Ped FDW	-	22		22		20		22
32	Min Green	5	10	5	5	5	10	5	5
33	Type 3 Limit	-	-	-	-	-	-	-	-
34	Added Initial	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
35	Veh Extension	2.0	~~2.0~~ 2.0	2.0	2.0	2.0	~~2.0~~ 2.0	2.0	2.0
36	Max Gap	3.0	~~2.0~~ 2.5	3.0	3.0	3.0	~~3.0~~ 2.5	3.0	3.0
37	Min Gap	1.0	~~2.0~~ 2.5	1.0	1.0	1.0	~~2.0~~ 2.5	1.0	1.0
38	Max Limit	15	30	15	30	15	30	15	30
39	Max Limit 2								
40									
41	Call To Phase								
42	Reduce By	0.1	1.0	0.1	1.0	0.1	1.0	0.1	1.0
43	Reduce Every	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0
44	Yellow Change	3.0	5.4	3.0	4.3	3.0	4.3	3.0	4.3
45	Red Clear	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0

Phase Timing - Bank 1 <F Page>

RR-1 Delay	
RR-1 Clear	
EV-A Delay	
EV-A Clear	6
EV-B Delay	
EV-B Clear	6
EV-C Delay	
EV-C Clear	6
EV-D Delay	
EV-D Clear	6
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

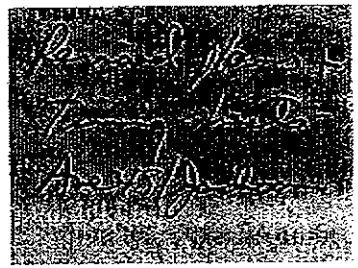
Preempt Timing

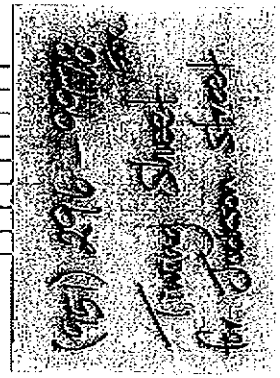
		Row
Permit	12345678	
Red Lock		
Yellow Lock		
Min Recall		
Ped Recall		
View Set Peds	-----	
Rest In Walk		
Red Rest		
Dual Entry	x2x4x6x8	
Max Recall		
Soft Recall	x2xxx6xx	
Max 2		
Cond. Service	1xxxx5xx	
Man Cntrl Calls		
Yellow Start		
First Phases	xxx4xxx8	

Phase Functions <F Page>

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	90	122	41	147	74	130	461	21	24	453	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.95		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3234		1770	3362		1770	3516		1770	3522	
Flt Permitted	0.60	1.00		0.59	1.00		0.47	1.00		0.46	1.00	
Satd. Flow (perm)	1122	3234		1093	3362		875	3516		857	3522	
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	42	114	154	45	160	80	140	496	23	26	482	16
RTOR Reduction (vph)	0	113	0	0	59	0	0	5	0	0	4	0
Lane Group Flow (vph)	42	155	0	45	181	0	140	514	0	26	495	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	11.2	11.2		11.2	11.2		21.2	21.2		21.2	21.2	
Effective Green, g (s)	11.2	11.2		11.2	11.2		21.2	21.2		21.2	21.2	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.50	0.50		0.50	0.50	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	296	854		289	888		438	1758		429	1761	
v/s Ratio Prot		0.05			c0.05			0.15			0.14	
v/s Ratio Perm	0.04			0.04			c0.16			0.03		
v/c Ratio	0.14	0.18		0.16	0.20		0.32	0.29		0.06	0.28	
Uniform Delay, d1	11.9	12.1		12.0	12.1		6.3	6.2		5.5	6.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		0.3	0.2		0.9	0.2		0.1	0.2	
Delay (s)	12.2	12.2		12.3	12.3		7.2	6.4		5.6	6.3	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		12.2			12.3			6.6			6.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	42.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	28	46	88	34	48	46	472	105	86	461	28
Peak Hour Factor	0.90	0.90	0.90	0.78	0.78	0.78	0.90	0.90	0.90	0.84	0.84	0.84
Hourly flow rate (vph)	24	31	51	113	44	62	51	524	117	102	549	33

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	24	82	218	313	379	377	308
Volume Left (vph)	24	0	113	51	0	102	0
Volume Right (vph)	0	51	62	0	117	0	33
Hadj (s)	0.57	-0.37	0.00	0.12	-0.18	0.17	-0.04
Departure Headway (s)	9.1	8.1	7.7	7.0	6.7	7.1	6.9
Degree Utilization, x	0.06	0.18	0.46	0.61	0.71	0.74	0.59
Capacity (veh/h)	363	403	448	494	519	493	505
Control Delay (s)	11.4	11.7	17.1	19.4	23.4	26.7	18.0
Approach Delay (s)	11.7		17.1	21.6		22.8	
Approach LOS	B		C	C		C	

Intersection Summary			
Delay	20.9		
HCM Level of Service	C		
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	8	8	111	16	17	15	598	119	65	553	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		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	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1693		1752	1845	1549	1770	3436		1770	3539	1541
Flt Permitted	0.74	1.00		0.51	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1372	1693		933	1845	1549	1770	3436		1770	3539	1541
Peak-hour factor, PHF	0.42	0.42	0.42	0.77	0.77	0.77	0.94	0.94	0.94	0.93	0.93	0.93
Adj. Flow (vph)	2	19	19	144	21	22	16	636	127	70	595	2
RTOR Reduction (vph)	0	17	0	0	0	17	0	14	0	0	0	1
Lane Group Flow (vph)	2	21	0	144	21	5	16	749	0	70	595	1
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	7.4	6.7		16.5	12.8	16.7	0.9	35.9		3.9	40.0	40.0
Effective Green, g (s)	7.4	6.7		16.5	12.8	16.7	0.9	35.9		3.9	40.0	40.0
Actuated g/C Ratio	0.10	0.09		0.23	0.18	0.24	0.01	0.51		0.05	0.56	0.56
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	147	160		295	333	364	22	1737		97	1994	868
v/s Ratio Prot	0.00	0.01		c0.05	0.01	0.00	0.01	c0.22		c0.04	c0.17	
v/s Ratio Perm	0.00			c0.07		0.00						0.00
v/c Ratio	0.01	0.13		0.49	0.06	0.01	0.73	0.43		0.72	0.30	0.00
Uniform Delay, d1	28.5	29.5		22.9	24.1	20.8	34.9	11.1		33.0	8.1	6.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.5	0.0	0.0	67.5	0.2		19.9	0.1	0.0
Delay (s)	28.5	29.6		23.3	24.2	20.8	102.5	11.3		52.9	8.3	6.8
Level of Service	C	C		C	C	C	F	B		D	A	A
Approach Delay (s)		29.6			23.1			13.2			12.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	71.0	Sum of lost time (s)	17.7
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	98	106	107	110	68	152	716	64	62	644	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.94		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3263		1770	3337		1770	3495		1770	3469	
Flt Permitted	0.61	1.00		0.58	1.00		0.30	1.00		0.29	1.00	
Satd. Flow (perm)	1132	3263		1077	3337		550	3495		547	3469	
Peak-hour factor, PHF	0.72	0.72	0.72	0.77	0.77	0.77	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	135	136	147	139	143	88	165	778	70	70	732	112
RTOR Reduction (vph)	0	91	0	0	63	0	0	10	0	0	18	0
Lane Group Flow (vph)	135	192	0	139	168	0	165	838	0	70	826	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	14.8	14.8		14.8	14.8		26.7	26.7		26.7	26.7	
Effective Green, g (s)	14.8	14.8		14.8	14.8		26.7	26.7		26.7	26.7	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.52	0.52		0.52	0.52	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	325	938		310	959		285	1812		284	1798	
v/s Ratio Prot		0.06			0.05			0.24			0.24	
v/s Ratio Perm	0.12			c0.13			c0.30			0.13		
v/c Ratio	0.42	0.20		0.45	0.18		0.58	0.46		0.25	0.46	
Uniform Delay, d1	14.8	13.9		15.0	13.8		8.5	7.9		6.8	7.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.1		1.4	0.1		4.5	0.4		1.0	0.4	
Delay (s)	16.0	14.0		16.4	13.9		13.0	8.2		7.8	8.2	
Level of Service	B	B		B	B		B	A		A	A	
Approach Delay (s)		14.7			14.8			9.0			8.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	58	27	128	94	37	43	148	789	81	59	639	92
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.93	0.93	0.93	0.91	0.91	0.91
Hourly flow rate (vph)	64	30	141	106	42	48	159	848	87	65	702	101

