APPENDIX N

2020 & 2040 Build 2 Synchro Intersection Analysis

Queues

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	277	2065	321	1386	495	98	147	196	22	22	22
v/c Ratio	0.89	0.66	0.91	0.49	0.45	0.27	0.75	0.38	0.30	0.29	0.06
Control Delay	96.7	22.3	101.1	21.0	4.4	70.7	96.6	7.9	88.0	87.3	0.3
Queue Delay	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.7	22.3	101.1	21.3	4.6	70.7	96.6	7.9	88.0	87.3	0.3
Queue Length 50th (ft)	301	506	185	247	45	52	162	0	25	25	0
Queue Length 95th (ft)	#452	649	#282	474	130	81	236	66	60	60	0
Internal Link Dist (ft)		580		548			436			396	
Turn Bay Length (ft)	450		375		350	225		250	200		
Base Capacity (vph)	334	3137	353	2800	1258	646	350	516	266	274	393
Starvation Cap Reductn	0	0	0	694	206	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.66	0.91	0.66	0.47	0.15	0.42	0.38	0.08	0.08	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	1735	165	295	1275	455	90	135	180	30	10	20
Future Volume (vph)	255	1735	165	295	1275	455	90	135	180	30	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.0	6.0	6.0	6.5	6.0	6.0	6.5
Lane Util. Factor	1.00	0.91		0.97	0.91	1.00	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1770	5019		3433	5085	1583	3433	1863	1583	1681	1726	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (perm)	1770	5019		3433	5085	1583	3433	1863	1583	1681	1726	1583
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)	277	1886	179	321	1386	495	98	147	196	33	11	22
RTOR Reduction (vph)	0	4	0	0	0	116	0	0	158	0	0	17
Lane Group Flow (vph)	277	2061	0	321	1386	379	98	147	38	22	22	5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	1	6		5	2	3	4	4	5	3	3	1
Permitted Phases						2			4			3
Actuated Green, G (s)	28.0	104.1		15.5	91.6	99.2	17.8	17.8	33.3	7.6	7.6	35.6
Effective Green, g (s)	30.0	106.1		17.5	93.6	103.2	17.8	17.8	33.3	7.6	7.6	35.6
Actuated g/C Ratio	0.18	0.62		0.10	0.55	0.61	0.10	0.10	0.20	0.04	0.04	0.21
Clearance Time (s)	6.5	6.5		6.5	6.5	6.0	6.0	6.0	6.5	6.0	6.0	6.5
Vehicle Extension (s)	1.5	3.0		2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5
Lane Grp Cap (vph)	312	3132		353	2799	960	359	195	310	75	77	331
v/s Ratio Prot	c0.16	c0.41		0.09	0.27	c0.02	0.03	c0.08	0.01	0.01	0.01	0.00
v/s Ratio Perm						0.22			0.01			0.00
v/c Ratio	0.89	0.66		0.91	0.50	0.39	0.27	0.75	0.12	0.29	0.29	0.01
Uniform Delay, d1	68.4	20.4		75.5	23.6	17.3	70.1	74.0	56.3	78.6	78.6	53.3
Progression Factor	1.00	1.00		0.99	0.83	0.51	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.2	1.1		23.5	0.6	0.1	0.2	13.6	0.1	0.8	0.7	0.0
Delay (s)	92.6	21.5		98.4	20.0	9.0	70.3	87.6	56.4	79.4	79.3	53.3
Level of Service	F	C		F	C	A	E	F	E	E	E	D
Approach Delay (s)		29.9			29.0			69.9			70.7	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	33.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1397	695	1440	537	737
v/c Ratio	0.27	0.44	0.49	0.82	0.71
Control Delay	0.1	1.2	15.1	58.6	49.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.1	1.2	15.1	58.6	49.3
Queue Length 50th (ft)	0	0	342	540	398
Queue Length 95th (ft)	0	9	430	609	420
Internal Link Dist (ft)	548		319		
Turn Bay Length (ft)		150			
Base Capacity (vph)	5085	1583	2934	900	1418
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.44	0.49	0.60	0.52

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑↑	↱		↑↑↑		↰		↱↱		
Traffic Volume (vph)	0	1285	660	0	1325	0	510	0	700	0	0
Future Volume (vph)	0	1285	660	0	1325	0	510	0	700	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		4.5		4.5		4.5		
Lane Util. Factor		0.91	1.00		0.91		1.00		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		5085	1583		5085		1770		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		5085	1583		5085		1770		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1397	695	0	1440	0	537	0	737	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1397	695	0	1440	0	537	0	737	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm		NA		Prot		Prot		
Protected Phases		Free!			2		8!		3		
Permitted Phases			Free								
Actuated Green, G (s)		170.0	170.0		96.1		60.9		60.9		
Effective Green, g (s)		170.0	170.0		98.1		62.9		62.9		
Actuated g/C Ratio		1.00	1.00		0.58		0.37		0.37		
Clearance Time (s)					6.5		6.5		6.5		
Vehicle Extension (s)					3.0		2.5		2.5		
Lane Grp Cap (vph)		5085	1583		2934		654		1031		
v/s Ratio Prot		0.27			c0.28		c0.30		0.26		
v/s Ratio Perm			0.44								
v/c Ratio		0.27	0.44		0.49		0.82		0.71		
Uniform Delay, d1		0.0	0.0		21.2		48.5		45.9		
Progression Factor		1.00	1.00		0.65		1.00		1.00		
Incremental Delay, d2		0.1	0.7		0.5		8.0		2.2		
Delay (s)		0.1	0.7		14.3		56.5		48.1		
Level of Service		A	A		B		E		D		
Approach Delay (s)		0.3			14.3			51.6		0.0	
Approach LOS		A			B			D		A	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1364	1549	772	576	758
v/c Ratio	0.48	0.54	0.49	0.32	0.73
Control Delay	8.2	6.6	1.3	19.5	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	6.6	1.3	19.5	26.0
Queue Length 50th (ft)	104	127	1	75	180
Queue Length 95th (ft)	241	m143	m0	93	230
Internal Link Dist (ft)	286	371			
Turn Bay Length (ft)			250	350	350
Base Capacity (vph)	2857	2857	1568	2113	1208
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.54	0.49	0.27	0.63

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑	↱	↰↰↰		↱↱			
Traffic Volume (vph)	0	1255	0	0	1425	710	530	0	720	0	0	0
Future Volume (vph)	0	1255	0	0	1425	710	530	0	720	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	2.0	2.0		2.0			
Lane Util. Factor		0.91			0.91	1.00	0.94		0.88			
Frt		1.00			1.00	0.85	1.00		0.85			
Flt Protected		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085			5085	1568	4990		2787			
Flt Permitted		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085			5085	1568	4990		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	1364	0	0	1549	772	576	0	758	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	31	0	0	0
Lane Group Flow (vph)	0	1364	0	0	1549	772	576	0	727	0	0	0
Heavy Vehicles (%)	3%	2%	2%	2%	2%	3%	2%	3%	2%	3%	3%	3%
Turn Type		NA			NA	Free	Prot		Prot			
Protected Phases		6			2		4		4			
Permitted Phases						Free						
Actuated Green, G (s)		45.8			45.8	85.0	28.7		28.7			
Effective Green, g (s)		47.8			47.8	85.0	30.7		30.7			
Actuated g/C Ratio		0.56			0.56	1.00	0.36		0.36			
Clearance Time (s)		6.5			6.5		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		2859			2859	1568	1802		1006			
v/s Ratio Prot		0.27			c0.30		0.12		c0.26			
v/s Ratio Perm						0.49						
v/c Ratio		0.48			0.54	0.49	0.32		0.72			
Uniform Delay, d1		11.1			11.7	0.0	19.6		23.5			
Progression Factor		0.65			0.51	1.00	1.00		1.00			
Incremental Delay, d2		0.5			0.3	0.5	0.1		2.6			
Delay (s)		7.8			6.3	0.5	19.7		26.1			
Level of Service		A			A	A	B		C			
Approach Delay (s)		7.8			4.4			23.3			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	315	1717	114	76	1902	435	87	147	33	5	71
v/c Ratio	0.99	0.51	0.10	0.59	0.67	1.88	0.38	0.45	0.38	0.08	0.31
Control Delay	109.6	13.5	1.3	94.2	27.7	447.5	75.0	14.1	75.1	81.8	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.6	13.5	1.3	94.2	27.7	447.5	75.0	14.1	75.1	81.8	3.4
Queue Length 50th (ft)	370	267	4	83	531	~673	92	0	32	6	0
Queue Length 95th (ft)	#579	357	16	143	582	#900	155	72	66	22	0
Internal Link Dist (ft)		660			631		513			403	
Turn Bay Length (ft)	300		150	100		125					340
Base Capacity (vph)	318	3396	1103	153	2835	231	558	577	87	416	495
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.51	0.10	0.50	0.67	1.88	0.16	0.25	0.38	0.01	0.14

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	290	1580	105	70	1670	80	400	80	135	30	5	65
Future Volume (vph)	290	1580	105	70	1670	80	400	80	135	30	5	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5050		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.41	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5050		767	1863	1583	1305	1863	1583
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)	315	1717	114	76	1815	87	435	87	147	33	5	71
RTOR Reduction (vph)	0	0	39	0	2	0	0	0	129	0	0	68
Lane Group Flow (vph)	315	1717	75	76	1900	0	435	87	18	33	5	3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	28.6	110.4	110.4	10.4	92.2		30.2	21.0	21.0	10.4	7.2	7.2
Effective Green, g (s)	30.6	112.4	112.4	12.4	94.2		30.2	21.0	21.0	10.4	7.2	7.2
Actuated g/C Ratio	0.18	0.66	0.66	0.07	0.55		0.18	0.12	0.12	0.06	0.04	0.04
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	1.5	3.0		1.5	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	318	3362	1046	129	2798		236	230	195	88	78	67
v/s Ratio Prot	c0.18	0.34		0.04	c0.38		c0.18	0.05		0.01	0.00	
v/s Ratio Perm			0.05				c0.14		0.01	0.02		0.00
v/c Ratio	0.99	0.51	0.07	0.59	0.68		1.84	0.38	0.09	0.38	0.06	0.04
Uniform Delay, d1	69.6	14.7	10.2	76.3	27.1		67.8	68.5	66.1	76.3	78.2	78.1
Progression Factor	0.96	0.90	1.46	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	44.1	0.5	0.1	4.4	1.3		395.4	0.4	0.1	1.0	0.1	0.1
Delay (s)	110.7	13.8	15.1	80.7	28.4		463.3	68.9	66.1	77.3	78.3	78.2
Level of Service	F	B	B	F	C		F	E	E	E	E	E
Approach Delay (s)		28.1			30.4			324.7			77.9	
Approach LOS		C			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	70.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	386	1429	141	342	891	505	190	723	620	500	598	310
v/c Ratio	0.70	0.91	0.18	0.62	0.81	0.58	0.60	0.97	0.90	0.94	0.62	0.20
Control Delay	59.9	52.5	2.2	47.1	39.9	12.0	65.2	76.5	33.5	81.7	44.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	52.5	2.2	47.1	39.9	12.0	65.2	76.5	33.5	81.7	44.6	0.3
Queue Length 50th (ft)	162	427	0	125	375	236	80	320	219	217	233	0
Queue Length 95th (ft)	#238	#516	24	175	454	306	120	#447	#385	#324	298	0
Internal Link Dist (ft)		620			1001			569			457	
Turn Bay Length (ft)	280		500	550		600	350			300		200
Base Capacity (vph)	551	1576	787	567	1176	869	330	748	697	530	970	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.91	0.18	0.60	0.76	0.58	0.58	0.97	0.89	0.94	0.62	0.20

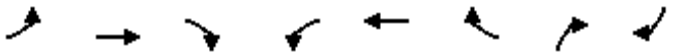
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	1315	130	315	820	465	175	665	570	460	550	285
Future Volume (vph)	355	1315	130	315	820	465	175	665	570	460	550	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	5.9	5.5	4.0	5.9	5.9	5.9	5.5	5.9	5.9	2.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
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)	386	1429	141	342	891	505	190	723	620	500	598	310
RTOR Reduction (vph)	0	0	84	0	0	91	0	0	97	0	0	0
Lane Group Flow (vph)	386	1429	57	342	891	414	190	723	523	500	598	310
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Free
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	
Permitted Phases			6			2			4			Free
Actuated Green, G (s)	18.9	38.3	48.2	18.8	38.2	56.3	9.9	25.5	44.3	18.1	33.7	130.0
Effective Green, g (s)	20.9	40.3	52.2	20.8	40.2	60.3	11.9	27.5	48.3	20.1	35.7	130.0
Actuated g/C Ratio	0.16	0.31	0.40	0.16	0.31	0.46	0.09	0.21	0.37	0.15	0.27	1.00
Clearance Time (s)	7.5	6.0	7.9	7.5	6.0	7.9	7.9	7.9	7.5	7.9	7.9	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.0	
Lane Grp Cap (vph)	551	1576	635	549	1094	806	314	748	588	530	971	1583
v/s Ratio Prot	0.11	c0.28	0.01	0.10	c0.25	0.08	0.06	c0.20	0.14	c0.15	0.17	
v/s Ratio Perm			0.03			0.18			0.19			0.20
v/c Ratio	0.70	0.91	0.09	0.62	0.81	0.51	0.61	0.97	0.89	0.94	0.62	0.20
Uniform Delay, d1	51.6	43.0	24.1	50.9	41.5	24.5	56.8	50.8	38.4	54.4	41.2	0.0
Progression Factor	1.00	1.00	1.00	0.82	0.81	0.64	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	9.1	0.0	1.5	6.4	0.2	2.3	24.7	14.9	25.3	1.2	0.3
Delay (s)	54.9	52.2	24.2	43.4	40.0	15.9	59.0	75.5	53.3	79.7	42.3	0.3
Level of Service	D	D	C	D	D	B	E	E	D	E	D	A
Approach Delay (s)		50.7			33.7			64.4			46.3	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	48.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

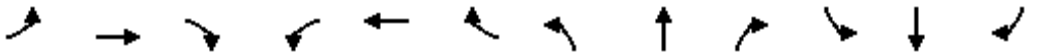
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBR	SBR
Lane Group Flow (vph)	332	1663	554	402	1576	364	152	163
v/c Ratio	0.38	0.49	0.51	0.56	0.40	0.37	0.20	0.23
Control Delay	14.4	2.7	2.3	28.8	5.2	3.5	5.3	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	2.7	2.3	28.8	5.2	3.5	5.3	6.6
Queue Length 50th (ft)	55	44	25	103	85	42	0	1
Queue Length 95th (ft)	m78	m57	m32	138	64	42	17	21
Internal Link Dist (ft)		900			925			
Turn Bay Length (ft)	460		400	750		500	120	
Base Capacity (vph)	870	3395	1093	792	4337	1071	842	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.49	0.51	0.51	0.36	0.34	0.18	0.23

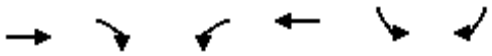
Intersection Summary

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



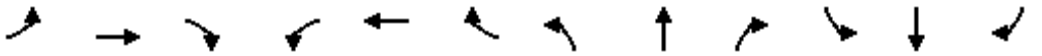
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	1530	510	370	1450	335	0	0	140	0	0	150
Future Volume (vph)	305	1530	510	370	1450	335	0	0	140	0	0	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0			6.0			6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00			0.76			0.76
Frt	1.00	1.00	0.85	1.00	1.00	0.85			0.85			0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00			1.00			1.00
Satd. Flow (prot)	3367	5085	1583	3433	6408	1524			3610			2630
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00			1.00			1.00
Satd. Flow (perm)	3367	5085	1583	3433	6408	1524			3610			2630
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)	332	1663	554	402	1576	364	0	0	152	0	0	163
RTOR Reduction (vph)	0	0	36	0	0	47	0	0	124	0	0	117
Lane Group Flow (vph)	332	1663	518	402	1576	317	0	0	28	0	0	46
Heavy Vehicles (%)	4%	2%	2%	2%	2%	6%	2%	2%	2%	18%	2%	40%
Turn Type	Prot	NA	Perm	Prot	NA	Perm			Over			Over
Protected Phases	1	6		5	2				5			1
Permitted Phases			6			2						
Actuated Green, G (s)	14.8	41.4	41.4	11.6	38.2	38.2			11.6			14.8
Effective Green, g (s)	16.8	43.4	43.4	13.6	40.2	40.2			11.6			14.8
Actuated g/C Ratio	0.26	0.67	0.67	0.21	0.62	0.62			0.18			0.23
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0			6.0			6.0
Vehicle Extension (s)	1.5	3.0	3.0	2.5	3.0	3.0			2.5			1.5
Lane Grp Cap (vph)	870	3395	1056	718	3963	942			644			598
v/s Ratio Prot	0.10	0.33		c0.12	0.25				0.01			0.02
v/s Ratio Perm			c0.33			0.21						
v/c Ratio	0.38	0.49	0.49	0.56	0.40	0.34			0.04			0.08
Uniform Delay, d1	19.8	5.3	5.3	23.0	6.3	6.0			22.1			19.7
Progression Factor	0.67	0.45	0.35	1.14	0.80	0.73			1.00			1.00
Incremental Delay, d2	0.0	0.0	0.1	0.6	0.2	0.8			0.0			0.0
Delay (s)	13.4	2.4	2.0	27.0	5.3	5.2			22.1			19.8
Level of Service	B	A	A	C	A	A			C			B
Approach Delay (s)		3.8			9.0			22.1			19.8	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1408	395	616	1810	337	516
v/c Ratio	0.69	0.25	0.50	0.54	0.36	0.68
Control Delay	30.5	0.3	40.8	6.4	39.3	47.3
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	30.5	0.3	40.8	6.5	39.3	47.3
Queue Length 50th (ft)	200	0	211	191	118	221
Queue Length 95th (ft)	241	0	275	212	162	290
Internal Link Dist (ft)	925			635		
Turn Bay Length (ft)		500	305		500	500
Base Capacity (vph)	2031	1583	1241	3344	940	763
Starvation Cap Reductn	0	0	0	309	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.25	0.50	0.60	0.36	0.68

