

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↑	↗		↑↑↑			↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00		0.91			0.91	1.00
Frbp, ped/bikes		1.00	0.97		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
Frt		1.00	0.85		1.00	0.85		1.00			1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1537	1287		1565	1295		4256			4272	1284
Flt Permitted		0.88	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1367	1287		1565	1295		4256			4272	1284
Volume (vph)	63	153	416	0	97	104	0	1442	30	0	1990	64
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	166	452	0	105	113	0	1567	33	0	2163	70
RTOR Reduction (vph)	0	0	11	0	0	39	0	2	0	0	0	22
Lane Group Flow (vph)	0	234	441	0	105	74	0	1598	0	0	2163	48
Confl. Peds. (#/hr)	12		17			12			8			21
Turn Type	Perm		Perm			Perm						Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4			8						6
Actuated Green, G (s)		28.0	28.0		28.0	28.0		81.0			81.0	81.0
Effective Green, g (s)		29.0	29.0		29.0	29.0		83.0			83.0	83.0
Actuated g/C Ratio		0.24	0.24		0.24	0.24		0.69			0.69	0.69
Clearance Time (s)		5.0	5.0		5.0	5.0		6.0			6.0	6.0
Lane Grp Cap (vph)		330	311		378	313		2944			2955	888
v/s Ratio Prot					0.07			0.38			c0.51	
v/s Ratio Perm		0.17	c0.34			0.06						0.04
v/c Ratio		0.71	1.42		0.28	0.24		0.54			0.73	0.05
Uniform Delay, d1		41.6	45.5		37.0	36.6		9.1			11.6	5.9
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		12.2	206.6		1.8	1.8		0.7			1.6	0.1
Delay (s)		53.8	252.1		38.8	38.4		9.9			13.2	6.0
Level of Service		D	F		D	D		A			B	A
Approach Delay (s)		184.4			38.6			9.9			13.0	
Approach LOS		F			D			A			B	

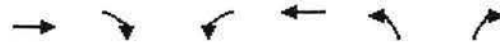
Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Fr <sub>t</sub>		1.00	0.85		1.00					1.00	0.98	
Flt Protected		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (prot)		4577	1425		4556					1513	1557	
Flt Permitted		1.00	1.00		0.83					0.95	1.00	
Satd. Flow (perm)		4577	1425		3796					1513	1557	
Volume (vph)	0	813	769	66	669	0	0	0	0	200	171	30
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	903	854	73	743	0	0	0	0	222	190	33
RTOR Reduction (vph)	0	0	598	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	903	256	0	816	0	0	0	0	222	217	0
Turn Type			Perm	D.P+P						Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		18.0	18.0		59.0					26.0	26.0	
Effective Green, g (s)		20.0	20.0		63.0					28.0	28.0	
Actuated g/C Ratio		0.20	0.20		0.63					0.28	0.28	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Lane Grp Cap (vph)		915	285		2718					424	436	
v/s Ratio Prot		c0.20	/		c0.13					c0.15	0.14	
v/s Ratio Perm			0.18		0.06							
v/c Ratio		0.99	0.90		0.30					0.52	0.50	
Uniform Delay, d1		39.9	39.0		8.4					30.4	30.1	
Progression Factor		1.00	1.00		0.11					1.00	1.00	
Incremental Delay, d2		26.8	32.4		0.2					4.6	4.0	
Delay (s)		66.6	71.4		1.2					34.9	34.1	
Level of Service		E	E		A					C	C	
Approach Delay (s)		68.9			1.2			0.0			34.5	
Approach LOS		E			A			A			C	

Intersection Summary			
HCM Average Control Delay	45.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↑	↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	972	6	3	593	1	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1057	7	3	645	1	17
Pedestrians					47	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	188			680		
pX, platoon unblocked			0.85		0.85	0.85
vC, conflicting volume			1110		1328	402
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			773		1030	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	98
cM capacity (veh/h)			688		187	890

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	423	423	218	132	258	258	18
Volume Left	0	0	0	3	0	0	1
Volume Right	0	0	7	0	0	0	17
cSH	1700	1700	1700	688	1700	1700	729
Volume to Capacity	0.25	0.25	0.13	0.00	0.15	0.15	0.03
Queue Length 95th (ft)	0	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.3	0.0	0.0	10.1
Lane LOS				A			B
Approach Delay (s)	0.0			0.1			10.1
Approach LOS							B

Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			31.0%		ICU Level of Service		A
Analysis Period (min)			15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↕			↕	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	991	11	7	630	1	14	2	15	1	5	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1077	12	8	685	1	15	2	16	1	5	36
Pedestrians								47			39	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								3			3	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		410			458							
pX, platoon unblocked	1.00			0.87			0.87	0.87	0.87	0.87	0.87	1.00
vC, conflicting volume	725			1136			1434	1892	412	1138	1897	268
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	725			848			1191	1720	12	849	1726	268
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			85	97	98	99	92	95
cM capacity (veh/h)	850			658			100	70	893	193	70	711
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	280	539	281	179	342	172	34	42				
Volume Left	11	0	0	8	0	0	15	1				
Volume Right	0	0	12	0	0	1	16	36				
cSH	850	1700	1700	658	1700	1700	168	316				
Volume to Capacity	0.01	0.32	0.17	0.01	0.20	0.10	0.20	0.13				
Queue Length 95th (ft)	1	0	0	1	0	0	18	11				
Control Delay (s)	0.5	0.0	0.0	0.6	0.0	0.0	31.8	18.1				
Lane LOS	A			A			D	C				
Approach Delay (s)	0.1			0.1			31.8	18.1				
Approach LOS							D	C				

Intersection Summary

Average Delay	1.1
Intersection Capacity Utilization	44.6%
Analysis Period (min)	15
ICU Level of Service	A

Monument Ballpark - Square 700 & 701  
5: M St SE & Cushing Place

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑			↑	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	12	1006	5	3	563	3	7	0	1	0	0	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	1093	5	3	612	3	8	0	1	0	0	18
Pedestrians								25			4	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		624			244							
pX, platoon unblocked	0.98			0.89			0.90	0.90	0.89	0.90	0.90	0.98
vC, conflicting volume	619			1124			1376	1773	392	1016	1774	210
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560			888			1075	1516	64	675	1517	140
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			95	100	100	100	100	98
cM capacity (veh/h)	980			662			146	103	861	296	102	859
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	286	547	279	156	306	156	9	18				
Volume Left	13	0	0	3	0	0	8	0				
Volume Right	0	0	5	0	0	3	1	18				
cSH	980	1700	1700	662	1700	1700	163	859				
Volume to Capacity	0.01	0.32	0.16	0.00	0.18	0.09	0.05	0.02				
Queue Length 95th (ft)	1	0	0	0	0	0	4	2				
Control Delay (s)	0.5	0.0	0.0	0.3	0.0	0.0	28.3	9.3				
Lane LOS	A			A			D	A				
Approach Delay (s)	0.1			0.1			28.3	9.3				
Approach LOS							D	A				