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	64	170	196	583	511	416	452
Volume Left (vph)	64	0	106	159	0	65	0
Volume Right (vph)	0	141	48	0	87	0	101
Hadj (s)	0.57	-0.51	0.03	0.17	-0.09	0.11	-0.12
Departure Headway (s)	9.9	8.8	8.8	8.1	7.8	8.0	7.8
Degree Utilization, x	0.18	0.42	0.48	1.31	1.11	0.92	0.98
Capacity (veh/h)	353	396	396	454	473	442	452
Control Delay (s)	13.8	16.8	19.5	178.5	102.5	53.0	62.8
Approach Delay (s)	16.0		19.5	143.0		58.1	
Approach LOS	C		C	F		F	

Intersection Summary			
Delay	89.7		
HCM Level of Service	F		
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	15	78	10	40	3	1020	55	21	798	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		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	0.86		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1560		1752	1845	1549	1770	3507		1770	3539	1541
Flt Permitted	0.75	1.00		0.52	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1384	1560		951	1845	1549	1770	3507		1770	3539	1541
Peak-hour factor, PHF	0.44	0.44	0.44	0.95	0.95	0.95	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	2	2	34	82	11	42	3	1062	57	23	858	2
RTOR Reduction (vph)	0	31	0	0	0	34	0	3	0	0	0	1
Lane Group Flow (vph)	2	5	0	82	11	8	3	1116	0	23	858	1
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	7.8	7.1		15.0	11.3	14.5	0.8	39.8		3.2	43.3	43.3
Effective Green, g (s)	7.8	7.1		15.0	11.3	14.5	0.8	39.8		3.2	43.3	43.3
Actuated g/C Ratio	0.11	0.10		0.21	0.16	0.20	0.01	0.55		0.04	0.60	0.60
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	152	152		250	287	309	19	1920		78	2108	918
v/s Ratio Prot	0.00	0.00		c0.02	0.01	0.00	0.00	c0.32		c0.01	0.24	
v/s Ratio Perm	0.00			c0.05		0.00						0.00
v/c Ratio	0.01	0.04		0.33	0.04	0.03	0.16	0.58		0.29	0.41	0.00
Uniform Delay, d1	29.0	29.7		24.1	26.1	23.4	35.6	10.9		33.7	7.8	5.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.0		0.3	0.0	0.0	1.4	0.5		0.8	0.2	0.0
Delay (s)	29.0	29.7		24.4	26.1	23.4	37.0	11.5		34.4	8.0	6.0
Level of Service	C	C		C	C	C	D	B		C	A	A
Approach Delay (s)		29.7			24.2			11.5			8.7	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	72.7	Sum of lost time (s)	12.4
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	90	122	41	147	74	130	461	21	24	453	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.95		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3234		1770	3362		1770	3516		1770	3522	
Flt Permitted	0.57	1.00		0.52	1.00		0.47	1.00		0.46	1.00	
Satd. Flow (perm)	1055	3234		966	3362		875	3516		857	3522	
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	42	114	154	45	160	80	140	496	23	26	482	16
RTOR Reduction (vph)	0	131	0	0	68	0	0	2	0	0	2	0
Lane Group Flow (vph)	42	137	0	45	172	0	140	517	0	26	496	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	13.2	13.2		13.2	13.2		66.8	66.8		66.8	66.8	
Effective Green, g (s)	13.2	13.2		13.2	13.2		66.8	66.8		66.8	66.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.74	0.74		0.74	0.74	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	155	474		142	493		649	2610		636	2614	
v/s Ratio Prot		0.04			c0.05			0.15			0.14	
v/s Ratio Perm	0.04			0.05			c0.16			0.03		
v/c Ratio	0.27	0.29		0.32	0.35		0.22	0.20		0.04	0.19	
Uniform Delay, d1	34.1	34.2		34.4	34.5		3.6	3.5		3.1	3.5	
Progression Factor	1.00	1.00		1.00	1.00		0.51	0.53		1.00	1.00	
Incremental Delay, d2	1.3	0.5		1.8	0.6		0.7	0.2		0.1	0.2	
Delay (s)	35.4	34.7		36.1	35.1		2.6	2.0		3.2	3.6	
Level of Service	D	C		D	D		A	A		A	A	
Approach Delay (s)		34.8			35.3			2.1			3.6	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	28	46	88	34	48	46	472	105	86	461	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3		5.3	5.3		3.0	5.3		3.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.91		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1656		1736	1667		1770	3442		1770	3509	
Flt Permitted	0.69	1.00		0.70	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1258	1656		1286	1667		1770	3442		1770	3509	
Peak-hour factor, PHF	0.90	0.90	0.90	0.78	0.78	0.78	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	24	31	51	113	44	62	51	524	117	102	549	33
RTOR Reduction (vph)	0	44	0	0	53	0	0	13	0	0	3	0
Lane Group Flow (vph)	24	38	0	113	53	0	51	628	0	102	579	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	12.4	12.4		12.4	12.4		5.0	55.6		8.4	59.0	
Effective Green, g (s)	12.4	12.4		12.4	12.4		5.0	55.6		8.4	59.0	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.06	0.62		0.09	0.66	
Clearance Time (s)	5.3	5.3		5.3	5.3		3.0	5.3		3.0	5.3	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	173	228		177	230		98	2126		165	2300	
v/s Ratio Prot		0.02			0.03		0.03	c0.18		c0.06	0.16	
v/s Ratio Perm	0.02			c0.09								
v/c Ratio	0.14	0.17		0.64	0.23		0.52	0.30		0.62	0.25	
Uniform Delay, d1	34.1	34.2		36.7	34.5		41.3	8.0		39.3	6.4	
Progression Factor	1.00	1.00		1.00	1.00		1.23	0.31		1.02	0.78	
Incremental Delay, d2	0.1	0.1		5.5	0.2		2.2	0.3		4.7	0.3	
Delay (s)	34.2	34.4		42.1	34.7		53.1	2.8		44.9	5.3	
Level of Service	C	C		D	C		D	A		D	A	
Approach Delay (s)		34.3			38.5			6.5			11.2	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	8	8	111	16	17	15	598	119	65	553	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		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	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1692		1752	1845	1550	1770	3435		1770	3539	1539
Flt Permitted	0.74	1.00		0.54	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1372	1692		998	1845	1550	1770	3435		1770	3539	1539
Peak-hour factor, PHF	0.42	0.42	0.42	0.77	0.77	0.77	0.94	0.94	0.94	0.93	0.93	0.93
Adj. Flow (vph)	2	19	19	144	21	22	16	636	127	70	595	2
RTOR Reduction (vph)	0	17	0	0	0	17	0	12	0	0	0	1
Lane Group Flow (vph)	2	21	0	144	21	5	16	751	0	70	595	1
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	9.5	8.5		18.0	14.0	20.2	1.2	51.1		6.2	57.2	57.2
Effective Green, g (s)	9.5	8.5		18.0	14.0	20.2	1.2	51.1		6.2	57.2	57.2
Actuated g/C Ratio	0.11	0.09		0.20	0.16	0.22	0.01	0.57		0.07	0.64	0.64
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	149	160		254	287	348	24	1950		122	2249	978
v/s Ratio Prot	0.00	0.01		c0.04	0.01	0.00	0.01	c0.22		c0.04	0.17	
v/s Ratio Perm	0.00			c0.07		0.00						0.00
v/c Ratio	0.01	0.13		0.57	0.07	0.01	0.67	0.39		0.57	0.26	0.00
Uniform Delay, d1	36.0	37.4		31.4	32.5	27.2	44.2	10.8		40.6	7.2	6.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.01	0.76	0.74