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1295	375	585	1665	0	0	0	0	320	0	490
Future Volume (vph)	0	1295	375	585	1665	0	0	0	0	320	0	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	2.0	4.0	4.5					4.4		4.4
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		0.88
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7544	1583	3433	5085					3433		2787
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7544	1583	3433	5085					3433		2787
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	1408	395	616	1810	0	0	0	0	337	0	516
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1408	395	616	1810	0	0	0	0	337	0	516
Turn Type		NA	Free	Prot	NA					Prot		Perm
Protected Phases		6		5 4	2 4					3		
Permitted Phases			Free									3
Actuated Green, G (s)		33.0	130.0	45.0	83.5					33.6		33.6
Effective Green, g (s)		35.0	130.0	42.6	81.1					35.6		35.6
Actuated g/C Ratio		0.27	1.00	0.33	0.62					0.27		0.27
Clearance Time (s)		6.0								6.4		6.4
Vehicle Extension (s)		3.0								2.0		2.0
Lane Grp Cap (vph)		2031	1583	1124	3172					940		763
v/s Ratio Prot		c0.19		0.18	c0.36					0.10		
v/s Ratio Perm			0.25									c0.19
v/c Ratio		0.69	0.25	0.55	0.57					0.36		0.68
Uniform Delay, d1		42.7	0.0	35.8	14.3					38.0		42.1
Progression Factor		0.67	1.00	1.21	0.49					1.00		1.00
Incremental Delay, d2		1.8	0.3	0.5	0.3					0.1		1.9
Delay (s)		30.4	0.3	43.9	7.2					38.1		43.9
Level of Service		C	A	D	A					D		D
Approach Delay (s)		23.8			16.5			0.0			41.6	
Approach LOS		C			B			A			D	

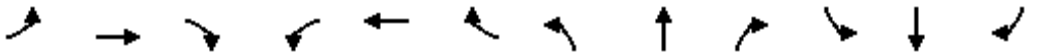
Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1299	442	1793	284	632	442
v/c Ratio	0.44	0.16	0.34	0.18	0.54	0.52
Control Delay	2.0	0.1	3.4	0.2	45.5	45.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	0.1	3.4	0.2	45.5	45.9
Queue Length 50th (ft)	19	0	46	0	166	143
Queue Length 95th (ft)	11	0	54	m0	207	189
Internal Link Dist (ft)	635		630			
Turn Bay Length (ft)		700			410	430
Base Capacity (vph)	2933	2787	5251	1583	1174	849
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.16	0.34	0.18	0.54	0.52

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1195	420	0	1650	270	600	0	420	0	0	0
Future Volume (vph)	0	1195	420	0	1650	270	600	0	420	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	2.0		4.5	2.0	4.4		4.4			
Lane Util. Factor		0.91	0.88		0.81	1.00	0.94		0.76			
Frt		1.00	0.85		1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085	2787		7544	1583	4990		3610			
Flt Permitted		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085	2787		7544	1583	4990		3610			
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	1299	442	0	1793	284	632	0	442	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1299	442	0	1793	284	632	0	442	0	0	0
Turn Type		NA	Free		NA	Free	Prot		Prot			
Protected Phases		6 3			2 3		4		4			
Permitted Phases			Free			Free						
Actuated Green, G (s)		72.6	130.0		88.6	130.0	28.6		28.6			
Effective Green, g (s)		74.6	130.0		90.6	130.0	30.6		30.6			
Actuated g/C Ratio		0.57	1.00		0.70	1.00	0.24		0.24			
Clearance Time (s)							6.4		6.4			
Vehicle Extension (s)							3.5		3.5			
Lane Grp Cap (vph)		2918	2787		5257	1583	1174		849			
v/s Ratio Prot		c0.26			c0.24		c0.13		0.12			
v/s Ratio Perm			0.16			0.18						
v/c Ratio		0.45	0.16		0.34	0.18	0.54		0.52			
Uniform Delay, d1		15.9	0.0		7.8	0.0	43.5		43.3			
Progression Factor		0.11	1.00		0.42	1.00	1.00		1.00			
Incremental Delay, d2		0.0	0.1		0.0	0.2	0.5		0.7			
Delay (s)		1.7	0.1		3.3	0.2	44.1		44.0			
Level of Service		A	A		A	A	D		D			
Approach Delay (s)		1.3			2.8			44.0			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.8
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

5: Research Park Boulevard/SW Natura Boulevard & SR 869/SW 10th Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	223	1245	288	103	1500	87	261	141	130	239	163	326
v/c Ratio	0.71	0.59	0.35	0.33	0.77	0.11	0.87	0.39	0.26	0.74	0.78	0.65
Control Delay	45.4	8.1	1.7	30.7	20.8	0.3	51.8	30.8	1.3	36.1	55.1	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	8.1	1.7	30.7	20.8	0.3	51.8	30.8	1.3	36.1	55.1	9.0
Queue Length 50th (ft)	53	98	4	20	185	0	84	27	0	75	64	0
Queue Length 95th (ft)	#86	114	9	41	237	0	#166	53	0	#132	#152	48
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	200		370	200		200	260		260	170		170
Base Capacity (vph)	316	2115	827	316	1952	760	300	364	493	322	214	508
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.59	0.35	0.33	0.77	0.11	0.87	0.39	0.26	0.74	0.76	0.64

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	1145	265	95	1380	80	240	130	120	220	150	300
Future Volume (vph)	205	1145	265	95	1380	80	240	130	120	220	150	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	4.4	4.4	4.4	5.7	5.7	5.7	5.7	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	1770	3539	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.65	1.00	1.00	0.59	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	1218	3539	1583	1101	1863	1583
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)	223	1245	288	103	1500	87	261	141	130	239	163	326
RTOR Reduction (vph)	0	0	174	0	0	54	0	0	117	0	0	289
Lane Group Flow (vph)	223	1245	114	103	1500	33	261	141	13	239	163	37
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2	4		4	8		8
Actuated Green, G (s)	4.0	23.7	23.7	3.2	22.9	22.9	13.1	6.6	6.6	14.7	7.4	7.4
Effective Green, g (s)	6.0	25.7	25.7	5.2	24.9	24.9	13.1	6.6	6.6	14.7	7.4	7.4
Actuated g/C Ratio	0.09	0.40	0.40	0.08	0.38	0.38	0.20	0.10	0.10	0.23	0.11	0.11
Clearance Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	5.7	5.7	5.7	5.7	5.7	5.7
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	316	2010	625	274	1947	606	300	359	160	324	212	180
v/s Ratio Prot	0.06	c0.24		0.03	c0.29		c0.09	0.04		0.08	0.09	
v/s Ratio Perm			0.07			0.02	c0.09		0.01	0.08		0.02
v/c Ratio	0.71	0.62	0.18	0.38	0.77	0.05	0.87	0.39	0.08	0.74	0.77	0.21
Uniform Delay, d1	28.6	15.7	12.8	28.4	17.5	12.6	24.5	27.3	26.5	22.6	28.0	26.1
Progression Factor	1.17	0.45	0.43	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2	1.3	0.6	0.3	3.0	0.2	21.9	0.3	0.1	7.4	13.9	0.2
Delay (s)	38.8	8.4	6.1	28.7	20.6	12.8	46.3	27.6	26.5	29.9	41.9	26.3
Level of Service	D	A	A	C	C	B	D	C	C	C	D	C
Approach Delay (s)		11.9			20.7			36.5			31.0	
Approach LOS		B			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2261	152	1793	147	190
v/c Ratio	0.53	0.64	0.47	0.68	0.53
Control Delay	16.9	61.7	1.6	65.1	11.8
Queue Delay	0.0	1.6	0.1	0.0	0.0
Total Delay	16.9	63.2	1.6	65.1	11.8
Queue Length 50th (ft)	250	83	26	111	0
Queue Length 95th (ft)	318	#154	27	170	64
Internal Link Dist (ft)	575		175	531	
Turn Bay Length (ft)					
Base Capacity (vph)	4261	236	3824	545	619
Starvation Cap Reductn	0	19	458	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.70	0.53	0.27	0.31

Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1975	105	140	1650	135	175
Future Volume (vph)	1975	105	140	1650	135	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	9.0	9.0
Lane Util. Factor	0.81		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	7487		1770	5085	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	7487		1770	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2147	114	152	1793	147	190
RTOR Reduction (vph)	5	0	0	0	0	167
Lane Group Flow (vph)	2256	0	152	1793	147	23
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2 3		1	1 2 3	4	
Permitted Phases					4	4
Actuated Green, G (s)	66.2		14.0	88.2	14.8	14.8
Effective Green, g (s)	68.2		16.0	90.2	14.8	14.8
Actuated g/C Ratio	0.57		0.13	0.75	0.12	0.12
Clearance Time (s)			8.0		9.0	9.0
Vehicle Extension (s)			1.5		2.0	2.0
Lane Grp Cap (vph)	4255		236	3822	218	195
v/s Ratio Prot	c0.30		c0.09	0.35	c0.08	
v/s Ratio Perm						0.01
v/c Ratio	0.53		0.64	0.47	0.67	0.12
Uniform Delay, d1	16.0		49.3	5.7	50.3	46.8
Progression Factor	1.00		1.00	0.19	1.00	1.00
Incremental Delay, d2	0.1		4.1	0.0	6.3	0.1
Delay (s)	16.1		53.2	1.1	56.6	46.9
Level of Service	B		D	A	E	D
Approach Delay (s)	16.1			5.2	51.1	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	92	2245	1783	82	250	163
v/c Ratio	0.70	0.47	0.44	0.08	0.59	0.49
Control Delay	63.8	2.3	9.7	1.3	55.0	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	2.4	9.7	1.3	55.0	13.2
Queue Length 50th (ft)	70	26	177	3	95	5
Queue Length 95th (ft)	#152	42	238	m4	130	64
Internal Link Dist (ft)		175	1004		271	
Turn Bay Length (ft)				450		
Base Capacity (vph)	132	4818	4017	1023	1058	595
Starvation Cap Reductn	0	529	0	0	0	0
Spillback Cap Reductn	0	0	14	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.52	0.45	0.08	0.24	0.27

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	85	2065	1640	75	230	150
Future Volume (vph)	85	2065	1640	75	230	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	9.0	9.0
Lane Util. Factor	1.00	0.86	0.86	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	6408	6408	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	6408	6408	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	2245	1783	82	250	163
RTOR Reduction (vph)	0	0	0	31	0	137
Lane Group Flow (vph)	92	2245	1783	51	250	26
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	3	1 2 3	1 2		4	
Permitted Phases				1 2		4
Actuated Green, G (s)	7.0	88.2	73.2	73.2	14.8	14.8
Effective Green, g (s)	9.0	90.2	75.2	75.2	14.8	14.8
Actuated g/C Ratio	0.08	0.75	0.63	0.63	0.12	0.12
Clearance Time (s)	8.0				9.0	9.0
Vehicle Extension (s)	1.5				2.0	2.0
Lane Grp Cap (vph)	132	4816	4015	992	423	195
v/s Ratio Prot	c0.05	c0.35	0.28		c0.07	
v/s Ratio Perm				0.03		0.02
v/c Ratio	0.70	0.47	0.44	0.05	0.59	0.13
Uniform Delay, d1	54.2	5.7	11.6	8.6	49.7	46.9
Progression Factor	0.72	0.34	0.78	0.50	1.00	1.00
Incremental Delay, d2	10.7	0.0	0.0	0.0	1.5	0.1
Delay (s)	49.7	2.0	9.1	4.4	51.2	47.0
Level of Service	D	A	A	A	D	D
Approach Delay (s)		3.8	8.9		49.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1527	937	1380	437	468
v/c Ratio	0.42	0.59	0.47	0.52	0.69
Control Delay	5.3	7.7	6.9	21.9	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	7.7	6.9	21.9	26.2
Queue Length 50th (ft)	72	236	106	69	85
Queue Length 95th (ft)	126	363	145	107	134
Internal Link Dist (ft)	1004		259		
Turn Bay Length (ft)		250			
Base Capacity (vph)	3663	1583	2907	886	719
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.59	0.47	0.49	0.65

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑↑↑	↱		↑↑↑		↰↰		↱↱		
Traffic Volume (vph)	0	1405	890	0	1270	0	415	0	445	0	0
Future Volume (vph)	0	1405	890	0	1270	0	415	0	445	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	2.0		5.5		5.5		5.5		
Lane Util. Factor		0.86	1.00		0.91		0.97		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		6408	1583		5085		3433		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		6408	1583		5085		3433		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1527	937	0	1380	0	437	0	468	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1527	937	0	1380	0	437	0	468	0	0
Turn Type		NA	Free		NA		Prot		Prot		
Protected Phases		6			2		3		3		
Permitted Phases			Free								
Actuated Green, G (s)		32.3	60.0		32.3		12.7		12.7		
Effective Green, g (s)		34.3	60.0		34.3		14.7		14.7		
Actuated g/C Ratio		0.57	1.00		0.57		0.24		0.24		
Clearance Time (s)		7.5			7.5		7.5		7.5		
Vehicle Extension (s)		3.0			3.0		2.5		2.5		
Lane Grp Cap (vph)		3663	1583		2906		841		682		
v/s Ratio Prot		0.24			0.27		0.13		0.17		
v/s Ratio Perm			c0.59								
v/c Ratio		0.42	0.59		0.47		0.52		0.69		
Uniform Delay, d1		7.2	0.0		7.6		19.6		20.6		
Progression Factor		0.68	1.00		0.83		1.00		1.00		
Incremental Delay, d2		0.3	1.5		0.4		0.4		2.6		
Delay (s)		5.2	1.5		6.7		20.0		23.2		
Level of Service		A	A		A		C		C		
Approach Delay (s)		3.8			6.7			21.6		0.0	
Approach LOS		A			A			C		A	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL2	NBR
Lane Group Flow (vph)	1120	1848	453	484	358
v/c Ratio	0.37	0.62	0.29	0.62	0.56
Control Delay	5.1	4.6	0.2	24.5	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	4.6	0.2	24.5	24.2
Queue Length 50th (ft)	82	91	0	79	64
Queue Length 95th (ft)	56	m143	m0	121	104
Internal Link Dist (ft)	270	1155			
Turn Bay Length (ft)			250		
Base Capacity (vph)	2991	2991	1583	829	673
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.62	0.29	0.58	0.53

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations		↑↑↑			↑↑↑	↱	↰↰		↱↱		
Traffic Volume (vph)	0	1030	0	0	1700	430	460	0	340	0	0
Future Volume (vph)	0	1030	0	0	1700	430	460	0	340	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5	2.0	5.5		5.5		
Lane Util. Factor		0.91			0.91	1.00	0.97		0.88		
Frt		1.00			1.00	0.85	1.00		0.85		
Flt Protected		1.00			1.00	1.00	0.95		1.00		
Satd. Flow (prot)		5085			5085	1583	3433		2787		
Flt Permitted		1.00			1.00	1.00	0.95		1.00		
Satd. Flow (perm)		5085			5085	1583	3433		2787		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1120	0	0	1848	453	484	0	358	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1120	0	0	1848	453	484	0	358	0	0
Turn Type		NA			NA	Free	Prot		Prot		
Protected Phases		6			2		4		4		
Permitted Phases						Free					
Actuated Green, G (s)		33.3			33.3	60.0	11.7		11.7		
Effective Green, g (s)		35.3			35.3	60.0	13.7		13.7		
Actuated g/C Ratio		0.59			0.59	1.00	0.23		0.23		
Clearance Time (s)		7.5			7.5		7.5		7.5		
Vehicle Extension (s)		3.0			3.0		2.5		2.5		
Lane Grp Cap (vph)		2991			2991	1583	783		636		
v/s Ratio Prot		0.22			c0.36		c0.14		0.13		
v/s Ratio Perm						0.29					
v/c Ratio		0.37			0.62	0.29	0.62		0.56		
Uniform Delay, d1		6.5			8.0	0.0	20.8		20.5		
Progression Factor		0.71			0.51	1.00	1.00		1.00		
Incremental Delay, d2		0.3			0.4	0.2	1.2		0.9		
Delay (s)		5.0			4.5	0.2	22.0		21.4		
Level of Service		A			A	A	C		C		
Approach Delay (s)		5.0			3.7			21.8		0.0	
Approach LOS		A			A			C		A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

5: NE 3rd Ave & Sample Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	386	1103	49	1658	212	217	65	92	212	516
v/c Ratio	0.91	0.48	0.43	0.87	0.63	0.43	0.12	0.28	0.44	0.98
Control Delay	71.5	18.3	66.2	40.8	40.4	39.2	0.5	29.1	40.1	66.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.5	18.3	66.2	40.8	40.4	39.2	0.5	29.1	40.1	66.1
Queue Length 50th (ft)	147	201	37	433	117	138	0	47	136	297
Queue Length 95th (ft)	#243	259	79	501	183	214	0	86	212	#526
Internal Link Dist (ft)		1155		834		912			742	
Turn Bay Length (ft)	550		490		250		225	200		
Base Capacity (vph)	425	2284	116	1899	335	507	543	327	492	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.48	0.42	0.87	0.63	0.43	0.12	0.28	0.43	0.97

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	900	115	45	1460	65	195	200	60	85	195	475
Future Volume (vph)	355	900	115	45	1460	65	195	200	60	85	195	475
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		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	4950		1752	5004		1752	1845	1568	1752	1845	1568
Flt Permitted	0.95	1.00		0.95	1.00		0.49	1.00	1.00	0.52	1.00	1.00
Satd. Flow (perm)	3400	4950		1752	5004		913	1845	1568	967	1845	1568
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)	386	978	125	49	1587	71	212	217	65	92	212	516
RTOR Reduction (vph)	0	13	0	0	4	0	0	0	47	0	0	114
Lane Group Flow (vph)	386	1090	0	49	1654	0	212	217	18	92	212	402
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases							4		4	8		8
Actuated Green, G (s)	13.0	51.6		4.8	43.4		38.6	32.6	32.6	36.6	31.6	31.6
Effective Green, g (s)	15.0	53.6		6.8	45.4		38.6	32.6	32.6	36.6	31.6	31.6
Actuated g/C Ratio	0.12	0.45		0.06	0.38		0.32	0.27	0.27	0.31	0.26	0.26
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	3.0		1.5	3.0		1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	425	2211		99	1893		335	501	425	327	485	412
v/s Ratio Prot	c0.11	0.22		0.03	c0.33		c0.03	0.12		0.01	0.11	
v/s Ratio Perm							0.17		0.01	0.07		c0.26
v/c Ratio	0.91	0.49		0.49	0.87		0.63	0.43	0.04	0.28	0.44	0.98
Uniform Delay, d1	51.8	23.6		54.9	34.6		34.8	36.1	32.2	30.7	36.8	43.8
Progression Factor	0.90	0.77		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.1	0.7		1.4	6.0		2.9	0.2	0.0	0.2	0.2	37.4
Delay (s)	67.5	18.9		56.4	40.6		37.6	36.3	32.2	30.9	37.0	81.2
Level of Service	E	B		E	D		D	D	C	C	D	F
Approach Delay (s)		31.5			41.1			36.3			64.1	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	41.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	43	1956	250	2163	54	223	11	332	268	276	337
v/c Ratio	0.42	0.82	1.25	0.90	0.05	0.64	0.06	0.89	0.83	0.84	0.67
Control Delay	67.2	31.8	191.9	23.7	0.1	60.0	47.6	59.8	68.4	69.0	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.2	31.8	191.9	23.7	0.1	60.0	47.6	59.8	68.4	69.0	17.9
Queue Length 50th (ft)	33	475	~128	200	0	87	8	192	208	215	69
Queue Length 95th (ft)	72	#640	#215	#742	m0	124	26	#324	306	313	146
Internal Link Dist (ft)		580		548			436			396	
Turn Bay Length (ft)	450		375		350	225		250	200		
Base Capacity (vph)	103	2388	200	2410	1213	915	496	375	378	385	506
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.82	1.25	0.90	0.04	0.24	0.02	0.89	0.71	0.72	0.67