Intersection Summary

Average Delay		0.3										
Intersection Capacity Utilization		44.5%			ICU Level of Service				A			
Analysis Period (min)		15										



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔↔			↔↔↔			↔			↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			1.00			1.00	
Frbp, ped/bikes		1.00			0.99			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			0.94			0.93	
Flt Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		4547			4499			1466			1292	
Flt Permitted		0.93			0.91			0.87			0.89	
Satd. Flow (perm)		4234			4094			1297			1170	
Volume (vph)	13	918	18	17	422	22	84	41	111	16	10	25
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	1020	20	19	469	24	93	46	123	18	11	28
RTOR Reduction (vph)	0	2	0	0	5	0	0	32	0	0	20	0
Lane Group Flow (vph)	0	1052	0	0	507	0	0	230	0	0	37	0
Confl. Peds. (#/hr)	47		30	30		47	8		3	3		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	4 3			2			6	
Permitted Phases	4			4 3			2			6		
Actuated Green, G (s)		46.0			62.0			24.0			24.0	
Effective Green, g (s)		48.0			64.0			27.0			27.0	
Actuated g/C Ratio		0.48			0.64			0.27			0.27	
Clearance Time (s)		5.0						6.0			6.0	
Lane Grp Cap (vph)		2032			2685			350			316	
v/s Ratio Prot					c0.03							
v/s Ratio Perm		c0.25			0.09			c0.18			0.03	
v/c Ratio		0.52			0.19			0.66			0.12	
Uniform Delay, d1		18.0			7.4			32.4			27.5	
Progression Factor		0.23			1.00			1.00			1.00	
Incremental Delay, d2		0.8			0.2			9.3			0.7	
Delay (s)		4.9			7.5			41.7			28.2	
Level of Service		A			A			D			C	
Approach Delay (s)		4.9			7.5			41.7			28.2	
Approach LOS		A			A			D			C	

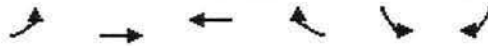
Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	27	449	57	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	29	488	62	0	0
Pedestrians	4					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						673
pX, platoon unblocked						
vC, conflicting volume	523	279			554	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	523	279			554	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			100	
cM capacity (veh/h)	482	716			1010	

Direction, Lane #	WB 1	NB 1	NB 2
Volume Total	29	325	225
Volume Left	0	0	0
Volume Right	29	0	62
cSH	716	1700	1700
Volume to Capacity	0.04	0.19	0.13
Queue Length 95th (ft)	3	0	0
Control Delay (s)	10.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.2	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		25.9%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↘	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	17	80	38	0	2	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	87	41	0	2	3
Pedestrians					3	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	44				168	44
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	44				168	44
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	1561				811	1024

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	105	41	5
Volume Left	18	0	2
Volume Right	0	0	3
cSH	1561	1700	926
Volume to Capacity	0.01	0.02	0.01
Queue Length 95th (ft)	1	0	0
Control Delay (s)	1.4	0.0	8.9
Lane LOS	A		A
Approach Delay (s)	1.4	0.0	8.9
Approach LOS			A

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization		22.4%	ICU Level of Service
Analysis Period (min)		15	A





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	18	63	30	7	10	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	68	33	8	11	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	40				144	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	40				144	36
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1569				838	1036

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	88	40	18
Volume Left	20	0	11
Volume Right	0	8	8
cSH	1569	1700	910
Volume to Capacity	0.01	0.02	0.02
Queue Length 95th (ft)	1	0	2
Control Delay (s)	1.7	0.0	9.0
Lane LOS	A		A
Approach Delay (s)	1.7	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization		21.5%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	45	3	25	3	9	63	11	85	0	6	28	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	3	27	3	10	68	12	92	0	7	30	12
Pedestrians		5			9							
Lane Width (ft)		10.0			10.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)											682	
pX, platoon unblocked												
vC, conflicting volume	244	180	41	204	186	101	47			101		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	244	180	41	204	186	101	47			101		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	100	97	100	99	93	99			100		
cM capacity (veh/h)	638	699	1026	715	693	948	1555			1482		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	79	82	104	49								
Volume Left	49	3	12	7								
Volume Right	27	68	0	12								
cSH	736	897	1555	1482								
Volume to Capacity	0.11	0.09	0.01	0.00								
Queue Length 95th (ft)	9	7	1	0								
Control Delay (s)	10.5	9.4	0.9	1.0								
Lane LOS	B	A	A	A								
Approach Delay (s)	10.5	9.4	0.9	1.0								
Approach LOS	B	A										

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization	26.8%		ICU Level of Service
Analysis Period (min)		15	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↑	↑				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0				
Lane Util. Factor		0.91			0.91		0.95	0.95				
Fr <sub>t</sub>		1.00			0.97		1.00	0.94				
Flt Protected		1.00			1.00		0.95	0.98				
Satd. Flow (prot)		4567			4419		1513	1462				
Flt Permitted		0.92			1.00		0.95	0.98				
Satd. Flow (perm)		4206			4419		1513	1462				
Volume (vph)	41	972	0	0	394	118	341	48	106	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	46	1080	0	0	438	131	379	53	118	0	0	0
RTOR Reduction (vph)	0	0	0	0	54	0	0	27	0	0	0	0
Lane Group Flow (vph)	0	1126	0	0	515	0	277	246	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5			5		2	2				
Permitted Phases	5											
Actuated Green, G (s)		44.0			18.0		41.0	41.0				
Effective Green, g (s)		48.0			20.0		43.0	43.0				
Actuated g/C Ratio		0.48			0.20		0.43	0.43				
Clearance Time (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)		2120			884		651	629				
v/s Ratio Prot		c0.15			c0.12		c0.18	0.17				
v/s Ratio Perm		0.11										
v/c Ratio		0.53			0.58		0.43	0.39				
Uniform Delay, d1		18.1			36.2		19.9	19.5				
Progression Factor		0.12			0.83		1.00	1.00				
Incremental Delay, d2		0.4			2.8		2.0	1.8				
Delay (s)		2.6			32.7		21.9	21.3				
Level of Service		A			C		C	C				
Approach Delay (s)		2.6			32.7			21.6			0.0	
Approach LOS		A			C			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.9				HCM Level of Service		B			
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)		9.0			
Intersection Capacity Utilization			58.7%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