Incremental Delay, d2	0.0	0.1		1.7	0.0	0.0	42.9	0.6		3.9	0.3	0.0
Delay (s)	36.1	37.5		33.2	32.5	27.2	87.1	11.3		44.9	5.8	4.4
Level of Service	D	D		C	C	C	F	B		D	A	A
Approach Delay (s)		37.4			32.4			12.9			9.9	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	98	106	107	110	68	152	716	64	62	644	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.94		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3263		1770	3337		1770	3495		1770	3469	
Flt Permitted	0.60	1.00		0.53	1.00		0.31	1.00		0.31	1.00	
Satd. Flow (perm)	1123	3263		996	3337		578	3495		575	3469	
Peak-hour factor, PHF	0.72	0.72	0.72	0.77	0.77	0.77	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	135	136	147	139	143	88	165	778	70	70	732	112
RTOR Reduction (vph)	0	116	0	0	70	0	0	6	0	0	12	0
Lane Group Flow (vph)	135	167	0	139	161	0	165	842	0	70	832	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	18.9	18.9		18.9	18.9		61.1	61.1		61.1	61.1	
Effective Green, g (s)	18.9	18.9		18.9	18.9		61.1	61.1		61.1	61.1	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.68	0.68		0.68	0.68	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	236	685		209	701		392	2373		390	2355	
v/s Ratio Prot		0.05			0.05			0.24			0.24	
v/s Ratio Perm	0.12			c0.14			c0.29			0.12		
v/c Ratio	0.57	0.24		0.67	0.23		0.42	0.35		0.18	0.35	
Uniform Delay, d1	31.9	29.6		32.6	29.5		6.5	6.1		5.3	6.1	
Progression Factor	1.00	1.00		1.00	1.00		0.45	0.43		1.00	1.00	
Incremental Delay, d2	4.0	0.3		8.5	0.2		3.1	0.4		1.0	0.4	
Delay (s)	35.9	29.9		41.1	29.7		6.1	3.0		6.3	6.5	
Level of Service	D	C		D	C		A	A		A	A	
Approach Delay (s)		31.8			34.0			3.5			6.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	27	128	94	37	43	148	789	81	59	639	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3		5.3	5.3		3.0	5.3		3.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88		1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1601		1736	1681		1770	3490		1770	3472	
Flt Permitted	0.70	1.00		0.51	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1276	1601		926	1681		1770	3490		1770	3472	
Peak-hour factor, PHF	0.91	0.91	0.91	0.89	0.89	0.89	0.93	0.93	0.93	0.91	0.91	0.91
Adj. Flow (vph)	64	30	141	106	42	48	159	848	87	65	702	101
RTOR Reduction (vph)	0	121	0	0	41	0	0	6	0	0	9	0
Lane Group Flow (vph)	64	50	0	106	49	0	159	929	0	65	794	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	12.8	12.8		12.8	12.8		12.4	56.8		6.8	51.2	
Effective Green, g (s)	12.8	12.8		12.8	12.8		12.4	56.8		6.8	51.2	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.14	0.63		0.08	0.57	
Clearance Time (s)	5.3	5.3		5.3	5.3		3.0	5.3		3.0	5.3	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	181	228		132	239		244	2203		134	1975	
v/s Ratio Prot		0.03			0.03		c0.09	c0.27		0.04	0.23	
v/s Ratio Perm	0.05			c0.11								
v/c Ratio	0.35	0.22		0.80	0.20		0.65	0.42		0.49	0.40	
Uniform Delay, d1	34.9	34.2		37.4	34.1		36.8	8.3		39.9	10.8	
Progression Factor	1.00	1.00		1.00	1.00		0.69	1.79		0.99	0.85	
Incremental Delay, d2	0.4	0.2		27.2	0.2		4.3	0.5		1.0	0.6	
Delay (s)	35.3	34.4		64.6	34.3		29.6	15.4		40.6	9.8	
Level of Service	D	C		E	C		C	B		D	A	
Approach Delay (s)		34.6			50.7			17.5			12.1	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	15	78	10	40	3	1020	55	21	798	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.99	1.00	1.00		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	0.86		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1559		1752	1845	1548	1770	3507		1770	3539	1539
Flt Permitted	0.75	1.00		0.54	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1384	1559		1003	1845	1548	1770	3507		1770	3539	1539
Peak-hour factor, PHF	0.44	0.44	0.44	0.95	0.95	0.95	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	2	2	34	82	11	42	3	1062	57	23	858	2
RTOR Reduction (vph)	0	31	0	0	0	34	0	3	0	0	0	1
Lane Group Flow (vph)	2	5	0	82	11	8	3	1116	0	23	858	1
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	9.6	8.6		16.7	12.7	16.3	1.1	55.0		3.6	58.6	58.6
Effective Green, g (s)	9.6	8.6		16.7	12.7	16.3	1.1	55.0		3.6	58.6	58.6
Actuated g/C Ratio	0.11	0.10		0.19	0.14	0.18	0.01	0.61		0.04	0.65	0.65
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	152	149		229	260	280	22	2143		71	2304	1002
v/s Ratio Prot	0.00	0.00		c0.02	0.01	0.00	0.00	c0.32		c0.01	0.24	
v/s Ratio Perm	0.00			c0.05		0.00						0.00
v/c Ratio	0.01	0.04		0.36	0.04	0.03	0.14	0.52		0.32	0.37	0.00
Uniform Delay, d1	36.0	36.9		31.4	33.4	30.3	44.0	10.0		42.0	7.2	5.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.02	0.59	0.48
Incremental Delay, d2	0.0	0.0		0.4	0.0	0.0	1.0	0.9		0.9	0.4	0.0
Delay (s)	36.0	37.0		31.7	33.4	30.3	45.0	10.9		43.6	4.7	2.7
Level of Service	D	D		C	C	C	D	B		D	A	A
Approach Delay (s)		36.9			31.4			11.0			5.7	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	93	125	43	151	76	133	474	21	25	466	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.95		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3235		1770	3361		1770	3516		1770	3522	
Flt Permitted	0.60	1.00		0.58	1.00		0.46	1.00		0.45	1.00	
Satd. Flow (perm)	1115	3235		1084	3361		862	3516		845	3522	
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	43	118	158	47	164	83	143	510	23	27	496	17
RTOR Reduction (vph)	0	116	0	0	61	0	0	5	0	0	3	0
Lane Group Flow (vph)	43	160	0	47	186	0	143	528	0	27	510	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	11.4	11.4		11.4	11.4		21.6	21.6		21.6	21.6	
Effective Green, g (s)	11.4	11.4		11.4	11.4		21.6	21.6		21.6	21.6	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.50	0.50		0.50	0.50	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	296	858		287	891		433	1766		424	1769	
v/s Ratio Prot		0.05			c0.06			0.15			0.14	
v/s Ratio Perm	0.04			0.04			c0.17			0.03		
v/c Ratio	0.15	0.19		0.16	0.21		0.33	0.30		0.06	0.29	
Uniform Delay, d1	12.1	12.2		12.1	12.3		6.4	6.3		5.5	6.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		0.4	0.2		0.9	0.2		0.1	0.2	
Delay (s)	12.4	12.4		12.5	12.5		7.3	6.5		5.6	6.4	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		12.4			12.5			6.6			6.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	43.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	29	47	91	35	49	47	485	108	88	474	29
Peak Hour Factor	0.90	0.90	0.90	0.78	0.78	0.78	0.90	0.90	0.90	0.84	0.84	0.84
Hourly flow rate (vph)	24	32	52	117	45	63	52	539	120	105	564	35