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	1670	130	230	1990	50	205	10	305	410	90	310
Future Volume (vph)	40	1670	130	230	1990	50	205	10	305	410	90	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.0	6.0	6.0	6.5	6.0	6.0	6.5
Lane Util. Factor	1.00	0.91		0.97	0.91	1.00	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1770	5030		3433	5085	1583	3433	1863	1583	1681	1714	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (perm)	1770	5030		3433	5085	1583	3433	1863	1583	1681	1714	1583
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)	43	1815	141	250	2163	54	223	11	332	446	98	337
RTOR Reduction (vph)	0	5	0	0	0	17	0	0	74	0	0	144
Lane Group Flow (vph)	43	1951	0	250	2163	37	223	11	258	268	276	193
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	1	6		5	2	3	4	4	5	3	3	1
Permitted Phases						2			4			3
Actuated Green, G (s)	5.0	54.9		5.0	54.9	77.8	12.2	12.2	17.2	22.9	22.9	27.9
Effective Green, g (s)	7.0	56.9		7.0	56.9	81.8	12.2	12.2	17.2	22.9	22.9	27.9
Actuated g/C Ratio	0.06	0.47		0.06	0.47	0.68	0.10	0.10	0.14	0.19	0.19	0.23
Clearance Time (s)	6.5	6.5		6.5	6.5	6.0	6.0	6.0	6.5	6.0	6.0	6.5
Vehicle Extension (s)	1.5	3.0		2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5
Lane Grp Cap (vph)	103	2385		200	2411	1079	349	189	226	320	327	368
v/s Ratio Prot	0.02	0.39		c0.07	c0.43	0.01	0.06	0.01	c0.05	0.16	c0.16	0.02
v/s Ratio Perm						0.02			0.12			0.10
v/c Ratio	0.42	0.82		1.25	0.90	0.03	0.64	0.06	1.14	0.84	0.84	0.52
Uniform Delay, d1	54.5	27.1		56.5	28.9	6.2	51.8	48.7	51.4	46.8	46.8	40.2
Progression Factor	1.00	1.00		1.17	0.59	0.03	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	3.3		140.4	4.6	0.0	2.8	0.0	103.8	16.4	17.1	0.6
Delay (s)	55.5	30.4		206.4	21.6	0.2	54.6	48.8	155.2	63.2	63.9	40.9
Level of Service	E	C		F	C	A	D	D	F	E	E	D
Approach Delay (s)		30.9			39.9			113.5			54.9	
Approach LOS		C			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1918	653	1913	568	537
v/c Ratio	0.38	0.41	0.69	0.84	0.50
Control Delay	0.1	0.4	20.3	44.9	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.1	0.4	20.3	44.9	29.2
Queue Length 50th (ft)	0	0	243	390	176
Queue Length 95th (ft)	0	m0	563	484	207
Internal Link Dist (ft)	548		319		
Turn Bay Length (ft)		150			
Base Capacity (vph)	5085	1583	2754	803	1265
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.38	0.41	0.69	0.71	0.42

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑↑	↱		↑↑↑		↰		↱↱		
Traffic Volume (vph)	0	1765	620	0	1760	0	540	0	510	0	0
Future Volume (vph)	0	1765	620	0	1760	0	540	0	510	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		4.5		4.5		4.5		
Lane Util. Factor		0.91	1.00		0.91		1.00		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		5085	1583		5085		1770		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		5085	1583		5085		1770		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1918	653	0	1913	0	568	0	537	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1918	653	0	1913	0	568	0	537	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm		NA		Prot		Prot		
Protected Phases		Free!			2		8!		3		
Permitted Phases			Free								
Actuated Green, G (s)		120.0	120.0		63.0		44.0		44.0		
Effective Green, g (s)		120.0	120.0		65.0		46.0		46.0		
Actuated g/C Ratio		1.00	1.00		0.54		0.38		0.38		
Clearance Time (s)					6.5		6.5		6.5		
Vehicle Extension (s)					3.0		2.5		2.5		
Lane Grp Cap (vph)		5085	1583		2754		678		1068		
v/s Ratio Prot		0.38			c0.38		c0.32		0.19		
v/s Ratio Perm			0.41								
v/c Ratio		0.38	0.41		0.69		0.84		0.50		
Uniform Delay, d1		0.0	0.0		20.2		33.6		28.3		
Progression Factor		1.00	1.00		0.89		1.00		1.00		
Incremental Delay, d2		0.1	0.4		1.1		8.7		0.3		
Delay (s)		0.1	0.4		19.1		42.4		28.5		
Level of Service		A	A		B		D		C		
Approach Delay (s)		0.2			19.1			35.6		0.0	
Approach LOS		A			B			D		A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1832	2152	696	620	716
v/c Ratio	0.62	0.73	0.44	0.40	0.79
Control Delay	10.0	9.4	0.5	17.2	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	9.4	0.5	17.2	24.9
Queue Length 50th (ft)	181	152	0	60	119
Queue Length 95th (ft)	183	m259	m0	87	#193
Internal Link Dist (ft)	286	371			
Turn Bay Length (ft)			250	350	350
Base Capacity (vph)	2960	2960	1568	1580	926
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.73	0.44	0.39	0.77

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑	↱	↰↰↰		↱↱			
Traffic Volume (vph)	0	1685	0	0	1980	640	570	0	680	0	0	0
Future Volume (vph)	0	1685	0	0	1980	640	570	0	680	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	2.0	2.0		2.0			
Lane Util. Factor		0.91			0.91	1.00	0.94		0.88			
Frt		1.00			1.00	0.85	1.00		0.85			
Flt Protected		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085			5085	1568	4990		2787			
Flt Permitted		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085			5085	1568	4990		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	1832	0	0	2152	696	620	0	716	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	44	0	0	0
Lane Group Flow (vph)	0	1832	0	0	2152	696	620	0	672	0	0	0
Heavy Vehicles (%)	3%	2%	2%	2%	2%	3%	2%	3%	2%	3%	3%	3%
Turn Type		NA			NA	Free	Prot		Prot			
Protected Phases		6			2		4		4			
Permitted Phases						Free						
Actuated Green, G (s)		32.9			32.9	60.0	16.6		16.6			
Effective Green, g (s)		34.9			34.9	60.0	18.6		18.6			
Actuated g/C Ratio		0.58			0.58	1.00	0.31		0.31			
Clearance Time (s)		6.5			6.5		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		2957			2957	1568	1546		863			
v/s Ratio Prot		0.36			c0.42		0.12		c0.24			
v/s Ratio Perm						0.44						
v/c Ratio		0.62			0.73	0.44	0.40		0.78			
Uniform Delay, d1		8.2			9.1	0.0	16.3		18.8			
Progression Factor		1.09			0.91	1.00	1.00		1.00			
Incremental Delay, d2		0.9			1.0	0.5	0.2		4.5			
Delay (s)		9.8			9.2	0.5	16.5		23.3			
Level of Service		A			A	A	B		C			
Approach Delay (s)		9.8			7.1			20.1			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	87	2207	277	130	2283	288	11	125	120	54	310
v/c Ratio	0.81	0.77	0.29	1.01	0.78	1.14	0.04	0.36	0.44	0.19	0.85
Control Delay	96.5	17.1	4.8	136.9	23.2	141.6	39.3	7.1	42.1	42.4	46.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.5	17.1	4.8	136.9	23.2	141.6	39.3	7.1	42.1	42.4	46.3
Queue Length 50th (ft)	65	387	33	~103	471	~238	7	0	77	37	129
Queue Length 95th (ft)	m#125	522	m103	#234	660	#294	23	36	116	68	215
Internal Link Dist (ft)		660			631		513			403	
Turn Bay Length (ft)	300		150	100		125					340
Base Capacity (vph)	107	2876	956	129	2934	253	574	588	275	589	600
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.77	0.29	1.01	0.78	1.14	0.02	0.21	0.44	0.09	0.52

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	2030	255	120	2070	30	265	10	115	110	50	285
Future Volume (vph)	80	2030	255	120	2070	30	265	10	115	110	50	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5074		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.72	1.00	1.00	0.71	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5074		1345	1863	1583	1321	1863	1583
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)	87	2207	277	130	2250	33	288	11	125	120	54	310
RTOR Reduction (vph)	0	0	61	0	1	0	0	0	107	0	0	123
Lane Group Flow (vph)	87	2207	216	130	2282	0	288	11	18	120	54	187
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	5.3	65.9	65.9	6.8	67.4		21.3	17.3	17.3	23.3	18.3	18.3
Effective Green, g (s)	7.3	67.9	67.9	8.8	69.4		21.3	17.3	17.3	23.3	18.3	18.3
Actuated g/C Ratio	0.06	0.57	0.57	0.07	0.58		0.18	0.14	0.14	0.19	0.15	0.15
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	1.5	3.0		1.5	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	107	2877	895	129	2934		252	268	228	275	284	241
v/s Ratio Prot	0.05	0.43		c0.07	c0.45		c0.04	0.01		0.02	0.03	
v/s Ratio Perm			0.14				c0.16		0.01	0.07		0.12
v/c Ratio	0.81	0.77	0.24	1.01	0.78		1.14	0.04	0.08	0.44	0.19	0.78
Uniform Delay, d1	55.7	20.0	13.1	55.6	19.4		48.8	44.2	44.5	42.1	44.4	48.9
Progression Factor	1.05	0.71	0.56	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.2	1.5	0.5	81.3	2.1		100.7	0.0	0.1	0.4	0.1	13.3
Delay (s)	85.7	15.7	7.8	136.9	21.5		149.6	44.2	44.5	42.5	44.5	62.2
Level of Service	F	B	A	F	C		F	D	D	D	D	E
Approach Delay (s)		17.3			27.7			115.9			55.3	
Approach LOS		B			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	375	1255	201	495	1603	527	179	516	342	435	810	625
v/c Ratio	0.99	0.76	0.28	0.61	1.01	0.56	0.90	0.95	0.48	0.95	1.00	0.39
Control Delay	104.5	45.4	2.6	47.3	53.0	9.8	107.8	86.5	12.5	91.0	84.8	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.5	45.4	2.6	47.3	53.0	9.8	107.8	86.5	12.5	91.0	84.8	0.7
Queue Length 50th (ft)	178	372	0	215	~626	74	85	248	79	205	391	0
Queue Length 95th (ft)	#285	411	23	288	#917	194	#158	#361	147	#310	#533	0
Internal Link Dist (ft)		620			1001			569			457	
Turn Bay Length (ft)	280		500	550		600	350			300		200
Base Capacity (vph)	380	1812	714	808	1592	944	198	543	709	458	811	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.69	0.28	0.61	1.01	0.56	0.90	0.95	0.48	0.95	1.00	0.39

Intersection Summary

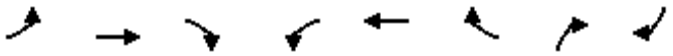
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	1155	185	455	1475	485	165	475	315	400	745	575
Future Volume (vph)	345	1155	185	455	1475	485	165	475	315	400	745	575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	5.9	5.5	4.0	5.9	5.9	5.9	5.5	5.9	5.9	2.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
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)	375	1255	201	495	1603	527	179	516	342	435	810	625
RTOR Reduction (vph)	0	0	124	0	0	40	0	0	89	0	0	0
Lane Group Flow (vph)	375	1255	77	495	1603	487	179	516	253	435	810	625
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Free
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	
Permitted Phases			6			2			4			Free
Actuated Green, G (s)	13.5	43.5	49.6	31.0	61.0	77.7	6.1	19.5	50.5	16.7	30.1	140.0
Effective Green, g (s)	15.5	45.5	53.6	33.0	63.0	81.7	8.1	21.5	54.5	18.7	32.1	140.0
Actuated g/C Ratio	0.11	0.32	0.38	0.24	0.45	0.58	0.06	0.15	0.39	0.13	0.23	1.00
Clearance Time (s)	7.5	6.0	7.9	7.5	6.0	7.9	7.9	7.9	7.5	7.9	7.9	
Vehicle Extension (s)	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.0	
Lane Grp Cap (vph)	380	1652	606	809	1592	923	198	543	616	458	811	1583
v/s Ratio Prot	c0.11	0.25	0.01	0.14	c0.45	0.07	0.05	0.15	0.10	c0.13	c0.23	
v/s Ratio Perm			0.04			0.24			0.06			0.39
v/c Ratio	0.99	0.76	0.13	0.61	1.01	0.53	0.90	0.95	0.41	0.95	1.00	0.39
Uniform Delay, d1	62.1	42.3	28.0	47.8	38.5	17.5	65.6	58.7	31.1	60.2	53.9	0.0
Progression Factor	1.00	1.00	1.00	0.91	0.79	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	42.2	3.3	0.0	0.8	22.1	0.2	37.6	26.6	0.2	29.0	31.1	0.7
Delay (s)	104.3	45.7	28.1	44.1	52.6	18.0	103.1	85.3	31.2	89.2	85.0	0.7
Level of Service	F	D	C	D	D	B	F	F	C	F	F	A
Approach Delay (s)		55.8			44.1			70.6			57.8	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	54.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



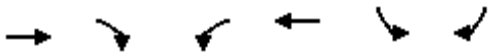
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBR	SBR
Lane Group Flow (vph)	87	1864	82	109	1777	98	538	848
v/c Ratio	0.07	0.58	0.08	0.12	0.55	0.12	0.58	0.83
Control Delay	14.9	2.9	0.1	14.1	7.0	1.7	21.2	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	2.9	0.1	14.1	7.0	1.7	21.2	24.4
Queue Length 50th (ft)	12	58	0	17	103	3	67	120
Queue Length 95th (ft)	m13	m56	m0	m30	182	m15	112	149
Internal Link Dist (ft)		900			925			
Turn Bay Length (ft)	460		400	750		500	120	
Base Capacity (vph)	1683	3414	1089	880	3229	816	931	1313
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.55	0.08	0.12	0.55	0.12	0.58	0.65

Intersection Summary

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

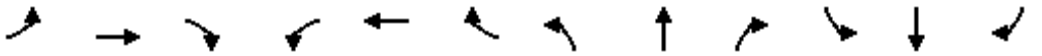
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	1715	75	100	1635	90	0	0	495	0	0	780
Future Volume (vph)	80	1715	75	100	1635	90	0	0	495	0	0	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0			6.0			6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00			0.76			0.76
Frt	1.00	1.00	0.85	1.00	1.00	0.85			0.85			0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00			1.00			1.00
Satd. Flow (prot)	3367	5085	1583	3433	6408	1524			3610			2630
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00			1.00			1.00
Satd. Flow (perm)	3367	5085	1583	3433	6408	1524			3610			2630
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)	87	1864	82	109	1777	98	0	0	538	0	0	848
RTOR Reduction (vph)	0	0	30	0	0	49	0	0	108	0	0	91
Lane Group Flow (vph)	87	1864	52	109	1777	49	0	0	430	0	0	757
Heavy Vehicles (%)	4%	2%	2%	2%	2%	6%	2%	2%	2%	18%	2%	40%
Turn Type	Prot	NA	Perm	Prot	NA	Perm			Over			Over
Protected Phases	1	6		5	2				5			1
Permitted Phases			6			2						
Actuated Green, G (s)	24.7	42.0	42.0	16.0	33.3	33.3			16.0			24.7
Effective Green, g (s)	26.7	44.0	44.0	18.0	35.3	35.3			16.0			24.7
Actuated g/C Ratio	0.38	0.63	0.63	0.26	0.50	0.50			0.23			0.35
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0			6.0			6.0
Vehicle Extension (s)	1.5	3.0	3.0	2.5	3.0	3.0			2.5			1.5
Lane Grp Cap (vph)	1284	3196	995	882	3231	768			825			928
v/s Ratio Prot	0.03	c0.37		0.03	c0.28				0.12			c0.29
v/s Ratio Perm			0.03			0.03						
v/c Ratio	0.07	0.58	0.05	0.12	0.55	0.06			0.52			0.82
Uniform Delay, d1	13.7	7.6	5.0	19.9	11.9	8.9			23.6			20.6
Progression Factor	1.20	0.32	0.01	0.65	0.50	0.61			1.00			1.00
Incremental Delay, d2	0.0	0.2	0.0	0.0	0.6	0.1			0.5			5.3
Delay (s)	16.5	2.6	0.1	13.1	6.6	5.6			24.1			25.9
Level of Service	B	A	A	B	A	A			C			C
Approach Delay (s)		3.1			6.9			24.1			25.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1886	500	605	1592	232	379
v/c Ratio	0.74	0.32	0.47	0.43	0.33	0.67
Control Delay	29.6	0.4	47.2	4.9	49.1	57.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	0.4	47.2	4.9	49.1	57.8
Queue Length 50th (ft)	246	0	250	174	93	182
Queue Length 95th (ft)	313	0	326	189	134	245
Internal Link Dist (ft)	925			635		
Turn Bay Length (ft)		500	305		500	500
Base Capacity (vph)	2532	1583	1275	3722	701	569
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.32	0.47	0.43	0.33	0.67