## Appendix C

### Background Future Intersection Capacity Analyses 2008



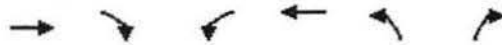
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖ ↗	↗ ↖		↑ ↗	↑ ↗		↑↑↑			↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00		0.91			0.91	1.00
Frbp, ped/bikes		1.00	0.95		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
Frt		1.00	0.85		1.00	0.85		1.00			1.00	0.85
Flt Protected		0.97	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1518	1269		1565	1294		4266			4272	1288
Flt Permitted		0.46	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		715	1269		1565	1294		4266			4272	1288
Volume (vph)	86	76	66	0	272	194	0	1485	12	0	1342	73
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	83	72	0	296	211	0	1614	13	0	1459	79
RTOR Reduction (vph)	0	0	38	0	0	28	0	1	0	0	0	27
Lane Group Flow (vph)	0	176	34	0	296	183	0	1626	0	0	1459	52
Confl. Peds. (#/hr)	14		32	32		14	16		5	5		16
Turn Type	Perm		Perm			Perm						Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4			8						6
Actuated Green, G (s)		32.0	32.0		32.0	32.0		77.0			77.0	77.0
Effective Green, g (s)		33.0	33.0		33.0	33.0		79.0			79.0	79.0
Actuated g/C Ratio		0.28	0.28		0.28	0.28		0.66			0.66	0.66
Clearance Time (s)		5.0	5.0		5.0	5.0		6.0			6.0	6.0
Lane Grp Cap (vph)		197	349		430	356		2808			2812	848
v/s Ratio Prot					0.19			c0.38			0.34	
v/s Ratio Perm		c0.25	0.03			0.14						0.04
v/c Ratio		0.89	0.10		0.69	0.51		0.58			0.52	0.06
Uniform Delay, d1		41.8	32.4		38.9	36.7		11.3			10.6	7.3
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		41.2	0.6		8.7	5.2		0.9			0.7	0.1
Delay (s)		83.0	33.0		47.6	41.9		12.2			11.3	7.4
Level of Service		F	C		D	D		B			B	A
Approach Delay (s)		68.5			45.2			12.2			11.1	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Frt		1.00	0.85		1.00					1.00	0.98	
Flt Protected		1.00	1.00		1.00					0.95	0.97	
Satd. Flow (prot)		4577	1425		4568					1513	1511	
Flt Permitted		1.00	1.00		0.91					0.95	0.97	
Satd. Flow (perm)		4577	1425		4184					1513	1511	
Volume (vph)	0	500	269	68	1781	0	0	0	0	377	63	38
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	556	299	76	1979	0	0	0	0	419	70	42
RTOR Reduction (vph)	0	0	239	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	556	60	0	2055	0	0	0	0	265	260	0
Turn Type			Perm D.P+P							Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		18.0	18.0		59.0					26.0	26.0	
Effective Green, g (s)		20.0	20.0		63.0					28.0	28.0	
Actuated g/C Ratio		0.20	0.20		0.63					0.28	0.28	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Lane Grp Cap (vph)		915	285		2801					424	423	
v/s Ratio Prot		0.12			c0.32					c0.18	0.17	
v/s Ratio Perm			0.04		c0.15							
v/c Ratio		0.61	0.21		0.73					0.62	0.61	
Uniform Delay, d1		36.4	33.4		12.7					31.4	31.3	
Progression Factor		1.00	1.00		0.04					1.00	1.00	
Incremental Delay, d2		3.0	1.7		0.2					6.8	6.5	
Delay (s)		39.4	35.1		0.6					38.2	37.8	
Level of Service		D	D		A					D	D	
Approach Delay (s)		37.9			0.6			0.0			38.0	
Approach LOS		D			A			A			D	

**Intersection Summary**

HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↘	↗
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	856	5	2	667	3	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	930	5	2	725	3	71
Pedestrians					37	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)	188			222		
pX, platoon unblocked			0.88		0.90	0.88
vC, conflicting volume			973		1216	350
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			687		817	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	92
cM capacity (veh/h)			771		274	926

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	372	372	192	147	290	290	3	71
Volume Left	0	0	0	2	0	0	3	0
Volume Right	0	0	5	0	0	0	0	71
cSH	1700	1700	1700	771	1700	1700	274	926
Volume to Capacity	0.22	0.22	0.11	0.00	0.17	0.17	0.01	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	1	6
Control Delay (s)	0.0	0.0	0.0	0.2	0.0	0.0	18.3	9.2
Lane LOS				A			C	A
Approach Delay (s)	0.0			0.0			9.6	
Approach LOS							A	

Intersection Summary								
Average Delay			0.4					
Intersection Capacity Utilization			29.7%		ICU Level of Service			A
Analysis Period (min)			15					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	920	11	24	673	6	2	1	29	13	0	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1000	12	26	732	7	2	1	32	14	0	52
Pedestrians								31			17	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		410			458							
pX, platoon unblocked				0.89			0.89	0.89	0.89	0.89	0.89	
vC, conflicting volume	755			1043			1407	1866	370	1191	1869	264
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	755			809			1216	1730	56	975	1733	264
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			98	98	96	91	100	93
cM capacity (veh/h)	841			710			104	72	873	163	71	726
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	261	500	262	209	366	189	3	32	66			
Volume Left	11	0	0	26	0	0	2	0	14			
Volume Right	0	0	12	0	0	7	0	32	52			
cSH	841	1700	1700	710	1700	1700	90	873	417			
Volume to Capacity	0.01	0.29	0.15	0.04	0.22	0.11	0.04	0.04	0.16			
Queue Length 95th (ft)	1	0	0	3	0	0	3	3	14			
Control Delay (s)	0.5	0.0	0.0	1.7	0.0	0.0	46.3	9.3	15.2			
Lane LOS	A			A			E	A	C			
Approach Delay (s)	0.1			0.5			12.7		15.2			
Approach LOS							B		C			

**Intersection Summary**

Average Delay	1.0
Intersection Capacity Utilization	51.6%
Analysis Period (min)	15
ICU Level of Service	A