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	24	84	224	322	389	387	317
Volume Left (vph)	24	0	117	52	0	105	0
Volume Right (vph)	0	52	63	0	120	0	35
Hadj (s)	0.57	-0.36	0.00	0.12	-0.18	0.17	-0.04
Departure Headway (s)	9.2	8.2	7.7	7.1	6.8	7.2	7.0
Degree Utilization, x	0.06	0.19	0.48	0.64	0.74	0.77	0.61
Capacity (veh/h)	359	398	446	489	514	488	499
Control Delay (s)	11.6	12.0	17.7	20.7	25.6	29.4	19.2
Approach Delay (s)	11.9		17.7	23.4		24.8	
Approach LOS	B		C	C		C	

Intersection Summary			
Delay	22.5		
HCM Level of Service	C		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	8	8	114	17	18	16	615	122	67	568	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		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	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1693		1752	1845	1551	1770	3436		1770	3539	1541
Flt Permitted	0.74	1.00		0.51	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1371	1693		933	1845	1551	1770	3436		1770	3539	1541
Peak-hour factor, PHF	0.42	0.42	0.42	0.77	0.77	0.77	0.94	0.94	0.94	0.93	0.93	0.93
Adj. Flow (vph)	2	19	19	148	22	23	17	654	130	72	611	2
RTOR Reduction (vph)	0	17	0	0	0	17	0	14	0	0	0	1
Lane Group Flow (vph)	2	21	0	148	22	6	17	770	0	72	611	1
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	7.4	6.7		16.5	12.8	18.2	0.9	35.3		5.4	40.9	40.9
Effective Green, g (s)	7.4	6.7		16.5	12.8	18.2	0.9	35.3		5.4	40.9	40.9
Actuated g/C Ratio	0.10	0.09		0.23	0.18	0.25	0.01	0.49		0.08	0.57	0.57
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	145	158		292	328	393	22	1687		133	2013	877
v/s Ratio Prot	0.00	0.01		c0.05	0.01	0.00	0.01	c0.22		c0.04	0.17	
v/s Ratio Perm	0.00			c0.07		0.00						0.00
v/c Ratio	0.01	0.13		0.51	0.07	0.01	0.77	0.46		0.54	0.30	0.00
Uniform Delay, d1	29.0	29.9		23.4	24.6	20.1	35.4	12.0		32.1	8.1	6.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.5	0.0	0.0	87.1	0.3		2.4	0.1	0.0
Delay (s)	29.0	30.1		23.9	24.6	20.1	122.5	12.3		34.5	8.2	6.7
Level of Service	C	C		C	C	C	F	B		C	A	A
Approach Delay (s)		30.0			23.5			14.6			11.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	12.4
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	101	109	110	113	69	156	736	66	64	662	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.94		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3264		1770	3338		1770	3495		1770	3468	
Flt Permitted	0.60	1.00		0.57	1.00		0.28	1.00		0.28	1.00	
Satd. Flow (perm)	1126	3264		1069	3338		530	3495		527	3468	
Peak-hour factor, PHF	0.72	0.72	0.72	0.77	0.77	0.77	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	139	140	151	143	147	90	170	800	72	73	752	116
RTOR Reduction (vph)	0	86	0	0	64	0	0	10	0	0	18	0
Lane Group Flow (vph)	139	205	0	143	173	0	170	862	0	73	850	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	15.0	15.0		15.0	15.0		27.3	27.3		27.3	27.3	
Effective Green, g (s)	15.0	15.0		15.0	15.0		27.3	27.3		27.3	27.3	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.52	0.52		0.52	0.52	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	323	936		307	957		277	1824		275	1810	
v/s Ratio Prot		0.06			0.05			0.25			0.25	
v/s Ratio Perm	0.12			c0.13			c0.32			0.14		
v/c Ratio	0.43	0.22		0.47	0.18		0.61	0.47		0.27	0.47	
Uniform Delay, d1	15.2	14.2		15.4	14.0		8.8	7.9		6.9	7.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.2		1.5	0.1		5.7	0.4		1.1	0.4	
Delay (s)	16.4	14.4		16.9	14.2		14.5	8.3		8.0	8.3	
Level of Service	B	B		B	B		B	A		A	A	
Approach Delay (s)		15.0			15.2			9.3			8.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	52.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	59	28	131	96	38	44	152	811	83	60	656	94
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.93	0.93	0.93	0.91	0.91	0.91
Hourly flow rate (vph)	65	31	144	108	43	49	163	872	89	66	721	103

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	65	175	200	599	525	426	464
Volume Left (vph)	65	0	108	163	0	66	0
Volume Right (vph)	0	144	49	0	89	0	103
Hadj (s)	0.57	-0.51	0.03	0.17	-0.08	0.11	-0.12
Departure Headway (s)	10.0	8.9	8.9	8.1	7.8	8.1	7.8
Degree Utilization, x	0.18	0.43	0.49	1.34	1.14	0.95	1.01
Capacity (veh/h)	352	396	395	456	466	442	464
Control Delay (s)	13.9	17.3	20.2	190.4	111.1	59.1	70.8
Approach Delay (s)	16.4		20.2	153.4		65.2	
Approach LOS	C		C	F		F	