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1735	475	575	1465	0	0	0	0	220	0	360
Future Volume (vph)	0	1735	475	575	1465	0	0	0	0	220	0	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	2.0	4.0	4.5					4.4		4.4
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		0.88
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7544	1583	3433	5085					3433		2787
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7544	1583	3433	5085					3433		2787
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	1886	500	605	1592	0	0	0	0	232	0	379
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1886	500	605	1592	0	0	0	0	232	0	379
Turn Type		NA	Free	Prot	NA					Prot		Perm
Protected Phases		6		5 4	2 4					3		
Permitted Phases			Free									3
Actuated Green, G (s)		45.0	140.0	50.0	100.5					26.6		26.6
Effective Green, g (s)		47.0	140.0	47.6	98.1					28.6		28.6
Actuated g/C Ratio		0.34	1.00	0.34	0.70					0.20		0.20
Clearance Time (s)		6.0								6.4		6.4
Vehicle Extension (s)		3.0								2.0		2.0
Lane Grp Cap (vph)		2532	1583	1167	3563					701		569
v/s Ratio Prot		c0.25		c0.18	0.31					0.07		
v/s Ratio Perm			0.32									c0.14
v/c Ratio		0.74	0.32	0.52	0.45					0.33		0.67
Uniform Delay, d1		41.2	0.0	37.0	9.1					47.5		51.3
Progression Factor		0.67	1.00	1.36	0.62					1.00		1.00
Incremental Delay, d2		1.7	0.4	0.4	0.1					0.1		2.3
Delay (s)		29.5	0.4	50.7	5.8					47.6		53.6
Level of Service		C	A	D	A					D		D
Approach Delay (s)		23.4			18.1			0.0			51.3	
Approach LOS		C			B			A			D	

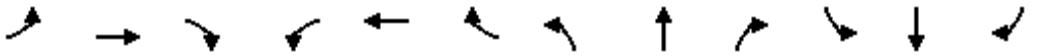
Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1473	632	1739	316	463	653
v/c Ratio	0.51	0.23	0.34	0.20	0.37	0.71
Control Delay	1.3	0.1	4.6	0.2	43.9	52.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.3	0.1	4.6	0.2	43.9	52.6
Queue Length 50th (ft)	7	0	59	0	123	239
Queue Length 95th (ft)	5	0	73	m0	158	297
Internal Link Dist (ft)	635		630			
Turn Bay Length (ft)		700			410	430
Base Capacity (vph)	2905	2787	5146	1583	1268	917
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.23	0.34	0.20	0.37	0.71

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1355	600	0	1600	300	440	0	620	0	0	0
Future Volume (vph)	0	1355	600	0	1600	300	440	0	620	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	2.0		4.5	2.0	4.4		4.4			
Lane Util. Factor		0.91	0.88		0.81	1.00	0.94		0.76			
Frt		1.00	0.85		1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085	2787		7544	1583	4990		3610			
Flt Permitted		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085	2787		7544	1583	4990		3610			
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	1473	632	0	1739	316	463	0	653	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1473	632	0	1739	316	463	0	653	0	0	0
Turn Type		NA	Free		NA	Free	Prot		Prot			
Protected Phases		6 3			2 3		4		4			
Permitted Phases			Free			Free						
Actuated Green, G (s)		77.6	140.0		93.6	140.0	33.6		33.6			
Effective Green, g (s)		79.6	140.0		95.6	140.0	35.6		35.6			
Actuated g/C Ratio		0.57	1.00		0.68	1.00	0.25		0.25			
Clearance Time (s)							6.4		6.4			
Vehicle Extension (s)							3.5		3.5			
Lane Grp Cap (vph)		2891	2787		5151	1583	1268		917			
v/s Ratio Prot		c0.29			c0.23		0.09		c0.18			
v/s Ratio Perm			0.23			0.20						
v/c Ratio		0.51	0.23		0.34	0.20	0.37		0.71			
Uniform Delay, d1		18.3	0.0		9.1	0.0	42.9		47.5			
Progression Factor		0.04	1.00		0.48	1.00	1.00		1.00			
Incremental Delay, d2		0.0	0.1		0.0	0.2	0.2		2.7			
Delay (s)		0.9	0.1		4.4	0.2	43.1		50.3			
Level of Service		A	A		A	A	D		D			
Approach Delay (s)		0.6			3.8			47.3			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.8
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

5: Research Park Boulevard/SW Natura Boulevard & SR 869/SW 10th Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	299	1587	261	283	1370	130	293	114	158	255	266	402
v/c Ratio	0.86	0.93	0.37	0.85	0.82	0.19	0.91	0.22	0.30	0.61	0.90	0.75
Control Delay	53.1	24.3	2.7	56.3	26.4	0.7	55.6	28.3	1.5	24.0	65.0	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	24.3	2.7	56.3	26.4	0.7	55.6	28.3	1.5	24.0	65.0	16.2
Queue Length 50th (ft)	74	259	12	63	194	0	95	23	0	80	114	23
Queue Length 95th (ft)	#139	#302	18	#125	248	2	#217	45	0	139	#242	#142
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	200		370	200		200	260		260	170		170
Base Capacity (vph)	348	1701	702	333	1679	677	321	511	520	443	295	537
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.93	0.37	0.85	0.82	0.19	0.91	0.22	0.30	0.58	0.90	0.75

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	1460	240	260	1260	120	270	105	145	235	245	370
Future Volume (vph)	275	1460	240	260	1260	120	270	105	145	235	245	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	4.4	4.4	4.4	5.7	5.7	5.7	5.7	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	1770	3539	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.40	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	738	3539	1583	1152	1863	1583
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)	299	1587	261	283	1370	130	293	114	158	255	266	402
RTOR Reduction (vph)	0	0	174	0	0	87	0	0	135	0	0	287
Lane Group Flow (vph)	299	1587	87	283	1370	43	293	114	23	255	266	115
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2	4		4	8		8
Actuated Green, G (s)	5.1	21.4	21.4	4.8	21.1	21.1	18.6	10.1	10.1	20.6	11.1	11.1
Effective Green, g (s)	7.1	23.4	23.4	6.8	23.1	23.1	18.6	10.1	10.1	20.6	11.1	11.1
Actuated g/C Ratio	0.10	0.33	0.33	0.10	0.33	0.33	0.27	0.14	0.14	0.29	0.16	0.16
Clearance Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	5.7	5.7	5.7	5.7	5.7	5.7
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	348	1699	529	333	1678	522	321	510	228	422	295	251
v/s Ratio Prot	0.09	c0.31		0.08	c0.27		c0.11	0.03		0.08	c0.14	
v/s Ratio Perm			0.06			0.03	0.13		0.01	0.10		0.07
v/c Ratio	0.86	0.93	0.16	0.85	0.82	0.08	0.91	0.22	0.10	0.60	0.90	0.46
Uniform Delay, d1	31.0	22.6	16.4	31.1	21.5	16.1	23.4	26.5	26.0	20.4	28.9	26.7
Progression Factor	1.03	0.63	0.77	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.4	9.5	0.6	17.3	4.5	0.3	28.5	0.1	0.1	1.7	28.1	0.5
Delay (s)	47.3	23.7	13.2	48.4	26.0	16.5	51.9	26.6	26.1	22.1	57.0	27.2
Level of Service	D	C	B	D	C	B	D	C	C	C	E	C
Approach Delay (s)		25.7			28.9			39.6			34.4	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2522	261	2245	114	120
v/c Ratio	0.59	0.87	0.56	0.65	0.45
Control Delay	19.1	77.0	1.9	72.8	14.3
Queue Delay	0.0	52.4	0.2	0.0	0.0
Total Delay	19.2	129.4	2.1	72.8	14.3
Queue Length 50th (ft)	323	167	44	94	0
Queue Length 95th (ft)	389	#359	30	152	57
Internal Link Dist (ft)	575		175	531	
Turn Bay Length (ft)					
Base Capacity (vph)	4280	299	3992	503	536
Starvation Cap Reductn	0	62	690	0	0
Spillback Cap Reductn	112	0	0	0	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	1.10	0.68	0.23	0.22

Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2240	80	240	2065	105	110
Future Volume (vph)	2240	80	240	2065	105	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	9.0	9.0
Lane Util. Factor	0.81		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	7505		1770	5085	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	7505		1770	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2435	87	261	2245	114	120
RTOR Reduction (vph)	3	0	0	0	0	108
Lane Group Flow (vph)	2519	0	261	2245	114	12
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2 3		1	1 2 3	4	
Permitted Phases					4	4
Actuated Green, G (s)	72.1		20.0	100.1	12.9	12.9
Effective Green, g (s)	74.1		22.0	102.1	12.9	12.9
Actuated g/C Ratio	0.57		0.17	0.79	0.10	0.10
Clearance Time (s)			8.0		9.0	9.0
Vehicle Extension (s)			1.5		2.0	2.0
Lane Grp Cap (vph)	4277		299	3993	175	157
v/s Ratio Prot	c0.34		c0.15	0.44	c0.06	
v/s Ratio Perm						0.01
v/c Ratio	0.59		0.87	0.56	0.65	0.08
Uniform Delay, d1	18.1		52.6	5.4	56.4	53.1
Progression Factor	1.00		1.00	0.24	1.00	1.00
Incremental Delay, d2	0.1		19.5	0.1	6.5	0.1
Delay (s)	18.2		72.1	1.4	62.8	53.2
Level of Service	B		E	A	E	D
Approach Delay (s)	18.2			8.8	57.9	
Approach LOS	B			A	E	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	179	2375	2348	272	185	158
v/c Ratio	0.82	0.47	0.59	0.25	0.54	0.53
Control Delay	63.9	2.0	12.2	1.1	61.0	14.3
Queue Delay	6.0	0.1	0.0	0.0	0.0	0.1
Total Delay	69.9	2.0	12.2	1.1	61.0	14.4
Queue Length 50th (ft)	149	23	275	6	77	0
Queue Length 95th (ft)	#277	35	382	m23	112	64
Internal Link Dist (ft)		175	1004		271	
Turn Bay Length (ft)				450		
Base Capacity (vph)	217	5031	3947	1079	977	563
Starvation Cap Reductn	16	786	0	0	0	0
Spillback Cap Reductn	0	0	122	0	0	50
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.56	0.61	0.25	0.19	0.31

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	165	2185	2160	250	170	145
Future Volume (vph)	165	2185	2160	250	170	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	9.0	9.0
Lane Util. Factor	1.00	0.86	0.86	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	6408	6408	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	6408	6408	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	2375	2348	272	185	158
RTOR Reduction (vph)	0	0	0	104	0	142
Lane Group Flow (vph)	179	2375	2348	168	185	16
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	3	1 2 3	1 2		4	
Permitted Phases				1 2		4
Actuated Green, G (s)	14.0	100.1	78.1	78.1	12.9	12.9
Effective Green, g (s)	16.0	102.1	80.1	80.1	12.9	12.9
Actuated g/C Ratio	0.12	0.79	0.62	0.62	0.10	0.10
Clearance Time (s)	8.0				9.0	9.0
Vehicle Extension (s)	1.5				2.0	2.0
Lane Grp Cap (vph)	217	5032	3948	975	340	157
v/s Ratio Prot	c0.10	0.37	c0.37		c0.05	
v/s Ratio Perm				0.11		0.01
v/c Ratio	0.82	0.47	0.59	0.17	0.54	0.10
Uniform Delay, d1	55.6	4.8	15.1	10.7	55.8	53.3
Progression Factor	0.68	0.34	0.75	0.48	1.00	1.00
Incremental Delay, d2	17.8	0.0	0.1	0.0	1.0	0.1
Delay (s)	55.7	1.6	11.5	5.2	56.7	53.4
Level of Service	E	A	B	A	E	D
Approach Delay (s)		5.4	10.8		55.2	
Approach LOS		A	B		E	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1897	642	1935	463	663
v/c Ratio	0.56	0.41	0.72	0.44	0.78
Control Delay	10.2	1.4	14.1	19.6	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	1.4	14.1	19.6	28.4
Queue Length 50th (ft)	177	4	259	73	131
Queue Length 95th (ft)	290	33	m226	111	#196
Internal Link Dist (ft)	1004		259		
Turn Bay Length (ft)		250			
Base Capacity (vph)	3379	1583	2681	1082	878
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.41	0.72	0.43	0.76

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑↑↑	↱		↑↑↑		↰↰		↱↱		
Traffic Volume (vph)	0	1745	610	0	1780	0	440	0	630	0	0
Future Volume (vph)	0	1745	610	0	1780	0	440	0	630	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	2.0		5.5		5.5		5.5		
Lane Util. Factor		0.86	1.00		0.91		0.97		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		6408	1583		5085		3433		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		6408	1583		5085		3433		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1897	642	0	1935	0	463	0	663	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1897	642	0	1935	0	463	0	663	0	0
Turn Type		NA	Free		NA		Prot		Prot		
Protected Phases		6			2		3		3		
Permitted Phases			Free								
Actuated Green, G (s)		32.3	65.0		32.3		17.7		17.7		
Effective Green, g (s)		34.3	65.0		34.3		19.7		19.7		
Actuated g/C Ratio		0.53	1.00		0.53		0.30		0.30		
Clearance Time (s)		7.5			7.5		7.5		7.5		
Vehicle Extension (s)		3.0			3.0		2.5		2.5		
Lane Grp Cap (vph)		3381	1583		2683		1040		844		
v/s Ratio Prot		0.30			c0.38		0.13		c0.24		
v/s Ratio Perm			0.41								
v/c Ratio		0.56	0.41		0.72		0.45		0.79		
Uniform Delay, d1		10.3	0.0		11.7		18.2		20.7		
Progression Factor		0.91	1.00		1.09		1.00		1.00		
Incremental Delay, d2		0.6	0.7		1.1		0.2		4.7		
Delay (s)		10.0	0.7		13.8		18.5		25.4		
Level of Service		B	A		B		B		C		
Approach Delay (s)		7.7			13.8			22.5		0.0	
Approach LOS		A			B			C		A	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL2	NBR
Lane Group Flow (vph)	1712	1707	347	1063	579
v/c Ratio	0.65	0.65	0.22	0.98	0.66
Control Delay	7.6	9.1	0.2	47.9	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	9.1	0.2	47.9	23.6
Queue Length 50th (ft)	56	127	0	212	110
Queue Length 95th (ft)	61	267	m0	#338	167
Internal Link Dist (ft)	270	1155			
Turn Bay Length (ft)			250		
Base Capacity (vph)	2620	2620	1583	1082	878
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.65	0.22	0.98	0.66

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations		↑↑↑			↑↑↑	↱	↰↰		↱↱		
Traffic Volume (vph)	0	1575	0	0	1570	330	1010	0	550	0	0
Future Volume (vph)	0	1575	0	0	1570	330	1010	0	550	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5	2.0	5.5		5.5		
Lane Util. Factor		0.91			0.91	1.00	0.97		0.88		
Frt		1.00			1.00	0.85	1.00		0.85		
Flt Protected		1.00			1.00	1.00	0.95		1.00		
Satd. Flow (prot)		5085			5085	1583	3433		2787		
Flt Permitted		1.00			1.00	1.00	0.95		1.00		
Satd. Flow (perm)		5085			5085	1583	3433		2787		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1712	0	0	1707	347	1063	0	579	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1712	0	0	1707	347	1063	0	579	0	0
Turn Type		NA			NA	Free	Prot		Prot		
Protected Phases		6			2		4		4		
Permitted Phases						Free					
Actuated Green, G (s)		31.5			31.5	65.0	18.5		18.5		
Effective Green, g (s)		33.5			33.5	65.0	20.5		20.5		
Actuated g/C Ratio		0.52			0.52	1.00	0.32		0.32		
Clearance Time (s)		7.5			7.5		7.5		7.5		
Vehicle Extension (s)		3.0			3.0		2.5		2.5		
Lane Grp Cap (vph)		2620			2620	1583	1082		878		
v/s Ratio Prot		c0.34			0.34		c0.31		0.21		
v/s Ratio Perm						0.22					
v/c Ratio		0.65			0.65	0.22	0.98		0.66		
Uniform Delay, d1		11.5			11.5	0.0	22.1		19.2		
Progression Factor		0.56			0.71	1.00	1.00		1.00		
Incremental Delay, d2		1.1			0.8	0.2	23.0		1.6		
Delay (s)		7.5			9.0	0.2	45.1		20.8		
Level of Service		A			A	A	D		C		
Approach Delay (s)		7.5			7.5			36.5		0.0	
Approach LOS		A			A			D		A	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

5: NE 3rd Ave & Sample Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	467	1843	98	1582	228	326	98	71	255	375
v/c Ratio	0.87	0.75	0.75	0.77	0.90	0.74	0.19	0.39	0.78	0.79
Control Delay	66.8	24.1	91.2	36.9	74.0	56.2	0.8	38.2	67.2	30.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.8	24.1	91.2	36.9	74.0	56.2	0.8	38.2	67.2	30.4
Queue Length 50th (ft)	188	366	82	412	154	263	0	44	209	114
Queue Length 95th (ft)	#282	511	#173	#566	#245	339	0	73	280	219
Internal Link Dist (ft)		1155		834		912			742	
Turn Bay Length (ft)	550		490		250		225	200		
Base Capacity (vph)	549	2460	134	2056	252	539	600	183	454	565
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.75	0.73	0.77	0.90	0.60	0.16	0.39	0.56	0.66

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	430	1515	180	90	1345	110	210	300	90	65	235	345
Future Volume (vph)	430	1515	180	90	1345	110	210	300	90	65	235	345
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		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	4956		1752	4979		1752	1845	1568	1752	1845	1568
Flt Permitted	0.95	1.00		0.95	1.00		0.25	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	3400	4956		1752	4979		468	1845	1568	659	1845	1568
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)	467	1647	196	98	1462	120	228	326	98	71	255	375
RTOR Reduction (vph)	0	10	0	0	7	0	0	0	74	0	0	194
Lane Group Flow (vph)	467	1833	0	98	1575	0	228	326	24	71	255	181
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases							4		4	8		8
Actuated Green, G (s)	18.5	61.0		7.8	50.3		41.2	31.2	31.2	28.2	24.2	24.2
Effective Green, g (s)	20.5	63.0		9.8	52.3		41.2	31.2	31.2	28.2	24.2	24.2
Actuated g/C Ratio	0.16	0.48		0.08	0.40		0.32	0.24	0.24	0.22	0.19	0.19
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	3.0		1.5	3.0		1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	536	2401		132	2003		256	442	376	176	343	291
v/s Ratio Prot	c0.14	c0.37		0.06	0.32		c0.08	0.18		0.01	0.14	
v/s Ratio Perm							c0.21		0.02	0.07		0.12
v/c Ratio	0.87	0.76		0.74	0.79		0.89	0.74	0.06	0.40	0.74	0.62
Uniform Delay, d1	53.5	27.4		58.9	34.0		39.0	45.6	38.1	42.4	50.0	48.7
Progression Factor	0.99	0.82		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.1	1.8		17.7	3.2		28.9	5.5	0.0	0.6	7.4	3.0
Delay (s)	64.0	24.2		76.6	37.2		67.9	51.1	38.1	42.9	57.4	51.7
Level of Service	E	C		E	D		E	D	D	D	E	D
Approach Delay (s)		32.3			39.5			55.0			52.9	
Approach LOS		C			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	40.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: SW 12th Avenue & Hillsboro Bvd