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕↕			↕↕↕			↕	↗		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.91			0.91			1.00	1.00		1.00	
Frbp, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Frnt		1.00			1.00			1.00	0.85		0.89	
Flt Protected		1.00			1.00			0.97	1.00		0.99	
Satd. Flow (prot)		4258			4254			1514	1330		1384	
Flt Permitted		0.93			0.88			0.91	1.00		0.96	
Satd. Flow (perm)		3963			3754			1428	1330		1336	
Volume (vph)	10	920	11	24	673	6	2	1	29	13	0	48
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	1000	12	26	732	7	2	1	32	14	0	52
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	25	0	41	0
Lane Group Flow (vph)	0	1022	0	0	764	0	0	3	7	0	25	0
Confl. Peds. (#/hr)	17		31	31		17						
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Actuated Green, G (s)		70.0			70.0			20.0	20.0		20.0	
Effective Green, g (s)		71.0			71.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.71			0.71			0.21	0.21		0.21	
Clearance Time (s)		5.0			5.0			5.0	5.0		5.0	
Lane Grp Cap (vph)		2814			2665			300	279		281	
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.20			0.00	0.01		c0.02	
v/c Ratio		0.36			0.29			0.01	0.02		0.09	
Uniform Delay, d1		5.7			5.3			31.3	31.4		31.8	
Progression Factor		0.23			0.65			0.99	0.95		1.00	
Incremental Delay, d2		0.3			0.3			0.1	0.2		0.6	
Delay (s)		1.6			3.7			30.9	29.9		32.4	
Level of Service		A			A			C	C		C	
Approach Delay (s)		1.6			3.7			30.0			32.4	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	4.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.6%	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		↑↑↑			↑↑↑			↑	↑		↑	↑
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	99	875	0	0	618	47	0	0	0	0	0	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	108	951	0	0	672	51	0	0	0	0	0	12
Pedestrians								55			83	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								4			6	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		214			244							
pX, platoon unblocked	0.99			0.92			0.93	0.93	0.92	0.93	0.93	0.99
vC, conflicting volume	806			1006			1457	2027	372	1313	2002	332
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	776			841			1276	1889	155	1121	1862	296
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			100			100	100	100	100	100	98
cM capacity (veh/h)	777			702			90	50	767	117	53	651
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2		
Volume Total	345	476	238	168	336	219	0	0	0	12		
Volume Left	108	0	0	0	0	0	0	0	0	0		
Volume Right	0	0	0	0	0	51	0	0	0	12		
cSH	777	1700	1700	702	1700	1700	1700	1700	1700	651		
Volume to Capacity	0.14	0.28	0.14	0.00	0.20	0.13	0.00	0.00	0.00	0.02		
Queue Length 95th (ft)	12	0	0	0	0	0	0	0	0	1		
Control Delay (s)	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6		
Lane LOS	A						A	A	A	B		
Approach Delay (s)	1.4			0.0			0.0		10.6			
Approach LOS							A		B			

Intersection Summary												
Average Delay			0.9									
Intersection Capacity Utilization			42.5%		ICU Level of Service						A	
Analysis Period (min)			15									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↕↔			↔↕↔			↔↕			↔↕↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			0.95			0.95	
Frbp, ped/bikes		1.00			0.98			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			0.99	
Frt		0.99			0.98			0.98			0.96	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		4461			4386			2923			2762	
Flt Permitted		0.77			0.69			0.84			0.87	
Satd. Flow (perm)		3460			3038			2482			2414	
Volume (vph)	79	663	73	140	551	85	43	100	26	34	91	46
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	737	81	156	612	94	48	111	29	38	101	51
RTOR Reduction (vph)	0	12	0	0	15	0	0	15	0	0	37	0
Lane Group Flow (vph)	0	895	0	0	847	0	0	173	0	0	153	0
Confl. Peds. (#/hr)	75		13	13		75	8		23	23		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	4 3			2				6
Permitted Phases	4			4 3			2			6		
Actuated Green, G (s)		48.0			65.0			21.0				21.0
Effective Green, g (s)		50.0			67.0			24.0				24.0
Actuated g/C Ratio		0.50			0.67			0.24				0.24
Clearance Time (s)		5.0						6.0				6.0
Lane Grp Cap (vph)		1730			2265			596				579
v/s Ratio Prot					c0.06							
v/s Ratio Perm		c0.26			0.19			c0.07				0.06
v/c Ratio		0.52			0.37			0.29				0.26
Uniform Delay, d1		16.9			7.3			31.0				30.8
Progression Factor		0.23			1.00			0.86				1.00
Incremental Delay, d2		1.1			0.5			1.2				1.1
Delay (s)		4.9			7.7			28.0				31.9
Level of Service		A			A			C				C
Approach Delay (s)		4.9			7.7			28.0				31.9
Approach LOS		A			A			C				C

Intersection Summary

HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.6%	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					↑	↗		↑↑↑	↗		↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0	4.0		4.0	4.0
Lane Util. Factor					1.00	1.00		0.91	1.00		0.91	1.00
Fr <sub>t</sub>					1.00	0.85		1.00	0.85		1.00	0.85
Fl <sub>t</sub> Protected					1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)					1739	1478		4746	1478		4746	1478
Fl <sub>t</sub> Permitted					1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)					1739	1478		4746	1478		4746	1478
Volume (vph)	0	0	0	0	3	11	0	3112	258	0	1802	8
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	3	12	0	3383	280	0	1959	9
RTOR Reduction (vph)	0	0	0	0	0	3	0	0	56	0	0	2
Lane Group Flow (vph)	0	0	0	0	3	9	0	3383	224	0	1959	7
Turn Type						Perm			Perm			Perm
Protected Phases					8			2			6	
Permitted Phases						8			2			6
Actuated Green, G (s)					15.0	15.0		95.0	95.0		95.0	95.0
Effective Green, g (s)					16.0	16.0		96.0	96.0		96.0	96.0
Actuated g/C Ratio					0.13	0.13		0.80	0.80		0.80	0.80
Clearance Time (s)					5.0	5.0		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)					232	197		3797	1182		3797	1182
v/s Ratio Prot					0.00			c0.71			0.41	
v/s Ratio Perm						c0.01			0.15			0.00
v/c Ratio					0.01	0.05		0.89	0.19		0.52	0.01
Uniform Delay, d <sub>1</sub>					45.1	45.4		8.4	2.8		4.1	2.4
Progression Factor					1.00	1.00		1.00	1.00		0.38	0.24
Incremental Delay, d <sub>2</sub>					0.1	0.5		3.6	0.4		0.5	0.0
Delay (s)					45.2	45.8		12.0	3.2		2.0	0.6
Level of Service					D	D		B	A		A	A
Approach Delay (s)		0.0			45.7			11.3			2.0	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↗	↖
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	55	196	25	6	4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	213	27	7	4	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)		240	690			
pX, platoon unblocked						
vC, conflicting volume	34				257	17
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	34				257	17
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				99	100
cM capacity (veh/h)	1576				683	1058
<b>Direction, Lane #</b>						
	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	131	142	18	16	4	4
Volume Left	60	0	0	0	4	0
Volume Right	0	0	0	7	0	4
cSH	1576	1700	1700	1700	683	1058
Volume to Capacity	0.04	0.08	0.01	0.01	0.01	0.00
Queue Length 95th (ft)	3	0	0	0	0	0
Control Delay (s)	3.5	0.0	0.0	0.0	10.3	8.4
Lane LOS	A				B	A
Approach Delay (s)	1.7		0.0		9.4	
Approach LOS					A	
<b>Intersection Summary</b>						
Average Delay			1.7			
Intersection Capacity Utilization			21.1%		ICU Level of Service	A
Analysis Period (min)			15			