Intersection Summary			
Delay	97.2		
HCM Level of Service	F		
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	16	81	10	41	3	1048	56	21	820	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		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	0.86		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1559		1752	1845	1549	1770	3508		1770	3539	1541
Flt Permitted	0.75	1.00		0.51	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1384	1559		950	1845	1549	1770	3508		1770	3539	1541
Peak-hour factor, PHF	0.44	0.44	0.44	0.95	0.95	0.95	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	2	2	36	85	11	43	3	1092	58	23	882	2
RTOR Reduction (vph)	0	32	0	0	0	34	0	3	0	0	0	1
Lane Group Flow (vph)	2	6	0	85	11	9	3	1147	0	23	882	1
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	7.8	7.1		15.0	11.3	14.5	0.8	39.8		3.2	43.3	43.3
Effective Green, g (s)	7.8	7.1		15.0	11.3	14.5	0.8	39.8		3.2	43.3	43.3
Actuated g/C Ratio	0.11	0.10		0.21	0.16	0.20	0.01	0.55		0.04	0.60	0.60
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	152	152		250	287	309	19	1920		78	2108	918
v/s Ratio Prot	0.00	0.00		c0.02	0.01	0.00	0.00	c0.33		c0.01	0.25	
v/s Ratio Perm	0.00			c0.05		0.00						0.00
v/c Ratio	0.01	0.04		0.34	0.04	0.03	0.16	0.60		0.29	0.42	0.00
Uniform Delay, d1	29.0	29.7		24.1	26.1	23.4	35.6	11.1		33.7	7.9	5.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.0		0.3	0.0	0.0	1.4	0.6		0.8	0.2	0.0
Delay (s)	29.0	29.7		24.4	26.1	23.4	37.0	11.7		34.4	8.1	6.0
Level of Service	C	C		C	C	C	D	B		C	A	A
Approach Delay (s)		29.7			24.3			11.7			8.8	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	72.7	Sum of lost time (s)	12.4
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	93	125	43	151	76	133	474	21	25	466	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.95		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3235		1770	3361		1770	3516		1770	3522	
Flt Permitted	0.56	1.00		0.51	1.00		0.46	1.00		0.45	1.00	
Satd. Flow (perm)	1038	3235		950	3361		862	3516		845	3522	
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	43	118	158	47	164	83	143	510	23	27	496	17
RTOR Reduction (vph)	0	134	0	0	70	0	0	2	0	0	2	0
Lane Group Flow (vph)	43	142	0	47	177	0	143	531	0	27	511	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	13.7	13.7		13.7	13.7		66.3	66.3		66.3	66.3	
Effective Green, g (s)	13.7	13.7		13.7	13.7		66.3	66.3		66.3	66.3	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.74	0.74		0.74	0.74	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	158	492		145	512		635	2590		622	2595	
v/s Ratio Prot		0.04			c0.05			0.15			0.15	
v/s Ratio Perm	0.04			0.05			c0.17			0.03		
v/c Ratio	0.27	0.29		0.32	0.34		0.23	0.20		0.04	0.20	
Uniform Delay, d1	33.7	33.8		34.0	34.1		3.7	3.7		3.2	3.7	
Progression Factor	1.00	1.00		1.00	1.00		0.50	0.52		1.00	1.00	
Incremental Delay, d2	1.3	0.4		1.8	0.6		0.8	0.2		0.1	0.2	
Delay (s)	35.0	34.3		35.8	34.7		2.7	2.1		3.4	3.8	
Level of Service	D	C		D	C		A	A		A	A	
Approach Delay (s)		34.4			34.9			2.2			3.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	29	47	91	35	49	47	485	108	88	474	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3		5.3	5.3		3.0	5.3		3.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.91		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1657		1736	1667		1770	3443		1770	3508	
Flt Permitted	0.69	1.00		0.70	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1256	1657		1283	1667		1770	3443		1770	3508	
Peak-hour factor, PHF	0.90	0.90	0.90	0.78	0.78	0.78	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	24	32	52	117	45	63	52	539	120	105	564	35
RTOR Reduction (vph)	0	45	0	0	54	0	0	13	0	0	3	0
Lane Group Flow (vph)	24	39	0	117	54	0	52	646	0	105	596	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	12.7	12.7		12.7	12.7		5.0	55.1		8.6	58.7	
Effective Green, g (s)	12.7	12.7		12.7	12.7		5.0	55.1		8.6	58.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.06	0.61		0.10	0.65	
Clearance Time (s)	5.3	5.3		5.3	5.3		3.0	5.3		3.0	5.3	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	177	234		181	235		98	2108		169	2288	
v/s Ratio Prot		0.02			0.03		0.03	c0.19		c0.06	0.17	
v/s Ratio Perm	0.02			c0.09								
v/c Ratio	0.14	0.17		0.65	0.23		0.53	0.31		0.62	0.26	
Uniform Delay, d1	33.8	34.0		36.5	34.3		41.4	8.3		39.1	6.6	
Progression Factor	1.00	1.00		1.00	1.00		1.26	0.27		1.02	0.78	
Incremental Delay, d2	0.1	0.1		5.8	0.2		2.6	0.4		5.0	0.3	
Delay (s)	34.0	34.1		42.4	34.5		54.7	2.6		45.1	5.4	
Level of Service	C	C		D	C		D	A		D	A	
Approach Delay (s)		34.1			38.6			6.4			11.3	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	8	8	114	17	18	16	615	122	67	568	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		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	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1692		1752	1845	1550	1770	3435		1770	3539	1539
Flt Permitted	0.74	1.00		0.54	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1371	1692		998	1845	1550	1770	3435		1770	3539	1539
Peak-hour factor, PHF	0.42	0.42	0.42	0.77	0.77	0.77	0.94	0.94	0.94	0.93	0.93	0.93
Adj. Flow (vph)	2	19	19	148	22	23	17	654	130	72	611	2
RTOR Reduction (vph)	0	17	0	0	0	18	0	12	0	0	0	1
Lane Group Flow (vph)	2	21	0	148	22	5	17	772	0	72	611	1
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	9.5	8.5		18.0	14.0	20.3	2.4	51.0		6.3	56.0	56.0
Effective Green, g (s)	9.5	8.5		18.0	14.0	20.3	2.4	51.0		6.3	56.0	56.0
Actuated g/C Ratio	0.11	0.09		0.20	0.16	0.23	0.03	0.57		0.07	0.62	0.62
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	149	160		254	287	350	47	1947		124	2202	958
v/s Ratio Prot	0.00	0.01		c0.04	0.01	0.00	0.01	c0.22		c0.04	0.17	
v/s Ratio Perm	0.00			c0.07		0.00						0.00
v/c Ratio	0.01	0.13		0.58	0.08	0.01	0.36	0.40		0.58	0.28	0.00
Uniform Delay, d1	36.0	37.4		31.6	32.5	27.1	43.0	10.9		40.6	7.8	6.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.98	0.78	0.79
Incremental Delay, d2	0.0	0.1		2.2	0.0	0.0	1.7	0.6		4.3	0.3	0.0
Delay (s)	36.1	37.5		33.8	32.5	27.1	44.8	11.5		44.3	6.4	5.1
Level of Service	D	D		C	C	C	D	B		D	A	A
Approach Delay (s)		37.4			32.8			12.2			10.4	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	101	109	110	113	69	156	736	66	64	662	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.94		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3264		1770	3338		1770	3495		1770	3468	
Flt Permitted	0.60	1.00		0.53	1.00		0.30	1.00		0.30	1.00	
Satd. Flow (perm)	1112	3264		985	3338		557	3495		554	3468	
Peak-hour factor, PHF	0.72	0.72	0.72	0.77	0.77	0.77	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	139	140	151	143	147	90	170	800	72	73	752	116
RTOR Reduction (vph)	0	118	0	0	70	0	0	6	0	0	12	0
Lane Group Flow (vph)	139	173	0	143	167	0	170	866	0	73	856	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	19.7	19.7		19.7	19.7		60.3	60.3		60.3	60.3	
Effective Green, g (s)	19.7	19.7		19.7	19.7		60.3	60.3		60.3	60.3	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.67	0.67		0.67	0.67	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	243	714		216	731		373	2342		371	2324	
v/s Ratio Prot		0.05			0.05			0.25			0.25	
v/s Ratio Perm	0.12			c0.15			c0.31			0.13		
v/c Ratio	0.57	0.24		0.66	0.23		0.46	0.37		0.20	0.37	
Uniform Delay, d1	31.4	29.0		32.1	28.9		7.1	6.5		5.6	6.5	
Progression Factor	1.00	1.00		1.00	1.00		0.44	0.35		1.00	1.00	
Incremental Delay, d2	3.9	0.2		8.1	0.2		3.7	0.4		1.2	0.5	
Delay (s)	35.2	29.2		40.2	29.1		6.8	2.7		6.8	7.0	
Level of Service	D	C		D	C		A	A		A	A	
Approach Delay (s)		31.2			33.3			3.4			6.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	28	131	96	38	44	152	811	83	60	656	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3		5.3	5.3		3.0	5.3		3.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88		1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1601		1736	1681		1770	3490		1770	3473	
Flt Permitted	0.70	1.00		0.50	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1274	1601		913	1681		1770	3490		1770	3473	
Peak-hour factor, PHF	0.91	0.91	0.91	0.89	0.89	0.89	0.93	0.93	0.93	0.91	0.91	0.91
Adj. Flow (vph)	65	31	144	108	43	49	163	872	89	66	721	103
RTOR Reduction (vph)	0	123	0	0	42	0	0	6	0	0	9	0
Lane Group Flow (vph)	65	52	0	108	50	0	163	955	0	66	815	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	13.1	13.1		13.1	13.1		12.6	56.5		6.8	50.7	
Effective Green, g (s)	13.1	13.1		13.1	13.1		12.6	56.5		6.8	50.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.14	0.63		0.08	0.56	
Clearance Time (s)	5.3	5.3		5.3	5.3		3.0	5.3		3.0	5.3	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	185	233		133	245		248	2191		134	1956	
v/s Ratio Prot		0.03			0.03		c0.09	c0.27		0.04	0.23	
v/s Ratio Perm	0.05			c0.12								
v/c Ratio	0.35	0.22		0.81	0.20		0.66	0.44		0.49	0.42	
Uniform Delay, d1	34.6	34.0		37.3	33.9		36.7	8.6		39.9	11.2	
Progression Factor	1.00	1.00		1.00	1.00		0.68	1.78		0.98	0.92	
Incremental Delay, d2	0.4	0.2		28.7	0.2		4.3	0.6		1.0	0.6	
Delay (s)	35.0	34.1		66.0	34.0		29.2	15.9		40.2	10.9	
Level of Service	D	C		E	C		C	B		D	B	
Approach Delay (s)		34.4			51.3			17.8			13.1	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	16	81	10	41	3	1048	56	21	820	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.99	1.00	1.00		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	0.86		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1558		1752	1845	1548	1770	3508		1770	3539	1539
Flt Permitted	0.75	1.00		0.54	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1384	1558		1002	1845	1548	1770	3508		1770	3539	1539
Peak-hour factor, PHF	0.44	0.44	0.44	0.95	0.95	0.95	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	2	2	36	85	11	43	3	1092	58	23	882	2
RTOR Reduction (vph)	0	33	0	0	0	35	0	3	0	0	0	1
Lane Group Flow (vph)	2	5	0	85	11	8	3	1147	0	23	882	1
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	9.6	8.6		16.7	12.7	16.3	1.1	55.0		3.6	58.6	58.6
Effective Green, g (s)	9.6	8.6		16.7	12.7	16.3	1.1	55.0		3.6	58.6	58.6
Actuated g/C Ratio	0.11	0.10		0.19	0.14	0.18	0.01	0.61		0.04	0.65	0.65
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	152	149		228	260	280	22	2144		71	2304	1002
v/s Ratio Prot	0.00	0.00		c0.02	0.01	0.00	0.00	c0.33		c0.01	0.25	
v/s Ratio Perm	0.00			c0.05		0.00						0.00
v/c Ratio	0.01	0.04		0.37	0.04	0.03	0.14	0.54		0.32	0.38	0.00
Uniform Delay, d1	36.0	36.9		31.4	33.4	30.3	44.0	10.1		42.0	7.3	5.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.04	0.59	0.48
Incremental Delay, d2	0.0	0.0		0.4	0.0	0.0	1.0	1.0		0.9	0.5	0.0
Delay (s)	36.0	37.0		31.8	33.4	30.3	45.0	11.1		44.7	4.8	2.7
Level of Service	D	D		C	C	C	D	B		D	A	A
Approach Delay (s)		36.9			31.5			11.2			5.8	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	151	204	69	246	124	217	770	35	40	757	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.95		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3234		1770	3361		1770	3516		1770	3522	
Flt Permitted	0.48	1.00		0.43	1.00		0.31	1.00		0.29	1.00	
Satd. Flow (perm)	893	3234		807	3361		570	3516		543	3522	
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	70	191	258	75	267	135	233	828	38	43	805	27
RTOR Reduction (vph)	0	108	0	0	99	0	0	4	0	0	3	0
Lane Group Flow (vph)	70	341	0	75	303	0	233	862	0	43	829	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	16.4	16.4		16.4	16.4		36.1	36.1		36.1	36.1	
Effective Green, g (s)	16.4	16.4		16.4	16.4		36.1	36.1		36.1	36.1	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.58	0.58		0.58	0.58	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	234	849		212	882		329	2031		314	2034	
v/s Ratio Prot		c0.11			0.09			0.25			0.24	
v/s Ratio Perm	0.08			0.09			c0.41			0.08		
v/c Ratio	0.30	0.40		0.35	0.34		0.71	0.42		0.14	0.41	
Uniform Delay, d1	18.4	19.0		18.7	18.7		9.4	7.4		6.1	7.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.4		1.4	0.3		8.5	0.3		0.4	0.3	
Delay (s)	19.4	19.4		20.1	19.0		17.9	7.7		6.5	7.6	
Level of Service	B	B		C	B		B	A		A	A	
Approach Delay (s)		19.4			19.2			9.9			7.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	36	47	76	147	56	80	76	788	175	144	770	47
Peak Hour Factor	0.90	0.90	0.90	0.78	0.78	0.78	0.90	0.90	0.90	0.84	0.84	0.84
Hourly flow rate (vph)	40	52	84	188	72	103	84	876	194	171	917	56