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	315	2289	370	1500	505	109	152	261	27	27	27
v/c Ratio	0.91	0.73	0.98	0.55	0.47	0.30	0.77	0.49	0.36	0.35	0.07
Control Delay	99.1	26.2	125.5	29.0	6.5	75.1	102.4	15.6	95.6	95.0	0.3
Queue Delay	0.0	0.0	0.0	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.1	26.2	125.5	29.4	6.8	75.1	102.4	15.6	95.6	95.0	0.3
Queue Length 50th (ft)	362	653	235	528	101	62	178	50	33	33	0
Queue Length 95th (ft)	#525	827	#347	520	52	93	255	136	72	72	1
Internal Link Dist (ft)		580		548			436			396	
Turn Bay Length (ft)	450		375		350	225		250	200		
Base Capacity (vph)	372	3122	379	2723	1215	610	331	536	252	257	426
Starvation Cap Reductn	0	0	0	615	248	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.73	0.98	0.71	0.52	0.18	0.46	0.49	0.11	0.11	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	290	1915	190	340	1380	465	100	140	240	40	10	25
Future Volume (vph)	290	1915	190	340	1380	465	100	140	240	40	10	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.0	6.0	6.0	6.5	6.0	6.0	6.5
Lane Util. Factor	1.00	0.91		0.97	0.91	1.00	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1770	5016		3433	5085	1583	3433	1863	1583	1681	1719	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (perm)	1770	5016		3433	5085	1583	3433	1863	1583	1681	1719	1583
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)	315	2082	207	370	1500	505	109	152	261	43	11	27
RTOR Reduction (vph)	0	5	0	0	0	107	0	0	165	0	0	21
Lane Group Flow (vph)	315	2284	0	370	1500	398	109	152	96	27	27	6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	1	6		5	2	3	4	4	5	3	3	1
Permitted Phases						2			4			3
Actuated Green, G (s)	33.4	109.9		17.9	94.4	102.5	19.1	19.1	37.0	8.1	8.1	41.5
Effective Green, g (s)	35.4	111.9		19.9	96.4	106.5	19.1	19.1	37.0	8.1	8.1	41.5
Actuated g/C Ratio	0.20	0.62		0.11	0.54	0.59	0.11	0.11	0.21	0.04	0.04	0.23
Clearance Time (s)	6.5	6.5		6.5	6.5	6.0	6.0	6.0	6.5	6.0	6.0	6.5
Vehicle Extension (s)	1.5	3.0		2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5
Lane Grp Cap (vph)	348	3118		379	2723	936	364	197	325	75	77	364
v/s Ratio Prot	c0.18	c0.46		0.11	0.29	c0.02	0.03	c0.08	0.03	0.02	0.02	0.00
v/s Ratio Perm						0.23			0.03			0.00
v/c Ratio	0.91	0.73		0.98	0.55	0.43	0.30	0.77	0.29	0.36	0.35	0.02
Uniform Delay, d1	70.7	23.7		79.8	27.5	20.1	74.3	78.3	60.5	83.4	83.4	53.5
Progression Factor	1.00	1.00		1.15	0.98	0.59	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.4	1.6		35.5	0.7	0.1	0.2	15.5	0.2	1.1	1.0	0.0
Delay (s)	96.0	25.2		127.3	27.6	11.8	74.4	93.9	60.6	84.5	84.4	53.5
Level of Service	F	C		F	C	B	E	F	E	F	F	D
Approach Delay (s)		33.8			39.8			73.2			74.1	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1462	895	1495	642	853
v/c Ratio	0.29	0.57	0.58	0.82	0.69
Control Delay	0.1	4.8	23.5	52.7	42.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.1	4.8	23.6	52.7	42.9
Queue Length 50th (ft)	0	122	447	661	458
Queue Length 95th (ft)	0	605	523	693	448
Internal Link Dist (ft)	548		319		
Turn Bay Length (ft)		150			
Base Capacity (vph)	5085	1583	2585	948	1494
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	75	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.57	0.60	0.68	0.57

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	1345	850	0	1375	0	610	0	810	0	0
Future Volume (vph)	0	1345	850	0	1375	0	610	0	810	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		4.5		4.5		4.5		
Lane Util. Factor		0.91	1.00		0.91		1.00		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		5085	1583		5085		1770		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		5085	1583		5085		1770		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1462	895	0	1495	0	642	0	853	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1462	895	0	1495	0	642	0	853	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm		NA		Prot		Prot		
Protected Phases		Free!			2		8!		3		
Permitted Phases			Free								
Actuated Green, G (s)		180.0	180.0		89.5		77.5		77.5		
Effective Green, g (s)		180.0	180.0		91.5		79.5		79.5		
Actuated g/C Ratio		1.00	1.00		0.51		0.44		0.44		
Clearance Time (s)					6.5		6.5		6.5		
Vehicle Extension (s)					3.0		2.5		2.5		
Lane Grp Cap (vph)		5085	1583		2584		781		1230		
v/s Ratio Prot		0.29			0.29		c0.36		0.31		
v/s Ratio Perm			c0.57								
v/c Ratio		0.29	0.57		0.58		0.82		0.69		
Uniform Delay, d1		0.0	0.0		30.8		44.0		40.4		
Progression Factor		1.00	1.00		0.70		1.00		1.00		
Incremental Delay, d2		0.1	1.0		0.8		6.8		1.6		
Delay (s)		0.1	1.0		22.3		50.9		42.0		
Level of Service		A	A		C		D		D		
Approach Delay (s)		0.5			22.3			45.8		0.0	
Approach LOS		A			C			D		A	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1495	1734	880	576	842
v/c Ratio	0.54	0.63	0.56	0.30	0.77
Control Delay	10.9	10.9	1.8	19.3	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	10.9	1.8	19.3	28.0
Queue Length 50th (ft)	215	289	22	76	215
Queue Length 95th (ft)	345	m249	m0	98	282
Internal Link Dist (ft)	286	371			
Turn Bay Length (ft)			250	350	350
Base Capacity (vph)	2769	2769	1568	2106	1201
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.63	0.56	0.27	0.70

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑	↱	↰↰↰		↱↱			
Traffic Volume (vph)	0	1375	0	0	1595	810	530	0	800	0	0	0
Future Volume (vph)	0	1375	0	0	1595	810	530	0	800	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	2.0	2.0		2.0			
Lane Util. Factor		0.91			0.91	1.00	0.94		0.88			
Frt		1.00			1.00	0.85	1.00		0.85			
Flt Protected		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085			5085	1568	4990		2787			
Flt Permitted		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085			5085	1568	4990		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	1495	0	0	1734	880	576	0	842	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	26	0	0	0
Lane Group Flow (vph)	0	1495	0	0	1734	880	576	0	816	0	0	0
Heavy Vehicles (%)	3%	2%	2%	2%	2%	3%	2%	3%	2%	3%	3%	3%
Turn Type		NA			NA	Free	Prot		Prot			
Protected Phases		6			2		4		4			
Permitted Phases						Free						
Actuated Green, G (s)		47.0			47.0	90.0	32.5		32.5			
Effective Green, g (s)		49.0			49.0	90.0	34.5		34.5			
Actuated g/C Ratio		0.54			0.54	1.00	0.38		0.38			
Clearance Time (s)		6.5			6.5		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		2768			2768	1568	1912		1068			
v/s Ratio Prot		0.29			c0.34		0.12		c0.29			
v/s Ratio Perm						0.56						
v/c Ratio		0.54			0.63	0.56	0.30		0.76			
Uniform Delay, d1		13.2			14.2	0.0	19.3		24.2			
Progression Factor		0.74			0.72	1.00	1.00		1.00			
Incremental Delay, d2		0.7			0.3	0.4	0.1		3.3			
Delay (s)		10.5			10.5	0.4	19.4		27.5			
Level of Service		B			B	A	B		C			
Approach Delay (s)		10.5			7.1			24.2			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	342	1891	130	87	2141	484	92	174	43	5	92
v/c Ratio	1.07	0.56	0.12	0.64	0.75	2.04	0.39	0.49	0.52	0.08	0.42
Control Delay	129.8	14.1	1.4	101.4	31.9	514.9	78.5	13.8	90.8	87.0	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	129.8	14.1	1.4	101.4	31.9	514.9	78.5	13.8	90.8	87.0	5.7
Queue Length 50th (ft)	~447	383	5	101	684	~829	103	0	44	6	0
Queue Length 95th (ft)	#666	382	m18	167	739	#1063	169	79	85	22	0
Internal Link Dist (ft)		660			631		513			403	
Turn Bay Length (ft)	300		150	100		125					340
Base Capacity (vph)	320	3393	1099	160	2846	237	548	588	82	393	470
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.56	0.12	0.54	0.75	2.04	0.17	0.30	0.52	0.01	0.20

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	1740	120	80	1875	95	445	85	160	40	5	85
Future Volume (vph)	315	1740	120	80	1875	95	445	85	160	40	5	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5049		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.41	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5049		767	1863	1583	1299	1863	1583
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)	342	1891	130	87	2038	103	484	92	174	43	5	92
RTOR Reduction (vph)	0	0	44	0	2	0	0	0	152	0	0	88
Lane Group Flow (vph)	342	1891	86	87	2139	0	484	92	22	43	5	4
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	30.6	117.0	117.0	11.8	98.2		32.2	23.0	23.0	10.4	7.2	7.2
Effective Green, g (s)	32.6	119.0	119.0	13.8	100.2		32.2	23.0	23.0	10.4	7.2	7.2
Actuated g/C Ratio	0.18	0.66	0.66	0.08	0.56		0.18	0.13	0.13	0.06	0.04	0.04
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	1.5	3.0		1.5	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	320	3361	1046	135	2810		243	238	202	83	74	63
v/s Ratio Prot	c0.19	0.37		0.05	c0.42		c0.21	0.05		0.01	0.00	
v/s Ratio Perm			0.05				c0.15		0.01	0.02		0.00
v/c Ratio	1.07	0.56	0.08	0.64	0.76		1.99	0.39	0.11	0.52	0.07	0.06
Uniform Delay, d1	73.7	16.5	10.9	80.7	30.7		71.7	72.0	69.4	81.9	83.2	83.1
Progression Factor	0.97	0.84	0.77	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	64.8	0.6	0.1	7.7	2.0		460.7	0.4	0.1	2.3	0.1	0.1
Delay (s)	136.5	14.3	8.6	88.4	32.7		532.4	72.4	69.5	84.2	83.3	83.3
Level of Service	F	B	A	F	C		F	E	E	F	F	F
Approach Delay (s)		31.7			34.9			368.6			83.6	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	80.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	408	1565	207	370	1125	625	217	734	712	522	609	326
v/c Ratio	0.91	1.01	0.27	0.60	0.91	0.67	0.74	1.07	1.02	1.04	0.68	0.25
Control Delay	76.3	68.3	5.2	51.9	42.7	15.7	69.2	100.1	57.1	101.8	44.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.3	68.3	5.2	51.9	42.7	15.7	69.2	100.1	57.1	101.8	44.8	2.7
Queue Length 50th (ft)	163	~456	10	122	361	149	86	~331	~280	~225	224	38
Queue Length 95th (ft)	#259	#565	56	180	#513	267	#139	#455	#509	#336	289	59
Internal Link Dist (ft)		620			1001			569			457	
Turn Bay Length (ft)	280		500	550		600	350			300		200
Base Capacity (vph)	450	1542	775	615	1256	926	294	687	700	500	899	1299
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	1.01	0.27	0.60	0.90	0.67	0.74	1.07	1.02	1.04	0.68	0.25

Intersection Summary

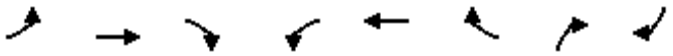
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	1440	190	340	1035	575	200	675	655	480	560	300
Future Volume (vph)	375	1440	190	340	1035	575	200	675	655	480	560	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	5.9	5.5	4.0	5.9	5.9	5.9	5.5	5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
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)	408	1565	207	370	1125	625	217	734	712	522	609	326
RTOR Reduction (vph)	0	0	113	0	0	93	0	0	105	0	0	12
Lane Group Flow (vph)	408	1565	94	370	1125	532	217	734	607	522	609	314
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	custom
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	8
Permitted Phases			6			2			4			1 2
Actuated Green, G (s)	13.8	34.4	42.7	19.5	40.1	55.6	8.3	21.3	40.8	15.5	28.5	88.4
Effective Green, g (s)	15.8	36.4	46.7	21.5	42.1	59.6	10.3	23.3	44.8	17.5	30.5	88.4
Actuated g/C Ratio	0.13	0.30	0.39	0.18	0.35	0.50	0.09	0.19	0.37	0.15	0.25	0.74
Clearance Time (s)	7.5	6.0	7.9	7.5	6.0	7.9	7.9	7.9	7.5	7.9	7.9	7.9
Vehicle Extension (s)	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0
Lane Grp Cap (vph)	452	1542	616	615	1241	864	294	687	590	500	899	1243
v/s Ratio Prot	0.12	c0.31	0.01	0.11	c0.32	0.09	0.06	c0.21	0.18	c0.15	0.17	0.06
v/s Ratio Perm			0.05			0.25			0.20			0.13
v/c Ratio	0.90	1.01	0.15	0.60	0.91	0.62	0.74	1.07	1.03	1.04	0.68	0.25
Uniform Delay, d1	51.3	41.8	23.8	45.3	37.1	21.9	53.5	48.4	37.6	51.2	40.3	5.1
Progression Factor	1.00	1.00	1.00	1.05	0.86	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	20.6	26.7	0.0	1.0	10.4	0.8	8.1	54.1	44.8	52.2	2.0	0.1
Delay (s)	71.9	68.5	23.8	48.6	42.4	19.5	61.6	102.4	82.4	103.5	42.4	5.2
Level of Service	E	E	C	D	D	B	E	F	F	F	D	A
Approach Delay (s)		64.9			36.8			88.5			55.9	
Approach LOS		E			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	60.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

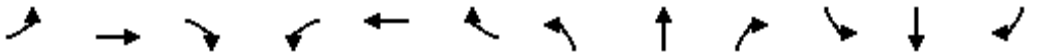
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBR	SBR
Lane Group Flow (vph)	397	1804	598	446	1902	386	179	217
v/c Ratio	0.62	0.54	0.56	0.62	0.44	0.37	0.23	0.40
Control Delay	25.1	3.3	3.2	25.5	6.4	5.6	6.1	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.1	3.3	3.2	25.5	6.4	5.6	6.1	9.6
Queue Length 50th (ft)	74	49	35	68	114	56	2	7
Queue Length 95th (ft)	m73	m48	m34	m94	109	m76	20	29
Internal Link Dist (ft)		900			925			
Turn Bay Length (ft)	460		400	750		500	120	
Base Capacity (vph)	673	3341	1064	743	4340	1057	795	575
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.54	0.56	0.60	0.44	0.37	0.23	0.38

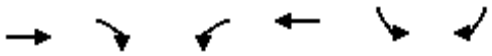
Intersection Summary

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



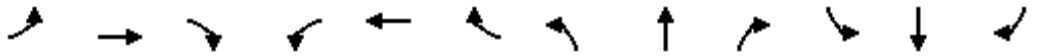
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	365	1660	550	410	1750	355	0	0	165	0	0	200
Future Volume (vph)	365	1660	550	410	1750	355	0	0	165	0	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0			6.0			6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00			0.76			0.76
Frt	1.00	1.00	0.85	1.00	1.00	0.85			0.85			0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00			1.00			1.00
Satd. Flow (prot)	3367	5085	1583	3433	6408	1524			3610			2630
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00			1.00			1.00
Satd. Flow (perm)	3367	5085	1583	3433	6408	1524			3610			2630
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)	397	1804	598	446	1902	386	0	0	179	0	0	217
RTOR Reduction (vph)	0	0	24	0	0	25	0	0	135	0	0	138
Lane Group Flow (vph)	397	1804	574	446	1902	361	0	0	44	0	0	79
Heavy Vehicles (%)	4%	2%	2%	2%	2%	6%	2%	2%	2%	18%	2%	40%
Turn Type	Prot	NA	Perm	Prot	NA	Perm			Over			Over
Protected Phases	1	6		5	2				5			1
Permitted Phases			6			2						
Actuated Green, G (s)	9.4	37.4	37.4	10.6	38.6	38.6			10.6			9.4
Effective Green, g (s)	11.4	39.4	39.4	12.6	40.6	40.6			10.6			9.4
Actuated g/C Ratio	0.19	0.66	0.66	0.21	0.68	0.68			0.18			0.16
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0			6.0			6.0
Vehicle Extension (s)	1.5	3.0	3.0	2.5	3.0	3.0			2.5			1.5
Lane Grp Cap (vph)	639	3339	1039	720	4336	1031			637			412
v/s Ratio Prot	0.12	0.35		c0.13	0.30				0.01			0.03
v/s Ratio Perm			c0.36			0.24						
v/c Ratio	0.62	0.54	0.55	0.62	0.44	0.35			0.07			0.19
Uniform Delay, d1	22.3	5.5	5.5	21.5	4.5	4.1			20.6			22.0
Progression Factor	1.11	0.58	0.60	1.04	1.35	1.44			1.00			1.00
Incremental Delay, d2	0.1	0.0	0.1	1.0	0.2	0.7			0.0			0.1
Delay (s)	24.8	3.2	3.4	23.4	6.3	6.6			20.6			22.1
Level of Service	C	A	A	C	A	A			C			C
Approach Delay (s)		6.3			9.1			20.6			22.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1565	405	847	2125	453	589
v/c Ratio	0.84	0.26	0.64	0.63	0.50	0.80
Control Delay	31.3	0.3	48.0	5.3	39.8	50.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.3	0.3	48.0	5.3	39.8	50.9
Queue Length 50th (ft)	231	0	304	117	154	242
Queue Length 95th (ft)	257	0	380	120	206	319
Internal Link Dist (ft)	925			635		
Turn Bay Length (ft)		500	305		500	500
Base Capacity (vph)	1860	1583	1327	3368	904	733
Starvation Cap Reductn	0	0	0	87	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.26	0.64	0.65	0.50	0.80