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↗	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	29	172	29	7	11	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	187	32	8	12	7
Pedestrians					2	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)		464	466			
pX, platoon unblocked						
vC, conflicting volume	41				194	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	41				194	22
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				98	99
cM capacity (veh/h)	1564				760	1049

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	94	125	21	18	12	7
Volume Left	32	0	0	0	12	0
Volume Right	0	0	0	8	0	7
cSH	1564	1700	1700	1700	760	1049
Volume to Capacity	0.02	0.07	0.01	0.01	0.02	0.01
Queue Length 95th (ft)	2	0	0	0	1	0
Control Delay (s)	2.6	0.0	0.0	0.0	9.8	8.5
Lane LOS	A				A	A
Approach Delay (s)	1.1		0.0		9.3	
Approach LOS					A	

Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			19.5%		ICU Level of Service	A
Analysis Period (min)			15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frbp, ped/bikes		1.00			1.00			0.98			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			0.99	
Frt		0.91			0.90			0.96			0.99	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		2668			2650			2800			2890	
Flt Permitted		0.89			0.92			0.93			0.84	
Satd. Flow (perm)		2405			2451			2600			2462	
Volume (vph)	37	31	112	6	7	29	14	129	48	65	226	15
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	34	122	7	8	32	15	140	52	71	246	16
RTOR Reduction (vph)	0	90	0	0	24	0	0	18	0	0	4	0
Lane Group Flow (vph)	0	106	0	0	23	0	0	189	0	0	329	0
Confl. Peds. (#/hr)							5		31	31		5
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		25.0			25.0			65.0			65.0	
Effective Green, g (s)		26.0			26.0			66.0			66.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		625			637			1716			1625	
v/s Ratio Prot												
v/s Ratio Perm		c0.04			0.01			0.07			c0.13	
v/c Ratio		0.17			0.04			0.11			0.20	
Uniform Delay, d1		28.6			27.6			6.2			6.7	
Progression Factor		1.00			1.00			1.00			0.90	
Incremental Delay, d2		0.6			0.1			0.1			0.3	
Delay (s)		29.2			27.8			6.4			6.2	
Level of Service		C			C			A			A	
Approach Delay (s)		29.2			27.8			6.4			6.2	
Approach LOS		C			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.3			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.19									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)		8.0				
Intersection Capacity Utilization			46.2%			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		↑↑↑			↑↑↑		↖	↕				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0				
Lane Util. Factor		0.91			0.91		0.95	0.95				
Fr <sub>t</sub>		1.00			0.99		1.00	0.98				
Fl <sub>t</sub> Protected		1.00			1.00		0.95	0.96				
Satd. Flow (prot)		4561			4521		1513	1508				
Fl <sub>t</sub> Permitted		0.86			1.00		0.95	0.96				
Satd. Flow (perm)		3935			4521		1513	1508				
Volume (vph)	61	816	0	0	546	49	1303	101	88	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	68	907	0	0	607	54	1448	112	98	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	975	0	0	651	0	835	818	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5	7		5		2	2				
Permitted Phases	5											
Actuated Green, G (s)		44.0			18.0		41.0	41.0				
Effective Green, g (s)		48.0			20.0		43.0	43.0				
Actuated g/C Ratio		0.48			0.20		0.43	0.43				
Clearance Time (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)		2064			904		651	648				
v/s Ratio Prot		c0.13			c0.14		c0.55	0.54				
v/s Ratio Perm		0.09										
v/c Ratio		0.47			0.72		1.28	1.26				
Uniform Delay, d <sub>1</sub>		17.5			37.4		28.5	28.5				
Progression Factor		0.06			0.77		1.00	1.00				
Incremental Delay, d <sub>2</sub>		0.6			4.8		138.7	130.1				
Delay (s)		1.7			33.6		167.2	158.6				
Level of Service		A			C		F	F				
Approach Delay (s)		1.7			33.6			162.9			0.0	
Approach LOS		A			C			F			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			89.2				HCM Level of Service		F			
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)		9.0			
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		↖	↗		↑	↗		↑↑↑			↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00		0.91			0.91	1.00
Frbp, ped/bikes		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
Frt		1.00	0.85		1.00	0.85		1.00			1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1538	1290		1565	1297		4249			4272	1283
Flt Permitted		0.88	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1366	1290		1565	1297		4249			4272	1283
Volume (vph)	66	168	433	0	112	170	0	1587	50	0	2129	67
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	183	471	0	122	185	0	1725	54	0	2314	73
RTOR Reduction (vph)	0	0	6	0	0	22	0	3	0	0	0	23
Lane Group Flow (vph)	0	255	465	0	122	163	0	1776	0	0	2314	50
Confl. Peds. (#/hr)	12		17			12			8			21
Turn Type	Perm		Perm			Perm						Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4			8						6
Actuated Green, G (s)		32.0	32.0		32.0	32.0		77.0			77.0	77.0
Effective Green, g (s)		33.0	33.0		33.0	33.0		79.0			79.0	79.0
Actuated g/C Ratio		0.28	0.28		0.28	0.28		0.66			0.66	0.66
Clearance Time (s)		5.0	5.0		5.0	5.0		6.0			6.0	6.0
Lane Grp Cap (vph)		376	355		430	357		2797			2812	845
v/s Ratio Prot					0.08			0.42			c0.54	
v/s Ratio Perm		0.19	c0.36			0.13						0.04
v/c Ratio		0.68	1.31		0.28	0.46		0.64			0.82	0.06
Uniform Delay, d1		38.8	43.5		34.2	36.1		12.0			15.3	7.3
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		9.5	158.5		1.6	4.1		1.1			2.9	0.1
Delay (s)		48.2	202.0		35.9	40.2		13.1			18.2	7.4
Level of Service		D	F		D	D		B			B	A
Approach Delay (s)		148.0			38.5			13.1			17.8	
Approach LOS		F			D			B			B	