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	40	137	363	522	632	630	514
Volume Left (vph)	40	0	188	84	0	171	0
Volume Right (vph)	0	84	103	0	194	0	56
Hadj (s)	0.57	-0.36	0.00	0.11	-0.18	0.17	-0.04
Departure Headway (s)	10.4	9.5	8.7	8.5	8.2	8.6	8.3
Degree Utilization, x	0.12	0.36	0.87	1.23	1.44	1.50	1.19
Capacity (veh/h)	337	371	363	430	451	434	436
Control Delay (s)	13.6	16.5	48.2	149.0	232.1	257.0	132.8
Approach Delay (s)	15.8		48.2	194.5		201.2	
Approach LOS	C		E	F		F	

Intersection Summary			
Delay	167.4		
HCM Level of Service	F		
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	13	13	186	27	29	25	999	198	109	923	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		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	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1693		1752	1845	1551	1770	3436		1770	3539	1541
Flt Permitted	0.73	1.00		0.50	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1355	1693		925	1845	1551	1770	3436		1770	3539	1541
Peak-hour factor, PHF	0.42	0.42	0.42	0.77	0.77	0.77	0.94	0.94	0.94	0.93	0.93	0.93
Adj. Flow (vph)	5	31	31	242	35	38	27	1063	211	117	992	4
RTOR Reduction (vph)	0	28	0	0	0	28	0	15	0	0	0	1
Lane Group Flow (vph)	5	34	0	242	35	10	27	1259	0	117	992	3
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	7.8	7.0		16.8	13.0	19.2	2.1	34.1		6.2	39.3	39.3
Effective Green, g (s)	7.8	7.0		16.8	13.0	19.2	2.1	34.1		6.2	39.3	39.3
Actuated g/C Ratio	0.11	0.10		0.23	0.18	0.27	0.03	0.47		0.09	0.55	0.55
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	152	165		295	334	415	52	1632		153	1937	843
v/s Ratio Prot	0.00	0.02		c0.08	0.02	0.00	0.02	c0.37		c0.07	0.28	
v/s Ratio Perm	0.00			c0.11		0.00						0.00
v/c Ratio	0.03	0.21		0.82	0.10	0.02	0.52	0.77		0.76	0.51	0.00
Uniform Delay, d1	28.6	29.8		25.2	24.5	19.4	34.4	15.6		32.1	10.2	7.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.2		15.8	0.1	0.0	3.6	2.5		18.3	0.3	0.0
Delay (s)	28.6	30.1		41.0	24.6	19.4	38.0	18.1		50.3	10.5	7.4
Level of Service	C	C		D	C	B	D	B		D	B	A
Approach Delay (s)		30.0			36.6			18.5			14.7	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	71.8	Sum of lost time (s)	12.4
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	162	164	177	178	184	113	253	1196	107	104	1076	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.94		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3264		1770	3337		1770	3496		1770	3468	
Flt Permitted	0.43	1.00		0.35	1.00		0.13	1.00		0.13	1.00	
Satd. Flow (perm)	797	3264		647	3337		242	3496		240	3468	
Peak-hour factor, PHF	0.72	0.72	0.72	0.77	0.77	0.77	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	225	228	246	231	239	147	275	1300	116	118	1223	189
RTOR Reduction (vph)	0	65	0	0	55	0	0	6	0	0	11	0
Lane Group Flow (vph)	225	409	0	231	331	0	275	1410	0	118	1401	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	29.0	29.0		29.0	29.0		71.0	71.0		71.0	71.0	
Effective Green, g (s)	29.0	29.0		29.0	29.0		71.0	71.0		71.0	71.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.65	0.65		0.65	0.65	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	210	861		171	880		156	2257		155	2238	
v/s Ratio Prot		0.13			0.10			0.40			0.40	
v/s Ratio Perm	0.28			c0.36			c1.14			0.49		
v/c Ratio	1.07	0.48		1.35	0.38		1.76	0.62		0.76	0.63	
Uniform Delay, d1	40.5	34.1		40.5	33.1		19.5	11.6		13.6	11.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	82.3	0.6		191.3	0.4		368.1	0.8		22.6	0.8	
Delay (s)	122.8	34.7		231.8	33.5		387.6	12.4		36.2	12.4	
Level of Service	F	C		F	C		F	B		D	B	
Approach Delay (s)		63.0			107.7			73.4			14.2	
Approach LOS		E			F			E			B	