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1440	385	805	1955	0	0	0	0	430	0	560
Future Volume (vph)	0	1440	385	805	1955	0	0	0	0	430	0	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	2.0	4.0	4.5					4.4		4.4
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		0.88
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7544	1583	3433	5085					3433		2787
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7544	1583	3433	5085					3433		2787
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	1565	405	847	2125	0	0	0	0	453	0	589
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1565	405	847	2125	0	0	0	0	453	0	589
Turn Type		NA	Free	Prot	NA					Prot		Perm
Protected Phases		6		5 4	2 4					3		
Permitted Phases			Free									3
Actuated Green, G (s)		27.6	120.0	44.4	77.5					29.6		29.6
Effective Green, g (s)		29.6	120.0	42.0	75.1					31.6		31.6
Actuated g/C Ratio		0.25	1.00	0.35	0.63					0.26		0.26
Clearance Time (s)		6.0								6.4		6.4
Vehicle Extension (s)		3.0								2.0		2.0
Lane Grp Cap (vph)		1860	1583	1201	3182					904		733
v/s Ratio Prot		c0.21		c0.25	c0.42					0.13		
v/s Ratio Perm			0.26									c0.21
v/c Ratio		0.84	0.26	0.71	0.67					0.50		0.80
Uniform Delay, d1		43.0	0.0	33.7	14.4					37.5		41.3
Progression Factor		0.63	1.00	1.52	0.37					1.00		1.00
Incremental Delay, d2		4.2	0.3	1.7	0.5					0.2		6.0
Delay (s)		31.2	0.3	52.7	5.9					37.7		47.3
Level of Service		C	A	D	A					D		D
Approach Delay (s)		24.9			19.2			0.0			43.1	
Approach LOS		C			B			A			D	

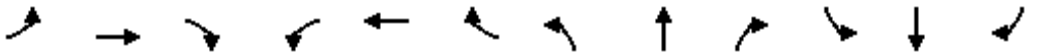
Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1565	453	2217	305	758	495
v/c Ratio	0.56	0.16	0.43	0.19	0.61	0.55
Control Delay	3.0	0.1	7.6	0.1	42.2	41.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	0.1	7.6	0.1	42.2	41.8
Queue Length 50th (ft)	37	0	212	0	184	146
Queue Length 95th (ft)	26	m0	m183	m0	228	193
Internal Link Dist (ft)	635		630			
Turn Bay Length (ft)		700			410	430
Base Capacity (vph)	2779	2787	5098	1583	1247	902
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.16	0.43	0.19	0.61	0.55

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1440	430	0	2040	290	720	0	470	0	0	0
Future Volume (vph)	0	1440	430	0	2040	290	720	0	470	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	2.0		4.5	2.0	4.4		4.4			
Lane Util. Factor		0.91	0.88		0.81	1.00	0.94		0.76			
Frt		1.00	0.85		1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085	2787		7544	1583	4990		3610			
Flt Permitted		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085	2787		7544	1583	4990		3610			
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	1565	453	0	2217	305	758	0	495	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1565	453	0	2217	305	758	0	495	0	0	0
Turn Type		NA	Free		NA	Free	Prot		Prot			
Protected Phases		6 3			2 3		4		4			
Permitted Phases			Free			Free						
Actuated Green, G (s)		63.2	120.0		79.2	120.0	28.0		28.0			
Effective Green, g (s)		65.2	120.0		81.2	120.0	30.0		30.0			
Actuated g/C Ratio		0.54	1.00		0.68	1.00	0.25		0.25			
Clearance Time (s)							6.4		6.4			
Vehicle Extension (s)							3.5		3.5			
Lane Grp Cap (vph)		2762	2787		5104	1583	1247		902			
v/s Ratio Prot		c0.31			c0.29		c0.15		0.14			
v/s Ratio Perm			0.16			0.19						
v/c Ratio		0.57	0.16		0.43	0.19	0.61		0.55			
Uniform Delay, d1		18.1	0.0		8.9	0.0	39.8		39.1			
Progression Factor		0.14	1.00		0.84	1.00	1.00		1.00			
Incremental Delay, d2		0.1	0.1		0.0	0.1	0.9		0.8			
Delay (s)		2.6	0.1		7.4	0.1	40.7		39.9			
Level of Service		A	A		A	A	D		D			
Approach Delay (s)		2.0			6.6			40.4			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.8
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

5: Research Park Boulevard/SW Natura Boulevard & SR 869/SW 10th Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	277	1457	342	228	1728	103	380	212	196	266	217	424
v/c Ratio	0.84	0.71	0.41	0.65	0.83	0.14	0.96	0.30	0.42	0.61	0.67	0.96
Control Delay	60.9	24.9	10.5	61.9	36.7	2.1	69.0	42.7	8.3	34.5	56.5	60.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	24.9	10.5	61.9	36.7	2.1	69.0	42.7	8.3	34.5	56.5	60.2
Queue Length 50th (ft)	108	340	97	90	442	0	228	74	0	147	156	184
Queue Length 95th (ft)	#181	400	179	#144	509	19	#387	113	61	222	241	#385
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	200		370	200		200	260		260	170		170
Base Capacity (vph)	331	2056	843	349	2070	724	396	697	471	466	346	456
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.71	0.41	0.65	0.83	0.14	0.96	0.30	0.42	0.57	0.63	0.93

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	1340	315	210	1590	95	350	195	180	245	200	390
Future Volume (vph)	255	1340	315	210	1590	95	350	195	180	245	200	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	4.4	4.4	4.4	5.7	5.7	5.7	5.7	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	1770	3539	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.35	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	648	3539	1583	1153	1863	1583
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)	277	1457	342	228	1728	103	380	212	196	266	217	424
RTOR Reduction (vph)	0	0	205	0	0	61	0	0	157	0	0	164
Lane Group Flow (vph)	277	1457	137	228	1728	42	380	212	39	266	217	260
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2	4		4	8		8
Actuated Green, G (s)	9.6	46.1	46.1	10.3	46.8	46.8	42.0	23.7	23.7	36.8	21.1	21.1
Effective Green, g (s)	11.6	48.1	48.1	12.3	48.8	48.8	42.0	23.7	23.7	36.8	21.1	21.1
Actuated g/C Ratio	0.10	0.40	0.40	0.10	0.41	0.41	0.35	0.20	0.20	0.31	0.18	0.18
Clearance Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	5.7	5.7	5.7	5.7	5.7	5.7
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	331	2038	634	351	2067	643	397	698	312	434	327	278
v/s Ratio Prot	c0.08	0.29		0.07	c0.34		c0.15	0.06		0.08	0.12	
v/s Ratio Perm			0.09			0.03	c0.19		0.02	0.11		0.16
v/c Ratio	0.84	0.71	0.22	0.65	0.84	0.07	0.96	0.30	0.12	0.61	0.66	0.94
Uniform Delay, d1	53.3	30.2	23.6	51.8	32.0	21.7	34.5	41.1	39.6	33.9	46.1	48.8
Progression Factor	0.78	0.76	3.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.7	1.8	0.7	3.1	4.2	0.2	33.6	0.1	0.1	1.8	3.9	36.4
Delay (s)	55.1	24.8	87.8	54.9	36.2	21.9	68.1	41.2	39.7	35.8	50.0	85.1
Level of Service	E	C	F	D	D	C	E	D	D	D	D	F
Approach Delay (s)		39.2			37.6			53.8			62.3	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2549	174	1946	158	207
v/c Ratio	0.60	0.79	0.51	0.69	0.54
Control Delay	17.9	77.9	1.9	64.9	11.3
Queue Delay	0.0	1.5	0.1	0.0	0.0
Total Delay	17.9	79.4	2.0	64.9	11.3
Queue Length 50th (ft)	297	103	34	119	0
Queue Length 95th (ft)	376	#237	32	181	65
Internal Link Dist (ft)	575		175	531	
Turn Bay Length (ft)					
Base Capacity (vph)	4279	221	3791	545	631
Starvation Cap Reductn	0	7	458	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.81	0.58	0.29	0.33

Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2230	115	160	1790	145	190
Future Volume (vph)	2230	115	160	1790	145	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	9.0	9.0
Lane Util. Factor	0.81		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	7489		1770	5085	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	7489		1770	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2424	125	174	1946	158	207
RTOR Reduction (vph)	5	0	0	0	0	180
Lane Group Flow (vph)	2544	0	174	1946	158	27
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2 3		1	1 2 3	4	
Permitted Phases					4	4
Actuated Green, G (s)	66.5		13.0	87.5	15.5	15.5
Effective Green, g (s)	68.5		15.0	89.5	15.5	15.5
Actuated g/C Ratio	0.57		0.12	0.75	0.13	0.13
Clearance Time (s)			8.0		9.0	9.0
Vehicle Extension (s)			1.5		2.0	2.0
Lane Grp Cap (vph)	4274		221	3792	228	204
v/s Ratio Prot	c0.34		c0.10	0.38	c0.09	
v/s Ratio Perm						0.02
v/c Ratio	0.60		0.79	0.51	0.69	0.13
Uniform Delay, d1	16.7		51.0	6.3	50.0	46.3
Progression Factor	1.00		1.09	0.22	1.00	1.00
Incremental Delay, d2	0.1		14.1	0.0	7.1	0.1
Delay (s)	16.9		69.5	1.4	57.1	46.4
Level of Service	B		E	A	E	D
Approach Delay (s)	16.9			7.0	51.0	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	103	2527	1940	92	272	179
v/c Ratio	0.78	0.53	0.49	0.09	0.61	0.53
Control Delay	70.9	2.7	10.6	1.2	54.8	15.9
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	70.9	2.7	10.6	1.2	54.8	15.9
Queue Length 50th (ft)	79	29	222	1	104	17
Queue Length 95th (ft)	m#173	46	278	m5	140	81
Internal Link Dist (ft)		175	1004		271	
Turn Bay Length (ft)				450		
Base Capacity (vph)	132	4778	3977	1017	1058	595
Starvation Cap Reductn	0	476	0	0	0	0
Spillback Cap Reductn	0	0	39	0	0	5
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.59	0.49	0.09	0.26	0.30

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	95	2325	1785	85	250	165
Future Volume (vph)	95	2325	1785	85	250	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	9.0	9.0
Lane Util. Factor	1.00	0.86	0.86	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	6408	6408	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	6408	6408	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	103	2527	1940	92	272	179
RTOR Reduction (vph)	0	0	0	35	0	135
Lane Group Flow (vph)	103	2527	1940	57	272	44
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	3	1 2 3	1 2		4	
Permitted Phases				1 2		4
Actuated Green, G (s)	7.0	87.5	72.5	72.5	15.5	15.5
Effective Green, g (s)	9.0	89.5	74.5	74.5	15.5	15.5
Actuated g/C Ratio	0.08	0.75	0.62	0.62	0.13	0.13
Clearance Time (s)	8.0				9.0	9.0
Vehicle Extension (s)	1.5				2.0	2.0
Lane Grp Cap (vph)	132	4779	3978	982	443	204
v/s Ratio Prot	c0.06	c0.39	0.30		c0.08	
v/s Ratio Perm				0.04		0.03
v/c Ratio	0.78	0.53	0.49	0.06	0.61	0.22
Uniform Delay, d1	54.5	6.4	12.4	8.9	49.4	46.8
Progression Factor	0.71	0.34	0.79	0.47	1.00	1.00
Incremental Delay, d2	19.9	0.0	0.0	0.0	1.8	0.2
Delay (s)	58.4	2.2	9.8	4.2	51.2	47.0
Level of Service	E	A	A	A	D	D
Approach Delay (s)		4.4	9.5		49.5	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1701	1063	1457	505	558
v/c Ratio	0.47	0.67	0.51	0.58	0.79
Control Delay	6.0	10.4	7.7	22.7	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	10.4	7.7	22.7	30.9
Queue Length 50th (ft)	84	362	135	81	106
Queue Length 95th (ft)	157	466	160	123	#182
Internal Link Dist (ft)	1004		259		
Turn Bay Length (ft)		250			
Base Capacity (vph)	3609	1583	2864	886	719
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.67	0.51	0.57	0.78

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	1565	1010	0	1340	0	480	0	530	0	0
Future Volume (vph)	0	1565	1010	0	1340	0	480	0	530	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	2.0		5.5		5.5		5.5		
Lane Util. Factor		0.86	1.00		0.91		0.97		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		6408	1583		5085		3433		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		6408	1583		5085		3433		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1701	1063	0	1457	0	505	0	558	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1701	1063	0	1457	0	505	0	558	0	0
Turn Type		NA	Free		NA		Prot		Prot		
Protected Phases		6			2		3		3		
Permitted Phases			Free								
Actuated Green, G (s)		31.8	60.0		31.8		13.2		13.2		
Effective Green, g (s)		33.8	60.0		33.8		15.2		15.2		
Actuated g/C Ratio		0.56	1.00		0.56		0.25		0.25		
Clearance Time (s)		7.5			7.5		7.5		7.5		
Vehicle Extension (s)		3.0			3.0		2.5		2.5		
Lane Grp Cap (vph)		3609	1583		2864		869		706		
v/s Ratio Prot		0.27			0.29		0.15		0.20		
v/s Ratio Perm			c0.67								
v/c Ratio		0.47	0.67		0.51		0.58		0.79		
Uniform Delay, d1		7.8	0.0		8.0		19.6		20.9		
Progression Factor		0.72	1.00		0.89		1.00		1.00		
Incremental Delay, d2		0.4	2.0		0.5		0.8		5.8		
Delay (s)		6.0	2.0		7.6		20.4		26.7		
Level of Service		A	A		A		C		C		
Approach Delay (s)		4.5			7.6			23.7		0.0	
Approach LOS		A			A			C		A	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL2	NBR
Lane Group Flow (vph)	1266	1913	600	579	442
v/c Ratio	0.44	0.66	0.38	0.68	0.64
Control Delay	6.5	7.2	0.2	25.0	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	7.2	0.2	25.0	24.9
Queue Length 50th (ft)	111	159	0	95	79
Queue Length 95th (ft)	75	m157	m0	143	126
Internal Link Dist (ft)	270	1155			
Turn Bay Length (ft)			250		
Base Capacity (vph)	2895	2895	1583	886	719
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.66	0.38	0.65	0.61

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	1165	0	0	1760	570	550	0	420	0	0
Future Volume (vph)	0	1165	0	0	1760	570	550	0	420	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5	2.0	5.5		5.5		
Lane Util. Factor		0.91			0.91	1.00	0.97		0.88		
Frt		1.00			1.00	0.85	1.00		0.85		
Flt Protected		1.00			1.00	1.00	0.95		1.00		
Satd. Flow (prot)		5085			5085	1583	3433		2787		
Flt Permitted		1.00			1.00	1.00	0.95		1.00		
Satd. Flow (perm)		5085			5085	1583	3433		2787		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1266	0	0	1913	600	579	0	442	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1266	0	0	1913	600	579	0	442	0	0
Turn Type		NA			NA	Free	Prot		Prot		
Protected Phases		6			2		4		4		
Permitted Phases						Free					
Actuated Green, G (s)		32.2			32.2	60.0	12.8		12.8		
Effective Green, g (s)		34.2			34.2	60.0	14.8		14.8		
Actuated g/C Ratio		0.57			0.57	1.00	0.25		0.25		
Clearance Time (s)		7.5			7.5		7.5		7.5		
Vehicle Extension (s)		3.0			3.0		2.5		2.5		
Lane Grp Cap (vph)		2898			2898	1583	846		687		
v/s Ratio Prot		0.25			c0.38		c0.17		0.16		
v/s Ratio Perm						0.38					
v/c Ratio		0.44			0.66	0.38	0.68		0.64		
Uniform Delay, d1		7.4			8.9	0.0	20.5		20.2		
Progression Factor		0.80			0.75	1.00	1.00		1.00		
Incremental Delay, d2		0.4			0.3	0.2	2.1		1.8		
Delay (s)		6.3			7.0	0.2	22.6		22.1		
Level of Service		A			A	A	C		C		
Approach Delay (s)		6.3			5.4			22.4		0.0	
Approach LOS		A			A			C		A	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

5: NE 3rd Ave & Sample Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	424	1299	60	1804	250	228	82	109	223	571
v/c Ratio	1.00	0.59	0.48	0.98	0.72	0.45	0.15	0.32	0.45	1.06
Control Delay	88.0	20.3	66.9	54.9	44.6	39.3	0.6	28.9	40.3	87.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.0	20.3	66.9	54.9	44.6	39.3	0.6	28.9	40.3	87.5
Queue Length 50th (ft)	168	247	45	500	140	146	0	56	144	~388
Queue Length 95th (ft)	#280	299	91	#619	#220	225	0	98	222	#611
Internal Link Dist (ft)		1155		834		912			742	
Turn Bay Length (ft)	550		490		250		225	200		
Base Capacity (vph)	425	2194	131	1836	345	509	544	338	492	537
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.59	0.46	0.98	0.72	0.45	0.15	0.32	0.45	1.06

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	390	1050	145	55	1575	85	230	210	75	100	205	525
Future Volume (vph)	390	1050	145	55	1575	85	230	210	75	100	205	525
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		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	4944		1752	4997		1752	1845	1568	1752	1845	1568
Flt Permitted	0.95	1.00		0.95	1.00		0.48	1.00	1.00	0.51	1.00	1.00
Satd. Flow (perm)	3400	4944		1752	4997		882	1845	1568	941	1845	1568
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)	424	1141	158	60	1712	92	250	228	82	109	223	571
RTOR Reduction (vph)	0	15	0	0	5	0	0	0	59	0	0	120
Lane Group Flow (vph)	424	1284	0	60	1799	0	250	228	23	109	223	451
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases							4		4	8		8
Actuated Green, G (s)	13.0	49.5		5.5	42.0		40.1	33.1	33.1	37.9	32.0	32.0
Effective Green, g (s)	15.0	51.5		7.5	44.0		40.1	33.1	33.1	37.9	32.0	32.0
Actuated g/C Ratio	0.12	0.43		0.06	0.37		0.33	0.28	0.28	0.32	0.27	0.27
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	3.0		1.5	3.0		1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	425	2121		109	1832		345	508	432	337	492	418
v/s Ratio Prot	c0.12	0.26		0.03	c0.36		c0.04	0.12		0.02	0.12	
v/s Ratio Perm							0.20		0.01	0.09		c0.29
v/c Ratio	1.00	0.61		0.55	0.98		0.72	0.45	0.05	0.32	0.45	1.08
Uniform Delay, d1	52.5	26.4		54.6	37.6		35.1	35.9	31.9	30.1	36.7	44.0
Progression Factor	0.89	0.75		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.3	1.2		3.4	17.2		6.3	0.2	0.0	0.2	0.2	67.2
Delay (s)	86.8	21.0		58.0	54.8		41.3	36.1	31.9	30.3	36.9	111.2
Level of Service	F	C		E	D		D	D	C	C	D	F
Approach Delay (s)		37.2			54.9			37.8			83.1	
Approach LOS		D			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: SW 12th Avenue & Hillsboro Bvd