Intersection Summary			
HCM Average Control Delay	35.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.8%	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		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Frt		1.00	0.85		1.00					1.00	0.98	
Flt Protected		1.00	1.00		0.99					0.95	0.99	
Satd. Flow (prot)		4577	1425		4554					1513	1552	
Flt Permitted		1.00	1.00		0.74					0.95	0.99	
Satd. Flow (perm)		4577	1425		3388					1513	1552	
Volume (vph)	0	869	800	89	787	0	0	0	0	267	178	31
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	966	889	99	874	0	0	0	0	297	198	34
RTOR Reduction (vph)	0	0	566	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	966	323	0	973	0	0	0	0	259	265	0
Turn Type			Perm D.P+P							Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		18.0	18.0		59.0					26.0	26.0	
Effective Green, g (s)		20.0	20.0		63.0					28.0	28.0	
Actuated g/C Ratio		0.20	0.20		0.63					0.28	0.28	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Lane Grp Cap (vph)		915	285		2636					424	435	
v/s Ratio Prot		0.21			c0.16					c0.17	0.17	
v/s Ratio Perm			c0.23		0.07							
v/c Ratio		1.06	1.13		0.37					0.61	0.61	
Uniform Delay, d1		40.0	40.0		8.9					31.3	31.2	
Progression Factor		1.00	1.00		0.17					1.00	1.00	
Incremental Delay, d2		45.6	94.7		0.3					6.4	6.2	
Delay (s)		85.6	134.7		1.8					37.7	37.5	
Level of Service		F	F		A					D	D	
Approach Delay (s)		109.1			1.8			0.0			37.6	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM Average Control Delay	66.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↑	↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1099	6	3	689	3	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1195	7	3	749	3	71
Pedestrians					47	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)	188			222		
pX, platoon unblocked			0.82		0.84	0.82
vC, conflicting volume			1248		1501	448
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			861		965	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	92
cM capacity (veh/h)			615		205	859

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	478	478	245	153	300	300	3	71
Volume Left	0	0	0	3	0	0	3	0
Volume Right	0	0	7	0	0	0	0	71
cSH	1700	1700	1700	615	1700	1700	205	859
Volume to Capacity	0.28	0.28	0.14	0.01	0.18	0.18	0.02	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	1	7
Control Delay (s)	0.0	0.0	0.0	0.3	0.0	0.0	22.9	9.6
Lane LOS				A			C	A
Approach Delay (s)	0.0			0.1			10.2	
Approach LOS							B	

Intersection Summary								
Average Delay			0.4					
Intersection Capacity Utilization			34.9%		ICU Level of Service			A
Analysis Period (min)			15					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	43	1086	11	7	708	16	15	7	16	6	5	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	1180	12	8	770	17	16	8	17	7	5	58
Pedestrians								47			39	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								3			3	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		410			458							
pX, platoon unblocked	1.00			0.84			0.84	0.84	0.84	0.84	0.84	1.00
vC, conflicting volume	826			1239			1659	2168	446	1341	2165	304
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	821			900			1390	1996	0	1011	1993	298
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			99			74	83	98	95	88	92
cM capacity (veh/h)	781			609			62	44	880	122	44	678
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	342	590	307	200	385	210	24	17	70			
Volume Left	47	0	0	8	0	0	16	0	7			
Volume Right	0	0	12	0	0	17	0	17	58			
cSH	781	1700	1700	609	1700	1700	55	880	265			
Volume to Capacity	0.06	0.35	0.18	0.01	0.23	0.12	0.44	0.02	0.26			
Queue Length 95th (ft)	5	0	0	1	0	0	41	2	26			
Control Delay (s)	2.0	0.0	0.0	0.6	0.0	0.0	114.4	9.2	23.3			
Lane LOS	A			A			F	A	C			
Approach Delay (s)	0.5			0.1			70.1		23.3			
Approach LOS							F		C			

Intersection Summary												
Average Delay				2.5								
Intersection Capacity Utilization			60.6%		ICU Level of Service					B		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.91			0.91			1.00	1.00		1.00	
Frbp, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			1.00			1.00	0.85		0.89	
Flt Protected		1.00			1.00			0.97	1.00		1.00	
Satd. Flow (prot)		4247			4243			1514	1330		1383	
Flt Permitted		0.87			0.93			0.86	1.00		0.98	
Satd. Flow (perm)		3708			3929			1341	1330		1365	
Volume (vph)	43	1086	11	7	708	16	15	7	16	6	5	53
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	1180	12	8	770	17	16	8	17	7	5	58
RTOR Reduction (vph)	0	1	0	0	2	0	0	0	13	0	44	0
Lane Group Flow (vph)	0	1238	0	0	793	0	0	24	4	0	27	0
Confl. Peds. (#/hr)	39		47	47		39						
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			4				8
Permitted Phases	2			6			4		4	8		
Actuated Green, G (s)		66.0			66.0			24.0	24.0			24.0
Effective Green, g (s)		67.0			67.0			25.0	25.0			25.0
Actuated g/C Ratio		0.67			0.67			0.25	0.25			0.25
Clearance Time (s)		5.0			5.0			5.0	5.0			5.0
Lane Grp Cap (vph)		2484			2632			335	333			341
v/s Ratio Prot												
v/s Ratio Perm		c0.33			0.20			0.02	0.00			c0.02
v/c Ratio		0.50			0.30			0.07	0.01			0.08
Uniform Delay, d1		8.2			6.8			28.6	28.2			28.7
Progression Factor		0.22			0.79			0.97	0.95			1.00
Incremental Delay, d2		0.6			0.3			0.4	0.1			0.4
Delay (s)		2.4			5.7			28.2	26.8			29.1
Level of Service		A			A			C	C			C
Approach Delay (s)		2.4			5.7			27.6				29.1
Approach LOS		A			A			C				C
<b>Intersection Summary</b>												
HCM Average Control Delay			5.0			HCM Level of Service			A			
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)		8.0				
Intersection Capacity Utilization			60.6%			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		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	12	1107	5	3	654	3	7	0	1	1	0	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	1203	5	3	711	3	8	0	1	1	0	20
Pedestrians								25			4	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		214			244							
pX, platoon unblocked	0.97			0.88			0.89	0.89	0.88	0.89	0.89	0.97
vC, conflicting volume	718			1234			1520	1982	429	1151	1983	243
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	654			995			1208	1724	82	796	1725	165
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			93	100	100	100	100	98
cM capacity (veh/h)	901			598			116	76	833	240	76	825

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	314	602	306	181	355	181	8	1	1	20
Volume Left	13	0	0	3	0	0	8	0	1	0
Volume Right	0	0	5	0	0	3	0	1	0	20
cSH	901	1700	1700	598	1700	1700	116	833	240	825
Volume to Capacity	0.01	0.35	0.18	0.01	0.21	0.11	0.07	0.00	0.00	0.02
Queue Length 95th (ft)	1	0	0	0	0	0	5	0	0	2
Control Delay (s)	0.5	0.0	0.0	0.3	0.0	0.0	38.3	9.3	20.0	9.5
Lane LOS	A			A			E	A	C	A
Approach Delay (s)	0.1			0.1			34.7		10.0	
Approach LOS							D		B	