Intersection Summary			
HCM Average Control Delay	56.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	85.8%	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												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	96	46	213	157	62	71	248	1318	135	98	1067	153
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.93	0.93	0.93	0.91	0.91	0.91
Hourly flow rate (vph)	105	51	234	176	70	80	267	1417	145	108	1173	168

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	105	285	326	975	854	694	754
Volume Left (vph)	105	0	176	267	0	108	0
Volume Right (vph)	0	234	80	0	145	0	168
Hadj (s)	0.57	-0.51	0.03	0.17	-0.09	0.11	-0.12
Departure Headway (s)	10.4	9.3	9.7	9.3	9.1	9.3	9.1
Degree Utilization, x	0.30	0.74	0.87	2.53	2.16	1.79	1.90
Capacity (veh/h)	341	378	367	395	403	392	403
Control Delay (s)	16.7	33.3	52.2	715.7	547.5	386.6	432.9
Approach Delay (s)	28.8		52.2	637.2		410.8	
Approach LOS	D		F	F		F	

Intersection Summary			
Delay	447.9		
HCM Level of Service	F		
Intersection Capacity Utilization	130.3%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	2	25	131	16	67	5	1704	91	35	1332	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.99	1.00	1.00		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	0.86		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1565		1752	1845	1547	1770	3507		1770	3539	1537
Flt Permitted	0.75	1.00		0.55	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1377	1565		1007	1845	1547	1770	3507		1770	3539	1537
Peak-hour factor, PHF	0.44	0.44	0.44	0.95	0.95	0.95	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	5	5	57	138	17	71	5	1775	95	38	1432	4
RTOR Reduction (vph)	0	52	0	0	0	58	0	3	0	0	0	1
Lane Group Flow (vph)	5	10	0	138	17	13	5	1867	0	38	1432	3
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	10.5	9.6		18.9	15.0	19.7	1.0	66.8		4.7	71.6	71.6
Effective Green, g (s)	10.5	9.6		18.9	15.0	19.7	1.0	66.8		4.7	71.6	71.6
Actuated g/C Ratio	0.10	0.09		0.18	0.14	0.19	0.01	0.64		0.04	0.68	0.68
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	141	143		226	263	290	17	2229		79	2411	1047
v/s Ratio Prot	0.00	0.01		c0.04	0.01	0.00	0.00	c0.53		c0.02	0.40	
v/s Ratio Perm	0.00			c0.07		0.01						0.00
v/c Ratio	0.04	0.07		0.61	0.06	0.05	0.29	0.84		0.48	0.59	0.00
Uniform Delay, d1	42.7	43.7		38.8	39.0	35.0	51.7	14.9		49.0	9.0	5.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.1		3.4	0.0	0.0	3.5	3.1		1.7	0.5	0.0
Delay (s)	42.7	43.8		42.2	39.0	35.0	55.2	18.0		50.7	9.4	5.4
Level of Service	D	D		D	D	D	E	B		D	A	A
Approach Delay (s)		43.7			39.7			18.1			10.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	105.1	Sum of lost time (s)	12.4
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	151	204	69	246	124	217	770	35	40	757	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.95		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3234		1770	3361		1770	3516		1770	3522	
Flt Permitted	0.39	1.00		0.34	1.00		0.32	1.00		0.30	1.00	
Satd. Flow (perm)	727	3234		632	3361		587	3516		563	3522	
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	70	191	258	75	267	135	233	828	38	43	805	27
RTOR Reduction (vph)	0	164	0	0	75	0	0	3	0	0	2	0
Lane Group Flow (vph)	70	285	0	75	327	0	233	863	0	43	830	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	18.6	18.6		18.6	18.6		61.4	61.4		61.4	61.4	
Effective Green, g (s)	18.6	18.6		18.6	18.6		61.4	61.4		61.4	61.4	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.68	0.68		0.68	0.68	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	150	668		131	695		400	2399		384	2403	
v/s Ratio Prot		0.09			0.10			0.25			0.24	
v/s Ratio Perm	0.10			c0.12			c0.40			0.08		
v/c Ratio	0.47	0.43		0.57	0.47		0.58	0.36		0.11	0.35	
Uniform Delay, d1	31.3	31.1		32.1	31.4		7.5	6.0		4.9	5.9	
Progression Factor	1.00	1.00		1.00	1.00		0.68	0.49		1.00	1.00	
Incremental Delay, d2	3.1	0.6		7.1	0.7		5.3	0.4		0.6	0.4	
Delay (s)	34.5	31.7		39.2	32.1		10.5	3.3		5.5	6.3	
Level of Service	C	C		D	C		B	A		A	A	
Approach Delay (s)		32.0			33.2			4.8			6.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	47	76	147	56	80	76	788	175	144	770	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3		4.0	4.0		3.0	5.3		3.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.91		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1658		1736	1666		1770	3443		1770	3509	
Flt Permitted	0.51	1.00		0.65	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	923	1658		1180	1666		1770	3443		1770	3509	
Peak-hour factor, PHF	0.90	0.90	0.90	0.78	0.78	0.78	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	40	52	84	188	72	103	84	876	194	171	917	56
RTOR Reduction (vph)	0	68	0	0	69	0	0	17	0	0	4	0
Lane Group Flow (vph)	40	68	0	188	106	0	84	1053	0	171	969	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	17.0	17.0		18.3	18.3		7.6	46.6		12.8	51.8	
Effective Green, g (s)	17.0	17.0		18.3	18.3		7.6	46.6		12.8	51.8	
Actuated g/C Ratio	0.19	0.19		0.20	0.20		0.08	0.52		0.14	0.58	
Clearance Time (s)	5.3	5.3		4.0	4.0		3.0	5.3		3.0	5.3	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	174	313		240	339		149	1783		252	2020	
v/s Ratio Prot		0.04			0.06		0.05	c0.31		c0.10	0.28	
v/s Ratio Perm	0.04			c0.16								
v/c Ratio	0.23	0.22		0.78	0.31		0.56	0.59		0.68	0.48	
Uniform Delay, d1	30.9	30.9		34.0	30.5		39.6	15.1		36.6	11.2	
Progression Factor	1.00	1.00		1.00	1.00		1.22	0.52		1.08	0.74	
Incremental Delay, d2	0.2	0.1		14.2	0.2		2.2	1.1		5.3	0.8	
Delay (s)	31.2	31.0		48.2	30.7		50.5	9.0		44.9	9.1	
Level of Service	C	C		D	C		D	A		D	A	
Approach Delay (s)		31.0			39.8			12.0			14.5	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	13	13	186	27	29	25	999	198	109	923	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		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	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1692		1752	1845	1552	1770	3436		1770	3539	1539
Flt Permitted	0.73	1.00		0.56	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1355	1692		1034	1845	1552	1770	3436		1770	3539	1539
Peak-hour factor, PHF	0.42	0.42	0.42	0.77	0.77	0.77	0.94	0.94	0.94	0.93	0.93	0.93
Adj. Flow (vph)	5	31	31	242	35	38	27	1063	211	117	992	4
RTOR Reduction (vph)	0	27	0	0	0	27	0	14	0	0	0	1
Lane Group Flow (vph)	5	35	0	242	35	11	27	1260	0	117	992	3
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	11.8	10.8		20.1	16.1	26.7	2.5	44.6		10.6	53.8	53.8
Effective Green, g (s)	11.8	10.8		20.1	16.1	26.7	2.5	44.6		10.6	53.8	53.8
Actuated g/C Ratio	0.13	0.12		0.22	0.18	0.30	0.03	0.50		0.12	0.60	0.60
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	182	203		281	330	460	49	1703		208	2116	920
v/s Ratio Prot	0.00	0.02		c0.06	0.02	0.00	0.02	c0.37		c0.07	0.28	
v/s Ratio Perm	0.00			c0.13		0.00						0.00
v/c Ratio	0.03	0.17		0.86	0.11	0.02	0.55	0.74		0.56	0.47	0.00
Uniform Delay, d1	34.1	35.6		33.1	30.9	22.4	43.2	18.1		37.5	10.1	7.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.93	1.08	1.30
Incremental Delay, d2	0.0	0.1		22.0	0.1	0.0	7.4	2.9		1.9	0.7	0.0
Delay (s)	34.1	35.7		55.1	31.0	22.4	50.6	21.0		36.7	11.6	9.5
Level of Service	C	D		E	C	C	D	C		D	B	A
Approach Delay (s)		35.6			48.5			21.6			14.2	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	162	164	177	178	184	113	253	1196	107	104	1076	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.94		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3264		1770	3337		1770	3496		1770	3468	
Flt Permitted	0.43	1.00		0.35	1.00		0.13	1.00		0.13	1.00	
Satd. Flow (perm)	797	3264		647	3337		242	3496		240	3468	
Peak-hour factor, PHF	0.72	0.72	0.72	0.77	0.77	0.77	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	225	228	246	231	239	147	275	1300	116	118	1223	189
RTOR Reduction (vph)	0	65	0	0	55	0	0	6	0	0	11	0
Lane Group Flow (vph)	225	409	0	231	331	0	275	1410	0	118	1401	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	29.0	29.0		29.0	29.0		71.0	71.0		71.0	71.0	
Effective Green, g (s)	29.0	29.0		29.0	29.0		71.0	71.0		71.0	71.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.65	0.65		0.65	0.65	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	210	861		171	880		156	2257		155	2238	
v/s Ratio Prot		0.13			0.10			0.40			0.40	
v/s Ratio Perm	0.28			c0.36			c1.14			0.49		
v/c Ratio	1.07	0.48		1.35	0.38		1.76	0.62		0.76	0.63	
Uniform Delay, d1	40.5	34.1		40.5	33.1		19.5	11.6		13.6	11.6	
Progression Factor	1.00	1.00		1.00	1.00		0.56	0.29		1.00	1.00	
Incremental Delay, d2	82.3	0.6		191.3	0.4		360.5	0.9		29.1	1.3	
Delay (s)	122.8	34.7		231.8	33.5		371.4	4.3		42.7	12.9	
Level of Service	F	C		F	C		F	A		D	B	
Approach Delay (s)		63.0			107.7			64.0			15.2	
Approach LOS		E			F			E			B	