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	49	2261	299	2266	65	250	11	402	274	281	359
v/c Ratio	0.56	0.91	1.16	0.86	0.05	0.70	0.06	1.04	0.91	0.91	0.86
Control Delay	88.5	40.2	159.9	21.7	0.2	70.9	55.1	99.4	88.6	89.3	46.6
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.5	40.2	159.9	22.4	0.2	70.9	55.1	99.4	88.6	89.3	46.6
Queue Length 50th (ft)	44	698	~169	246	0	115	9	~337	255	263	172
Queue Length 95th (ft)	#98	#873	m#258	538	m1	157	29	#506	#415	#425	#330
Internal Link Dist (ft)		580		548			436			396	
Turn Bay Length (ft)	450		375		350	225		250	200		
Base Capacity (vph)	88	2475	257	2623	1213	784	425	387	324	330	419
Starvation Cap Reductn	0	0	0	121	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.91	1.16	0.91	0.05	0.32	0.03	1.04	0.85	0.85	0.86

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	1935	145	275	2085	60	230	10	370	420	90	330
Future Volume (vph)	45	1935	145	275	2085	60	230	10	370	420	90	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.0	6.0	6.0	6.5	6.0	6.0	6.5
Lane Util. Factor	1.00	0.91		0.97	0.91	1.00	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1770	5032		3433	5085	1583	3433	1863	1583	1681	1714	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (perm)	1770	5032		3433	5085	1583	3433	1863	1583	1681	1714	1583
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)	49	2103	158	299	2266	65	250	11	402	457	98	359
RTOR Reduction (vph)	0	5	0	0	0	19	0	0	62	0	0	83
Lane Group Flow (vph)	49	2256	0	299	2266	46	250	11	340	274	281	276
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	1	6		5	2	3	4	4	5	3	3	1
Permitted Phases						2			4			3
Actuated Green, G (s)	5.0	66.7		8.5	70.2	95.4	14.6	14.6	23.1	25.2	25.2	30.2
Effective Green, g (s)	7.0	68.7		10.5	72.2	99.4	14.6	14.6	23.1	25.2	25.2	30.2
Actuated g/C Ratio	0.05	0.49		0.08	0.52	0.71	0.10	0.10	0.17	0.18	0.18	0.22
Clearance Time (s)	6.5	6.5		6.5	6.5	6.0	6.0	6.0	6.5	6.0	6.0	6.5
Vehicle Extension (s)	1.5	3.0		2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5
Lane Grp Cap (vph)	88	2469		257	2622	1123	358	194	261	302	308	341
v/s Ratio Prot	0.03	c0.45		0.09	c0.45	0.01	0.07	0.01	c0.08	0.16	c0.16	0.03
v/s Ratio Perm						0.02			0.14			0.15
v/c Ratio	0.56	0.91		1.16	0.86	0.04	0.70	0.06	1.30	0.91	0.91	0.81
Uniform Delay, d1	65.0	32.9		64.8	29.6	6.1	60.6	56.5	58.5	56.3	56.3	52.2
Progression Factor	1.00	1.00		1.13	0.60	0.18	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	6.6		99.5	2.9	0.0	4.7	0.0	161.6	28.4	29.3	12.5
Delay (s)	69.3	39.5		172.4	20.7	1.1	65.3	56.5	220.1	84.7	85.6	64.7
Level of Service	E	D		F	C	A	E	E	F	F	F	E
Approach Delay (s)		40.2			37.5			159.0			77.1	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	56.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	2092	842	1967	684	642
v/c Ratio	0.41	0.53	0.78	0.88	0.53
Control Delay	0.1	0.7	32.9	50.0	30.0
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	0.1	0.7	33.1	50.0	30.0
Queue Length 50th (ft)	0	0	637	549	233
Queue Length 95th (ft)	m0	m0	704	693	277
Internal Link Dist (ft)	548		319		
Turn Bay Length (ft)		150			
Base Capacity (vph)	5085	1583	2535	853	1343
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	110	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.41	0.53	0.81	0.80	0.48

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	1925	800	0	1810	0	650	0	610	0	0
Future Volume (vph)	0	1925	800	0	1810	0	650	0	610	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		4.5		4.5		4.5		
Lane Util. Factor		0.91	1.00		0.91		1.00		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		5085	1583		5085		1770		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		5085	1583		5085		1770		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	2092	842	0	1967	0	684	0	642	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2092	842	0	1967	0	684	0	642	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm		NA		Prot		Prot		
Protected Phases		Free!			2		8!		3		
Permitted Phases			Free								
Actuated Green, G (s)		140.0	140.0		67.8		59.2		59.2		
Effective Green, g (s)		140.0	140.0		69.8		61.2		61.2		
Actuated g/C Ratio		1.00	1.00		0.50		0.44		0.44		
Clearance Time (s)					6.5		6.5		6.5		
Vehicle Extension (s)					3.0		2.5		2.5		
Lane Grp Cap (vph)		5085	1583		2535		773		1218		
v/s Ratio Prot		0.41			c0.39		c0.39		0.23		
v/s Ratio Perm			0.53								
v/c Ratio		0.41	0.53		0.78		0.88		0.53		
Uniform Delay, d1		0.0	0.0		28.7		36.2		28.8		
Progression Factor		1.00	1.00		1.04		1.00		1.00		
Incremental Delay, d2		0.1	0.5		1.7		11.7		0.3		
Delay (s)		0.1	0.5		31.6		47.9		29.1		
Level of Service		A	A		C		D		C		
Approach Delay (s)		0.2			31.6			38.8		0.0	
Approach LOS		A			C			D		A	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	2038	2315	804	620	789
v/c Ratio	0.70	0.79	0.51	0.37	0.82
Control Delay	11.1	11.9	0.8	18.4	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	11.9	0.8	18.4	28.2
Queue Length 50th (ft)	235	246	0	69	159
Queue Length 95th (ft)	263	m327	m0	97	#240
Internal Link Dist (ft)	286	371			
Turn Bay Length (ft)			250	350	350
Base Capacity (vph)	2920	2920	1568	1710	991
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.79	0.51	0.36	0.80

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑	↱	↰↰↰		↱↱			
Traffic Volume (vph)	0	1875	0	0	2130	740	570	0	750	0	0	0
Future Volume (vph)	0	1875	0	0	2130	740	570	0	750	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	2.0	2.0		2.0			
Lane Util. Factor		0.91			0.91	1.00	0.94		0.88			
Frt		1.00			1.00	0.85	1.00		0.85			
Flt Protected		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085			5085	1568	4990		2787			
Flt Permitted		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085			5085	1568	4990		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	2038	0	0	2315	804	620	0	789	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	2038	0	0	2315	804	620	0	752	0	0	0
Heavy Vehicles (%)	3%	2%	2%	2%	2%	3%	2%	3%	2%	3%	3%	3%
Turn Type		NA			NA	Free	Prot		Prot			
Protected Phases		6			2		4		4			
Permitted Phases						Free						
Actuated Green, G (s)		38.2			38.2	70.0	21.3		21.3			
Effective Green, g (s)		40.2			40.2	70.0	23.3		23.3			
Actuated g/C Ratio		0.57			0.57	1.00	0.33		0.33			
Clearance Time (s)		6.5			6.5		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		2920			2920	1568	1660		927			
v/s Ratio Prot		0.40			c0.46		0.12		c0.27			
v/s Ratio Perm						0.51						
v/c Ratio		0.70			0.79	0.51	0.37		0.81			
Uniform Delay, d1		10.6			11.6	0.0	17.8		21.3			
Progression Factor		0.91			0.90	1.00	1.00		1.00			
Incremental Delay, d2		1.2			1.1	0.6	0.1		5.5			
Delay (s)		10.9			11.6	0.6	17.9		26.8			
Level of Service		B			B	A	B		C			
Approach Delay (s)		10.9			8.8			22.9			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	103	2413	337	152	2505	315	11	141	136	54	337
v/c Ratio	0.92	0.86	0.36	1.00	0.86	1.08	0.03	0.37	0.43	0.16	0.88
Control Delay	114.7	25.0	9.1	135.8	30.2	125.0	43.4	9.7	46.2	46.5	57.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	114.7	25.0	9.1	135.8	30.2	125.0	43.4	9.7	46.2	46.5	57.8
Queue Length 50th (ft)	91	569	94	141	676	~286	8	2	100	42	197
Queue Length 95th (ft)	m#162	#919	m176	#290	#954	#351	25	56	144	75	291
Internal Link Dist (ft)		660			631		513			403	
Turn Bay Length (ft)	300		150	100		125					340
Base Capacity (vph)	112	2799	928	152	2910	291	492	520	313	505	520
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.86	0.36	1.00	0.86	1.08	0.02	0.27	0.43	0.11	0.65

Intersection Summary

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

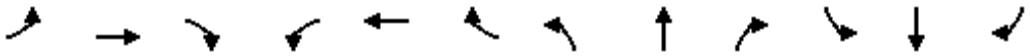
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	2220	310	140	2270	35	290	10	130	125	50	310
Future Volume (vph)	95	2220	310	140	2270	35	290	10	130	125	50	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5074		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.72	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5074		1345	1863	1583	1341	1863	1583
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)	103	2413	337	152	2467	38	315	11	141	136	54	337
RTOR Reduction (vph)	0	0	57	0	1	0	0	0	115	0	0	103
Lane Group Flow (vph)	103	2413	280	152	2504	0	315	11	26	136	54	234
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6				4		4	8		8
Actuated Green, G (s)	6.9	75.1	75.1	10.1	78.3		28.8	23.8	23.8	30.8	24.8	24.8
Effective Green, g (s)	8.9	77.1	77.1	12.1	80.3		28.8	23.8	23.8	30.8	24.8	24.8
Actuated g/C Ratio	0.06	0.55	0.55	0.09	0.57		0.21	0.17	0.17	0.22	0.18	0.18
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	2.0	3.0	3.0	1.5	3.0		1.5	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	112	2800	871	152	2910		291	316	269	313	330	280
v/s Ratio Prot	0.06	0.47		c0.09	c0.49		c0.04	0.01		0.02	0.03	
v/s Ratio Perm			0.18				c0.18		0.02	0.08		0.15
v/c Ratio	0.92	0.86	0.32	1.00	0.86		1.08	0.03	0.10	0.43	0.16	0.84
Uniform Delay, d1	65.2	26.9	17.2	64.0	25.1		54.9	48.5	49.0	46.6	48.8	55.6
Progression Factor	0.98	0.78	0.70	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.1	2.6	0.7	73.0	3.6		76.5	0.0	0.1	0.4	0.1	18.3
Delay (s)	110.0	23.5	12.6	136.9	28.7		131.4	48.5	49.1	46.9	48.9	73.9
Level of Service	F	C	B	F	C		F	D	D	D	D	E
Approach Delay (s)		25.4			34.9			104.6			64.4	
Approach LOS		C			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	380	1424	207	527	1755	587	277	560	435	478	832	696
v/c Ratio	1.16	0.81	0.25	0.80	1.12	0.57	1.07	1.05	0.66	1.04	1.12	0.53
Control Delay	147.5	39.8	4.5	47.8	89.2	10.2	126.6	102.0	16.5	102.9	116.3	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	147.5	39.8	4.5	47.8	89.2	10.2	126.6	102.0	16.5	102.9	116.3	4.6
Queue Length 50th (ft)	~178	360	9	165	~824	185	~122	~248	109	~205	~392	117
Queue Length 95th (ft)	#278	420	52	#278	#946	263	#210	#364	184	#313	#520	173
Internal Link Dist (ft)		620			1001			569			457	
Turn Bay Length (ft)	280		500	550		600	350			300		200
Base Capacity (vph)	328	1796	822	655	1563	1036	260	533	655	460	740	1315
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.79	0.25	0.80	1.12	0.57	1.07	1.05	0.66	1.04	1.12	0.53

Intersection Summary

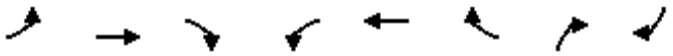
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	1310	190	485	1615	540	255	515	400	440	765	640
Future Volume (vph)	350	1310	190	485	1615	540	255	515	400	440	765	640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	5.9	5.5	4.0	5.9	5.9	5.9	5.5	5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
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)	380	1424	207	527	1755	587	277	560	435	478	832	696
RTOR Reduction (vph)	0	0	107	0	0	78	0	0	110	0	0	11
Lane Group Flow (vph)	380	1424	100	527	1755	509	277	560	325	478	832	685
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	custom
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	8
Permitted Phases			6			2			4			1 2
Actuated Green, G (s)	9.5	39.6	46.7	20.9	51.0	65.1	7.1	16.1	37.0	14.1	23.1	91.1
Effective Green, g (s)	11.5	41.6	50.7	22.9	53.0	69.1	9.1	18.1	41.0	16.1	25.1	89.6
Actuated g/C Ratio	0.10	0.35	0.42	0.19	0.44	0.58	0.08	0.15	0.34	0.13	0.21	0.75
Clearance Time (s)	7.5	6.0	7.9	7.5	6.0	7.9	7.9	7.9	7.5	7.9	7.9	7.9
Vehicle Extension (s)	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0
Lane Grp Cap (vph)	328	1762	746	655	1563	911	260	533	540	460	740	1181
v/s Ratio Prot	c0.11	0.28	0.01	0.15	c0.50	0.07	0.08	c0.16	0.11	0.14	c0.24	0.12
v/s Ratio Perm			0.05			0.25			0.09			0.31
v/c Ratio	1.16	0.81	0.13	0.80	1.12	0.56	1.07	1.05	0.60	1.04	1.12	0.58
Uniform Delay, d1	54.2	35.6	21.2	46.4	33.5	15.9	55.5	51.0	32.7	51.9	47.5	6.8
Progression Factor	1.00	1.00	1.00	0.87	0.82	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	100.0	4.1	0.0	4.4	61.3	0.3	74.2	53.0	1.3	52.5	72.8	0.7
Delay (s)	154.2	39.7	21.2	44.8	88.9	15.4	129.6	103.9	34.0	104.4	120.3	7.5
Level of Service	F	D	C	D	F	B	F	F	C	F	F	A
Approach Delay (s)		59.4			65.8			85.6			77.4	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	70.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBR	SBR
Lane Group Flow (vph)	103	2141	92	130	1853	114	674	1016
v/c Ratio	0.07	0.67	0.09	0.16	0.73	0.17	0.77	0.82
Control Delay	4.3	3.5	0.4	19.7	15.2	3.0	23.0	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	3.5	0.4	19.7	15.2	3.0	23.0	19.0
Queue Length 50th (ft)	5	72	0	20	157	3	73	109
Queue Length 95th (ft)	m8	m105	m0	m32	180	m12	116	#175
Internal Link Dist (ft)		900			925			
Turn Bay Length (ft)	460		400	750		500	120	
Base Capacity (vph)	1627	3179	1024	915	2541	673	968	1273
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.67	0.09	0.14	0.73	0.17	0.70	0.80

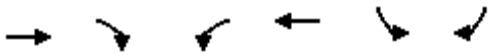
Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	1970	85	120	1705	105	0	0	620	0	0	935
Future Volume (vph)	95	1970	85	120	1705	105	0	0	620	0	0	935
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			6.0			6.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00			0.76			0.76
Frt	1.00	1.00	0.85	1.00	1.00	0.85			0.85			0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00			1.00			1.00
Satd. Flow (prot)	3367	5085	1583	3433	6408	1524			3610			2630
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00			1.00			1.00
Satd. Flow (perm)	3367	5085	1583	3433	6408	1524			3610			2630
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)	103	2141	92	130	1853	114	0	0	674	0	0	1016
RTOR Reduction (vph)	0	0	35	0	0	69	0	0	130	0	0	92
Lane Group Flow (vph)	103	2141	58	130	1853	45	0	0	544	0	0	924
Heavy Vehicles (%)	4%	2%	2%	2%	2%	6%	2%	2%	2%	18%	2%	40%
Turn Type	Prot	NA	Perm	Prot	NA	Perm			Over			Over
Protected Phases	1	6		5	2				5			1
Permitted Phases			6			2						
Actuated Green, G (s)	26.2	35.5	35.5	12.5	21.8	21.8			12.5			26.2
Effective Green, g (s)	28.2	37.5	37.5	14.5	23.8	23.8			12.5			26.2
Actuated g/C Ratio	0.47	0.62	0.62	0.24	0.40	0.40			0.21			0.44
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0			6.0			6.0
Vehicle Extension (s)	1.5	3.0	3.0	2.5	3.0	3.0			2.5			1.5
Lane Grp Cap (vph)	1582	3178	989	829	2541	604			752			1148
v/s Ratio Prot	0.03	0.42		0.04	c0.29				0.15			c0.35
v/s Ratio Perm			0.04			0.03						
v/c Ratio	0.07	0.67	0.06	0.16	0.73	0.07			0.72			0.80
Uniform Delay, d1	8.7	7.3	4.4	17.9	15.4	11.3			22.1			14.7
Progression Factor	0.51	0.37	0.29	1.10	0.87	1.13			1.00			1.00
Incremental Delay, d2	0.0	0.3	0.0	0.1	1.6	0.2			3.2			4.0
Delay (s)	4.4	3.0	1.3	19.9	15.0	12.9			25.4			18.6
Level of Service	A	A	A	B	B	B			C			B
Approach Delay (s)		3.0			15.2			25.4			18.6	
Approach LOS		A			B			C			B	

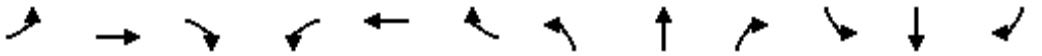
Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2152	642	811	1641	316	442
v/c Ratio	0.89	0.41	0.67	0.44	0.48	0.83
Control Delay	33.4	0.6	28.8	1.2	46.1	61.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.4	0.6	28.8	1.2	46.1	61.4
Queue Length 50th (ft)	325	0	234	18	113	189
Queue Length 95th (ft)	390	0	280	19	159	#276
Internal Link Dist (ft)	925			635		
Turn Bay Length (ft)		500	305		500	500
Base Capacity (vph)	2407	1583	1212	3737	655	531
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.41	0.67	0.44	0.48	0.83