**Intersection Summary**

Average Delay	0.4
Intersection Capacity Utilization	46.3%
Analysis Period (min)	15
ICU Level of Service	A















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔↔			↔↔↔			↔↔			↔↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			0.95			0.95	
Frbp, ped/bikes		1.00			0.99			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			0.94			0.96	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		4540			4477			2808			2767	
Flt Permitted		0.88			0.91			0.78			0.83	
Satd. Flow (perm)		4001			4065			2226			2330	
Volume (vph)	46	981	21	18	484	44	88	85	115	35	84	48
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	51	1090	23	20	538	49	98	94	128	39	93	53
RTOR Reduction (vph)	0	2	0	0	10	0	0	97	0	0	40	0
Lane Group Flow (vph)	0	1162	0	0	597	0	0	223	0	0	145	0
Confl. Peds. (#/hr)	47		30	30		47	8		3	3		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	4 3			2			6	
Permitted Phases	4			4 3			2			6		
Actuated Green, G (s)		48.0			65.0			21.0			21.0	
Effective Green, g (s)		50.0			67.0			24.0			24.0	
Actuated g/C Ratio		0.50			0.67			0.24			0.24	
Clearance Time (s)		5.0						6.0			6.0	
Lane Grp Cap (vph)		2001			2794			534			559	
v/s Ratio Prot					c0.04							
v/s Ratio Perm		c0.29			0.11			c0.10			0.06	
v/c Ratio		0.58			0.21			0.42			0.26	
Uniform Delay, d1		17.6			6.4			32.1			30.8	
Progression Factor		0.15			1.00			0.71			1.00	
Incremental Delay, d2		1.1			0.2			2.4			1.1	
Delay (s)		3.7			6.5			25.1			31.9	
Level of Service		A			A			C			C	
Approach Delay (s)		3.7			6.5			25.1			31.9	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑	↗		↑↑↑	↗		↑↑↑	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor					1.00	1.00		0.91	1.00		0.91	1.00	
Fr <sub>t</sub>					1.00	0.85		1.00	0.85		1.00	0.85	
Flt Protected					1.00	1.00		1.00	1.00		1.00	1.00	
Satd. Flow (prot)					1739	1478		4746	1478		4746	1478	
Flt Permitted					1.00	1.00		1.00	1.00		1.00	1.00	
Satd. Flow (perm)					1739	1478		4746	1478		4746	1478	
Volume (vph)	0	0	0	0	36	28	0	1598	65	0	2886	9	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	39	30	0	1737	71	0	3137	10	
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	11	0	0	2	
Lane Group Flow (vph)	0	0	0	0	39	3	0	1737	60	0	3137	8	
Turn Type						Perm			Perm			Perm	
Protected Phases					8			2			6		
Permitted Phases						8			2			6	
Actuated Green, G (s)					15.0	15.0		125.0	125.0		125.0	125.0	
Effective Green, g (s)					16.0	16.0		126.0	126.0		126.0	126.0	
Actuated g/C Ratio					0.11	0.11		0.84	0.84		0.84	0.84	
Clearance Time (s)					5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)					185	158		3987	1242		3987	1242	
v/s Ratio Prot					c0.02			0.37			c0.66		
v/s Ratio Perm						0.00			0.04			0.01	
v/c Ratio					0.21	0.02		0.44	0.05		0.79	0.01	
Uniform Delay, d1					61.2	60.0		3.0	2.0		5.7	1.9	
Progression Factor					1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2					2.6	0.2		0.3	0.1		1.6	0.0	
Delay (s)					63.8	60.2		3.4	2.1		7.3	1.9	
Level of Service					E	E		A	A		A	A	
Approach Delay (s)		0.0			62.2			3.3			7.3		
Approach LOS		A			E			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			6.6		HCM Level of Service						A		
HCM Volume to Capacity ratio			0.72										
Actuated Cycle Length (s)			150.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			65.8%		ICU Level of Service						C		
Analysis Period (min)			15										
c Critical Lane Group													





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔	↔↔		↔	↔
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	18	89	76	0	2	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	97	83	0	2	3
Pedestrians					3	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)		240	690			
pX, platoon unblocked						
vC, conflicting volume	86				173	44
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86				173	44
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	1506				788	1014

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	52	64	55	28	2	3
Volume Left	20	0	0	0	2	0
Volume Right	0	0	0	0	0	3
cSH	1506	1700	1700	1700	788	1014
Volume to Capacity	0.01	0.04	0.03	0.02	0.00	0.00
Queue Length 95th (ft)	1	0	0	0	0	0
Control Delay (s)	2.9	0.0	0.0	0.0	9.6	8.6
Lane LOS	A				A	A
Approach Delay (s)	1.3		0.0		9.0	
Approach LOS					A	

Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			17.8%		ICU Level of Service	A
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↗	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	24	67	67	7	10	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	73	73	8	11	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)		464	466			
pX, platoon unblocked						
vC, conflicting volume	80				165	40
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80				165	40
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	99
cM capacity (veh/h)	1515				795	1022













Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	50	49	49	32	11	8
Volume Left	26	0	0	0	11	0
Volume Right	0	0	0	8	0	8
cSH	1515	1700	1700	1700	795	1022
Volume to Capacity	0.02	0.03	0.03	0.02	0.01	0.01
Queue Length 95th (ft)	1	0	0	0	1	1
Control Delay (s)	3.9	0.0	0.0	0.0	9.6	8.5
Lane LOS	A				A	A
Approach Delay (s)	2.0		0.0		9.2	
Approach LOS					A	

Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			18.1%		ICU Level of Service	A
Analysis Period (min)			15			