Intersection Summary			
HCM Average Control Delay	53.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	85.8%	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 (vph)	96	46	213	157	62	71	248	1318	135	98	1067	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3		4.0	4.0		3.0	5.3		3.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88		1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1602		1736	1681		1770	3490		1770	3473	
Flt Permitted	0.57	1.00		0.36	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1048	1602		664	1681		1770	3490		1770	3473	
Peak-hour factor, PHF	0.91	0.91	0.91	0.89	0.89	0.89	0.93	0.93	0.93	0.91	0.91	0.91
Adj. Flow (vph)	105	51	234	176	70	80	267	1417	145	108	1173	168
RTOR Reduction (vph)	0	167	0	0	42	0	0	6	0	0	9	0
Lane Group Flow (vph)	105	118	0	176	108	0	267	1556	0	108	1332	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.3	26.3		27.6	27.6		20.8	59.9		10.2	49.3	
Effective Green, g (s)	26.3	26.3		27.6	27.6		20.8	59.9		10.2	49.3	
Actuated g/C Ratio	0.24	0.24		0.25	0.25		0.19	0.54		0.09	0.45	
Clearance Time (s)	5.3	5.3		4.0	4.0		3.0	5.3		3.0	5.3	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	251	383		167	422		335	1900		164	1557	
v/s Ratio Prot		0.07			0.06		c0.15	c0.45		0.06	0.38	
v/s Ratio Perm	0.10			c0.26								
v/c Ratio	0.42	0.31		1.05	0.26		0.80	0.82		0.66	0.86	
Uniform Delay, d1	35.4	34.4		41.2	33.0		42.6	20.6		48.2	27.2	
Progression Factor	1.00	1.00		1.00	1.00		1.21	0.89		1.09	0.77	
Incremental Delay, d2	0.4	0.2		84.6	0.1		7.4	2.5		5.0	4.4	
Delay (s)	35.8	34.6		125.8	33.1		58.9	20.9		57.5	25.3	
Level of Service	D	C		F	C		E	C		E	C	
Approach Delay (s)		34.9			83.2			26.5			27.7	
Approach LOS		C			F			C			C	

Intersection Summary			
HCM Average Control Delay	32.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	87.9%	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 (vph)	2	2	25	131	16	67	5	1704	91	35	1332	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.99	1.00	1.00		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	0.86		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1565		1752	1845	1547	1770	3507		1770	3539	1536
Flt Permitted	0.75	1.00		0.56	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1377	1565		1026	1845	1547	1770	3507		1770	3539	1536
Peak-hour factor, PHF	0.44	0.44	0.44	0.95	0.95	0.95	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	5	5	57	138	17	71	5	1775	95	38	1432	4
RTOR Reduction (vph)	0	52	0	0	0	58	0	3	0	0	0	1
Lane Group Flow (vph)	5	10	0	138	17	13	5	1867	0	38	1432	3
Confl. Peds. (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		pm+ov	Prot			Prot		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)	11.5	10.4		19.7	15.6	20.9	1.1	70.3		5.3	75.6	75.6
Effective Green, g (s)	11.5	10.4		19.7	15.6	20.9	1.1	70.3		5.3	75.6	75.6
Actuated g/C Ratio	0.10	0.09		0.18	0.14	0.19	0.01	0.64		0.05	0.69	0.69
Clearance Time (s)	3.0	5.3		3.0	5.3	3.0	3.0	6.4		3.0	5.3	5.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)	148	148		225	262	294	18	2241		85	2432	1056
v/s Ratio Prot	0.00	0.01		c0.04	0.01	0.00	0.00	c0.53		c0.02	0.40	
v/s Ratio Perm	0.00			c0.07		0.01						0.00
v/c Ratio	0.03	0.07		0.61	0.06	0.05	0.28	0.83		0.45	0.59	0.00
Uniform Delay, d1	44.2	45.4		40.8	40.9	36.4	54.1	15.3		50.9	9.0	5.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.02	0.53	0.67
Incremental Delay, d2	0.0	0.1		3.5	0.0	0.0	3.0	3.8		0.8	0.6	0.0
Delay (s)	44.3	45.5		44.3	40.9	36.4	57.1	19.1		52.9	5.4	3.6
Level of Service	D	D		D	D	D	E	B		D	A	A
Approach Delay (s)		45.4			41.6			19.2			6.7	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			