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1980	610	770	1510	0	0	0	0	300	0	420
Future Volume (vph)	0	1980	610	770	1510	0	0	0	0	300	0	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	2.0	4.0	4.5					4.4		4.4
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		0.88
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7544	1583	3433	5085					3433		2787
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7544	1583	3433	5085					3433		2787
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	2152	642	811	1641	0	0	0	0	316	0	442
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2152	642	811	1641	0	0	0	0	316	0	442
Turn Type		NA	Free	Prot	NA					Prot		Perm
Protected Phases		6		5 4	2 4					3		
Permitted Phases			Free									3
Actuated Green, G (s)		36.3	120.0	38.0	86.2					20.9		20.9
Effective Green, g (s)		38.3	120.0	42.0	83.8					22.9		22.9
Actuated g/C Ratio		0.32	1.00	0.35	0.70					0.19		0.19
Clearance Time (s)		6.0								6.4		6.4
Vehicle Extension (s)		3.0								2.0		2.0
Lane Grp Cap (vph)		2407	1583	1201	3551					655		531
v/s Ratio Prot		c0.29		c0.24	0.32					0.09		
v/s Ratio Perm			0.41									c0.16
v/c Ratio		0.89	0.41	0.68	0.46					0.48		0.83
Uniform Delay, d1		38.9	0.0	33.2	8.1					43.3		46.7
Progression Factor		0.74	1.00	1.27	0.13					1.00		1.00
Incremental Delay, d2		4.2	0.6	1.4	0.1					0.2		10.3
Delay (s)		33.2	0.6	43.7	1.2					43.5		57.0
Level of Service		C	A	D	A					D		E
Approach Delay (s)		25.7			15.2			0.0			51.4	
Approach LOS		C			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1663	789	1837	337	621	716
v/c Ratio	0.64	0.28	0.36	0.21	0.50	0.79
Control Delay	5.7	0.1	5.0	0.2	40.2	49.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	0.1	5.0	0.2	40.2	49.6
Queue Length 50th (ft)	105	0	70	0	146	228
Queue Length 95th (ft)	154	m0	m81	m0	185	289
Internal Link Dist (ft)	635		630			
Turn Bay Length (ft)		700			410	430
Base Capacity (vph)	2610	2787	5098	1583	1247	902
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.28	0.36	0.21	0.50	0.79

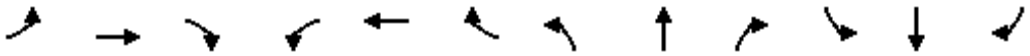
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1530	750	0	1690	320	590	0	680	0	0	0
Future Volume (vph)	0	1530	750	0	1690	320	590	0	680	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	2.0		4.5	2.0	4.4		4.4			
Lane Util. Factor		0.91	0.88		0.81	1.00	0.94		0.76			
Frt		1.00	0.85		1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085	2787		7544	1583	4990		3610			
Flt Permitted		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085	2787		7544	1583	4990		3610			
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	1663	789	0	1837	337	621	0	716	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1663	789	0	1837	337	621	0	716	0	0	0
Turn Type		NA	Free		NA	Free	Prot		Prot			
Protected Phases		6 3			2 3		4		4			
Permitted Phases			Free			Free						
Actuated Green, G (s)		57.2	120.0		79.2	120.0	28.0		28.0			
Effective Green, g (s)		61.2	120.0		81.2	120.0	30.0		30.0			
Actuated g/C Ratio		0.51	1.00		0.68	1.00	0.25		0.25			
Clearance Time (s)							6.4		6.4			
Vehicle Extension (s)							3.5		3.5			
Lane Grp Cap (vph)		2593	2787		5104	1583	1247		902			
v/s Ratio Prot		c0.33			c0.24		0.12		c0.20			
v/s Ratio Perm			0.28			0.21						
v/c Ratio		0.64	0.28		0.36	0.21	0.50		0.79			
Uniform Delay, d1		21.4	0.0		8.3	0.0	38.5		42.1			
Progression Factor		0.43	1.00		0.59	1.00	1.00		1.00			
Incremental Delay, d2		0.2	0.1		0.0	0.2	0.4		5.0			
Delay (s)		9.5	0.1		4.9	0.2	38.9		47.1			
Level of Service		A	A		A	A	D		D			
Approach Delay (s)		6.5			4.1			43.3			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.8
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	321	1772	310	375	1413	147	332	201	245	299	337	440
v/c Ratio	0.72	0.95	0.40	0.92	0.78	0.23	0.99	0.29	0.48	0.62	0.96	0.90
Control Delay	44.5	32.3	5.7	81.7	37.8	6.2	80.7	43.3	8.8	33.3	87.2	45.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	32.3	5.7	81.7	37.8	6.2	80.7	43.3	8.8	33.3	87.2	45.3
Queue Length 50th (ft)	110	290	20	150	348	6	209	71	0	167	260	168
Queue Length 95th (ft)	m#178	#578	m77	#241	407	49	#411	110	72	247	#442	#362
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	200		370	200		200	260		260	170		170
Base Capacity (vph)	445	1873	778	406	1860	664	337	696	508	530	355	490
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.95	0.40	0.92	0.76	0.22	0.99	0.29	0.48	0.56	0.95	0.90

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	295	1630	285	345	1300	135	305	185	225	275	310	405
Future Volume (vph)	295	1630	285	345	1300	135	305	185	225	275	310	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	4.4	4.4	4.4	5.7	5.7	5.7	5.7	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	1770	3539	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.17	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	316	3539	1583	1165	1863	1583
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)	321	1772	310	375	1413	147	332	201	245	299	337	440
RTOR Reduction (vph)	0	0	196	0	0	87	0	0	197	0	0	189
Lane Group Flow (vph)	321	1772	114	375	1413	60	332	201	48	299	337	251
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2	4		4	8		8
Actuated Green, G (s)	13.6	42.2	42.2	12.2	40.8	40.8	42.3	23.6	23.6	40.5	22.7	22.7
Effective Green, g (s)	15.6	44.2	44.2	14.2	42.8	42.8	42.3	23.6	23.6	40.5	22.7	22.7
Actuated g/C Ratio	0.13	0.37	0.37	0.12	0.36	0.36	0.35	0.20	0.20	0.34	0.19	0.19
Clearance Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	5.7	5.7	5.7	5.7	5.7	5.7
Vehicle Extension (s)	1.5	3.0	3.0	1.5	3.0	3.0	1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	446	1872	583	406	1813	564	337	696	311	482	352	299
v/s Ratio Prot	0.09	c0.35		c0.11	0.28		c0.15	0.06		0.09	0.18	
v/s Ratio Perm			0.07			0.04	c0.19		0.03	0.12		0.16
v/c Ratio	0.72	0.95	0.20	0.92	0.78	0.11	0.99	0.29	0.15	0.62	0.96	0.84
Uniform Delay, d1	50.1	36.8	25.8	52.4	34.4	25.8	33.6	41.1	39.9	31.7	48.2	46.9
Progression Factor	0.72	0.61	1.55	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4	9.0	0.5	26.1	3.4	0.4	44.6	0.1	0.1	1.8	36.2	17.6
Delay (s)	39.7	31.6	40.6	78.5	37.8	26.2	78.2	41.1	40.0	33.5	84.4	64.5
Level of Service	D	C	D	E	D	C	E	D	D	C	F	E
Approach Delay (s)		33.8			44.8			56.6			62.1	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2755	272	2516	125	130
v/c Ratio	0.64	0.95	0.64	0.67	0.46
Control Delay	20.1	95.8	2.5	72.8	13.6
Queue Delay	0.0	43.4	0.2	0.0	0.0
Total Delay	20.1	139.2	2.8	72.8	13.6
Queue Length 50th (ft)	369	196	61	103	0
Queue Length 95th (ft)	443	#396	42	164	58
Internal Link Dist (ft)	575		175	531	
Turn Bay Length (ft)					
Base Capacity (vph)	4288	285	3961	503	543
Starvation Cap Reductn	0	56	613	0	0
Spillback Cap Reductn	153	0	0	0	2
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	1.19	0.75	0.25	0.24

Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2440	95	250	2315	115	120
Future Volume (vph)	2440	95	250	2315	115	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	9.0	9.0
Lane Util. Factor	0.81		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	7502		1770	5085	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	7502		1770	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2652	103	272	2516	125	130
RTOR Reduction (vph)	3	0	0	0	0	116
Lane Group Flow (vph)	2752	0	272	2516	125	14
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2 3		1	1 2 3	4	
Permitted Phases					4	4
Actuated Green, G (s)	72.3		19.0	99.3	13.7	13.7
Effective Green, g (s)	74.3		21.0	101.3	13.7	13.7
Actuated g/C Ratio	0.57		0.16	0.78	0.11	0.11
Clearance Time (s)			8.0		9.0	9.0
Vehicle Extension (s)			1.5		2.0	2.0
Lane Grp Cap (vph)	4287		285	3962	186	166
v/s Ratio Prot	c0.37		c0.15	c0.49	c0.07	
v/s Ratio Perm						0.01
v/c Ratio	0.64		0.95	0.64	0.67	0.08
Uniform Delay, d1	18.8		54.0	6.3	56.0	52.5
Progression Factor	1.00		1.11	0.29	1.00	1.00
Incremental Delay, d2	0.2		34.6	0.2	7.3	0.1
Delay (s)	19.1		94.3	2.0	63.3	52.6
Level of Service	B		F	A	E	D
Approach Delay (s)	19.1			11.0	57.8	
Approach LOS	B			B	E	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	196	2587	2620	315	207	168
v/c Ratio	1.03	0.52	0.65	0.28	0.57	0.53
Control Delay	107.2	2.2	13.1	1.0	61.0	13.6
Queue Delay	0.0	0.1	0.1	0.0	0.0	0.1
Total Delay	107.2	2.2	13.1	1.0	61.0	13.8
Queue Length 50th (ft)	~176	25	355	1	87	0
Queue Length 95th (ft)	#334	38	450	m12	122	65
Internal Link Dist (ft)		175	1004		271	
Turn Bay Length (ft)				450		
Base Capacity (vph)	190	4992	4006	1107	977	570
Starvation Cap Reductn	0	737	0	0	0	0
Spillback Cap Reductn	0	0	185	0	0	60
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.61	0.69	0.28	0.21	0.33

Intersection Summary

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

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	180	2380	2410	290	190	155
Future Volume (vph)	180	2380	2410	290	190	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	9.0	9.0
Lane Util. Factor	1.00	0.86	0.86	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	6408	6408	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	6408	6408	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	2587	2620	315	207	168
RTOR Reduction (vph)	0	0	0	118	0	150
Lane Group Flow (vph)	196	2587	2620	197	207	18
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	3	1 2 3	1 2		4	
Permitted Phases				1 2		4
Actuated Green, G (s)	12.0	99.3	79.3	79.3	13.7	13.7
Effective Green, g (s)	14.0	101.3	81.3	81.3	13.7	13.7
Actuated g/C Ratio	0.11	0.78	0.63	0.63	0.11	0.11
Clearance Time (s)	8.0				9.0	9.0
Vehicle Extension (s)	1.5				2.0	2.0
Lane Grp Cap (vph)	190	4993	4007	989	361	166
v/s Ratio Prot	c0.11	0.40	c0.41		c0.06	
v/s Ratio Perm				0.12		0.01
v/c Ratio	1.03	0.52	0.65	0.20	0.57	0.11
Uniform Delay, d1	58.0	5.3	15.4	10.4	55.4	52.6
Progression Factor	0.68	0.33	0.79	0.55	1.00	1.00
Incremental Delay, d2	66.1	0.0	0.2	0.0	1.4	0.1
Delay (s)	105.7	1.8	12.3	5.7	56.7	52.7
Level of Service	F	A	B	A	E	D
Approach Delay (s)		9.1	11.6		54.9	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	2022	747	2125	563	784
v/c Ratio	0.61	0.47	0.81	0.52	0.90
Control Delay	10.7	2.6	13.8	20.4	36.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	2.6	13.8	20.4	36.9
Queue Length 50th (ft)	196	30	231	92	165
Queue Length 95th (ft)	295	78	276	136	#276
Internal Link Dist (ft)	1004		259		
Turn Bay Length (ft)		250			
Base Capacity (vph)	3312	1583	2628	1082	878
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.47	0.81	0.52	0.89

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑↑↑	↱		↑↑↑		↰↰		↱↱		
Traffic Volume (vph)	0	1860	710	0	1955	0	535	0	745	0	0
Future Volume (vph)	0	1860	710	0	1955	0	535	0	745	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	2.0		5.5		5.5		5.5		
Lane Util. Factor		0.86	1.00		0.91		0.97		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		6408	1583		5085		3433		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		6408	1583		5085		3433		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	2022	747	0	2125	0	563	0	784	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2022	747	0	2125	0	563	0	784	0	0
Turn Type		NA	Free		NA		Prot		Prot		
Protected Phases		6			2		3		3		
Permitted Phases			Free								
Actuated Green, G (s)		31.6	65.0		31.6		18.4		18.4		
Effective Green, g (s)		33.6	65.0		33.6		20.4		20.4		
Actuated g/C Ratio		0.52	1.00		0.52		0.31		0.31		
Clearance Time (s)		7.5			7.5		7.5		7.5		
Vehicle Extension (s)		3.0			3.0		2.5		2.5		
Lane Grp Cap (vph)		3312	1583		2628		1077		874		
v/s Ratio Prot		0.32			c0.42		0.16		c0.28		
v/s Ratio Perm			0.47								
v/c Ratio		0.61	0.47		0.81		0.52		0.90		
Uniform Delay, d1		11.1	0.0		13.0		18.3		21.3		
Progression Factor		0.90	1.00		0.91		1.00		1.00		
Incremental Delay, d2		0.7	0.9		1.9		0.4		11.8		
Delay (s)		10.7	0.9		13.7		18.7		33.1		
Level of Service		B	A		B		B		C		
Approach Delay (s)		8.0			13.7			27.0		0.0	
Approach LOS		A			B			C		A	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL2	NBR
Lane Group Flow (vph)	1832	1842	453	1200	705
v/c Ratio	0.73	0.73	0.29	0.83	0.60
Control Delay	18.9	16.5	0.2	39.3	31.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	16.5	0.2	39.3	31.3
Queue Length 50th (ft)	384	179	0	451	254
Queue Length 95th (ft)	396	m232	m0	513	307
Internal Link Dist (ft)	270	1155			
Turn Bay Length (ft)			250		
Base Capacity (vph)	2522	2522	1583	1571	1275
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.73	0.73	0.29	0.76	0.55

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	1685	0	0	1695	430	1140	0	670	0	0
Future Volume (vph)	0	1685	0	0	1695	430	1140	0	670	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5	2.0	5.5		5.5		
Lane Util. Factor		0.91			0.91	1.00	0.97		0.88		
Frt		1.00			1.00	0.85	1.00		0.85		
Flt Protected		1.00			1.00	1.00	0.95		1.00		
Satd. Flow (prot)		5085			5085	1583	3433		2787		
Flt Permitted		1.00			1.00	1.00	0.95		1.00		
Satd. Flow (perm)		5085			5085	1583	3433		2787		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1832	0	0	1842	453	1200	0	705	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1832	0	0	1842	453	1200	0	705	0	0
Turn Type		NA			NA	Free	Prot		Prot		
Protected Phases		6			2		4		4		
Permitted Phases						Free					
Actuated Green, G (s)		62.5			62.5	130.0	52.5		52.5		
Effective Green, g (s)		64.5			64.5	130.0	54.5		54.5		
Actuated g/C Ratio		0.50			0.50	1.00	0.42		0.42		
Clearance Time (s)		7.5			7.5		7.5		7.5		
Vehicle Extension (s)		3.0			3.0		2.5		2.5		
Lane Grp Cap (vph)		2522			2522	1583	1439		1168		
v/s Ratio Prot		0.36			c0.36		c0.35		0.25		
v/s Ratio Perm						0.29					
v/c Ratio		0.73			0.73	0.29	0.83		0.60		
Uniform Delay, d1		25.8			25.9	0.0	33.7		29.4		
Progression Factor		0.65			0.58	1.00	1.00		1.00		
Incremental Delay, d2		0.9			0.9	0.2	4.2		0.7		
Delay (s)		17.6			15.9	0.2	38.0		30.1		
Level of Service		B			B	A	D		C		
Approach Delay (s)		17.6			12.8			35.0		0.0	
Approach LOS		B			B			D		A	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

5: NE 3rd Ave & Sample Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	511	2049	114	1771	261	337	120	87	266	418
v/c Ratio	0.97	0.82	0.93	0.85	1.09	0.82	0.24	0.51	0.76	0.90
Control Delay	85.2	27.7	125.3	40.3	120.8	64.4	1.1	42.8	63.3	47.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.2	27.7	125.3	40.3	120.8	64.4	1.1	42.8	63.3	47.1
Queue Length 50th (ft)	234	350	97	489	~197	272	0	53	214	184
Queue Length 95th (ft)	#343	479	#217	#658	#280	358	0	87	291	303
Internal Link Dist (ft)		1155		834		912			742	
Turn Bay Length (ft)	550		490		250		225	200		
Base Capacity (vph)	528	2492	122	2075	240	515	583	171	458	547
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.82	0.93	0.85	1.09	0.65	0.21	0.51	0.58	0.76

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	470	1670	215	105	1500	130	240	310	110	80	245	385
Future Volume (vph)	470	1670	215	105	1500	130	240	310	110	80	245	385
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		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	4998		1770	5025		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.25	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	3433	4998		1770	5025		473	1863	1583	477	1863	1583
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)	511	1815	234	114	1630	141	261	337	120	87	266	418
RTOR Reduction (vph)	0	11	0	0	7	0	0	0	94	0	0	170
Lane Group Flow (vph)	511	2038	0	114	1764	0	261	337	26	87	266	248
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases							4		4	8		8
Actuated Green, G (s)	18.0	62.5		7.0	51.5		38.6	28.6	28.6	30.4	24.5	24.5
Effective Green, g (s)	20.0	64.5		9.0	53.5		38.6	28.6	28.6	30.4	24.5	24.5
Actuated g/C Ratio	0.15	0.50		0.07	0.41		0.30	0.22	0.22	0.23	0.19	0.19
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	3.0		1.5	3.0		1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	528	2479		122	2067		240	409	348	170	351	298
v/s Ratio Prot	c0.15	c0.41		0.06	0.35		c0.08	c0.18		0.02	0.14	
v/s Ratio Perm							c0.24		0.02	0.10		0.16
v/c Ratio	0.97	0.82		0.93	0.85		1.09	0.82	0.08	0.51	0.76	0.83
Uniform Delay, d1	54.7	27.9		60.2	34.7		43.3	48.3	40.2	40.9	49.9	50.8
Progression Factor	1.08	0.87		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.3	2.4		60.3	4.7		83.4	12.1	0.0	1.1	8.1	17.1
Delay (s)	84.5	26.7		120.6	39.4		126.7	60.4	40.3	41.9	58.0	67.9
Level of Service	F	C		F	D		F	E	D	D	E	E
Approach Delay (s)		38.2			44.3			81.1			61.5	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	48.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group