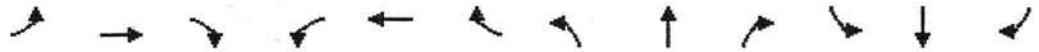
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.95			0.94			0.99			0.99	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		2737			2746			2934			2917	
Flt Permitted		0.75			0.85			0.94			0.94	
Satd. Flow (perm)		2120			2370			2762			2764	
Volume (vph)	48	3	26	48	45	66	11	130	7	6	105	11
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	3	28	52	49	72	12	141	8	7	114	12
RTOR Reduction (vph)	0	21	0	0	53	0	0	3	0	0	4	0
Lane Group Flow (vph)	0	62	0	0	120	0	0	158	0	0	129	0
Confl. Peds. (#/hr)							5		9	9		5
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		25.0			25.0			65.0			65.0	
Effective Green, g (s)		26.0			26.0			66.0			66.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		551			616			1823			1824	
v/s Ratio Prot												
v/s Ratio Perm		0.03			0.05			0.06			0.05	
v/c Ratio		0.11			0.19			0.09			0.07	
Uniform Delay, d1		28.2			28.8			6.1			6.1	
Progression Factor		1.00			1.00			1.00			0.77	
Incremental Delay, d2		0.4			0.7			0.1			0.1	
Delay (s)		28.6			29.5			6.2			4.7	
Level of Service		C			C			A			A	
Approach Delay (s)		28.6			29.5			6.2			4.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.6%	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		↑↑↑			↑↑↑		↗	↕				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0				
Lane Util. Factor		0.91			0.91		0.95	0.95				
Frt		1.00			0.97		1.00	0.93				
Flt Protected		1.00			1.00		0.95	0.98				
Satd. Flow (prot)		4568			4421		1513	1459				
Flt Permitted		0.91			1.00		0.95	0.98				
Satd. Flow (perm)		4176			4421		1513	1459				
Volume (vph)	43	1093	0	0	521	153	355	50	116	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	48	1214	0	0	579	170	394	56	129	0	0	0
RTOR Reduction (vph)	0	0	0	0	54	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	1262	0	0	695	0	294	264	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5			5		2	2				
Permitted Phases	5											
Actuated Green, G (s)		44.0			18.0		41.0	41.0				
Effective Green, g (s)		48.0			20.0		43.0	43.0				
Actuated g/C Ratio		0.48			0.20		0.43	0.43				
Clearance Time (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)		2114			884		651	627				
v/s Ratio Prot		c0.17			c0.16		c0.19	0.18				
v/s Ratio Perm		0.12										
v/c Ratio		0.60			0.79		0.45	0.42				
Uniform Delay, d1		19.0			38.0		20.2	19.8				
Progression Factor		0.14			0.71		1.00	1.00				
Incremental Delay, d2		0.4			6.8		2.3	2.1				
Delay (s)		3.1			33.6		22.4	21.9				
Level of Service		A			C		C	C				
Approach Delay (s)		3.1			33.6			22.2			0.0	
Approach LOS		A			C			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.2			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			65.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

## Appendix D

### Total Future Intersection Capacity Analyses 2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗		↕↗↘			↕↗↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00		0.91			0.91	1.00
Frbp, ped/bikes		1.00	0.95		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
Frt		1.00	0.85		1.00	0.85		1.00			1.00	0.85
Flt Protected		0.98	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1520	1269		1565	1294		4266			4272	1288
Flt Permitted		0.46	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		720	1269		1565	1294		4266			4272	1288
Volume (vph)	86	85	66	0	274	214	0	1515	12	0	1449	73
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	92	72	0	298	233	0	1647	13	0	1575	79
RTOR Reduction (vph)	0	0	30	0	0	27	0	1	0	0	0	27
Lane Group Flow (vph)	0	185	42	0	298	206	0	1659	0	0	1575	52
Confl. Peds. (#/hr)	14		32	32		14	16		5	5		16
Turn Type	Perm		Perm			Perm						Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4			8						6
Actuated Green, G (s)		32.0	32.0		32.0	32.0		77.0			77.0	77.0
Effective Green, g (s)		33.0	33.0		33.0	33.0		79.0			79.0	79.0
Actuated g/C Ratio		0.28	0.28		0.28	0.28		0.66			0.66	0.66
Clearance Time (s)		5.0	5.0		5.0	5.0		6.0			6.0	6.0
Lane Grp Cap (vph)		198	349		430	356		2808			2812	848
v/s Ratio Prot					0.19			c0.39			0.37	
v/s Ratio Perm		c0.26	0.03			0.16						0.04
v/c Ratio		0.93	0.12		0.69	0.58		0.59			0.56	0.06
Uniform Delay, d1		42.4	32.6		39.0	37.5		11.5			11.1	7.3
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		48.8	0.7		8.9	6.7		0.9			0.8	0.1
Delay (s)		91.2	33.3		47.8	44.2		12.4			11.9	7.4
Level of Service		F	C		D	D		B			B	A
Approach Delay (s)		75.0			46.3			12.4			11.7	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Fr <sub>t</sub>		1.00	0.85		1.00					1.00	0.98	
Fl <sub>t</sub> Protected		1.00	1.00		1.00					0.95	0.97	
Satd. Flow (prot)		4577	1425		4568					1513	1512	
Fl <sub>t</sub> Permitted		1.00	1.00		0.91					0.95	0.97	
Satd. Flow (perm)		4577	1425		4161					1513	1512	
Volume (vph)	0	538	269	72	1808	0	0	0	0	484	63	38
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	598	299	80	2009	0	0	0	0	538	70	42
RTOR Reduction (vph)	0	0	239	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	598	60	0	2089	0	0	0	0	324	321	0
Turn Type			Perm D.P+P							Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		18.0	18.0		59.0					26.0	26.0	
Effective Green, g (s)		20.0	20.0		63.0					28.0	28.0	
Actuated g/C Ratio		0.20	0.20		0.63					0.28	0.28	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Lane Grp Cap (vph)		915	285		2796					424	423	
v/s Ratio Prot		0.13			c0.32					c0.21	0.21	
v/s Ratio Perm			0.04		c0.15							
v/c Ratio		0.65	0.21		0.75					0.76	0.76	
Uniform Delay, d <sub>1</sub>		36.8	33.4		12.9					33.0	32.9	
Progression Factor		1.00	1.00		0.04					1.00	1.00	
Incremental Delay, d <sub>2</sub>		3.6	1.7		0.2					12.3	12.0	
Delay (s)		40.4	35.1		0.7					45.3	45.0	
Level of Service		D	D		A					D	D	
Approach Delay (s)		38.6			0.7			0.0			45.1	
Approach LOS		D			A			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.0			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			87.0%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↑	↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1002	5	2	674	3	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1089	5	2	733	3	71
Pedestrians					37	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	188			222		
pX, platoon unblocked			0.84		0.86	0.84
vC, conflicting volume			1132		1377	403
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			785		920	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	92
cM capacity (veh/h)			682		226	891

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	436	436	223	149	293	293	3	71
Volume Left	0	0	0	2	0	0	3	0
Volume Right	0	0	5	0	0	0	0	71
cSH	1700	1700	1700	682	1700	1700	226	891
Volume to Capacity	0.26	0.26	0.13	0.00	0.17	0.17	0.01	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	1	6
Control Delay (s)	0.0	0.0	0.0	0.2	0.0	0.0	21.1	9.4
Lane LOS				A			C	A
Approach Delay (s)	0.0			0.0			9.9	
Approach LOS							A	

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization	32.8%		ICU Level of Service A
Analysis Period (min)		15	