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	0.84	0.49	0.44	0.28	0.77	0.37	0.31	0.30	0.06
Control Delay	100.8	23.4	97.7	18.7	4.3	75.1	102.7	7.8	94.0	93.2	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	100.8	23.4	97.7	19.0	4.5	75.1	102.7	7.8	94.0	93.2	0.3
Queue Length 50th (ft)	319	541	198	260	44	56	172	0	27	27	0
Queue Length 95th (ft)	#468	685	#269	447	138	85	247	66	63	63	0
Internal Link Dist (ft)		580		548			436			396	
Turn Bay Length (ft)	450		375		350	225		250	200		
Base Capacity (vph)	335	3144	392	2853	1253	610	331	528	252	259	390
Starvation Cap Reductn	0	0	0	730	211	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	0.82	0.65	0.48	0.16	0.44	0.37	0.09	0.08	0.06

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: SW 12th Avenue & Hillsboro Bvd

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	107	0	0	156	0	0	17
Lane Group Flow (vph)	277	2061	0	321	1386	388	98	147	40	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)	29.7	110.6		18.1	99.0	106.7	18.6	18.6	36.7	7.7	7.7	37.4
Effective Green, g (s)	31.7	112.6		20.1	101.0	110.7	18.6	18.6	36.7	7.7	7.7	37.4
Actuated g/C Ratio	0.18	0.63		0.11	0.56	0.62	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)	311	3139		383	2853	973	354	192	322	71	73	328
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		0.84	0.49	0.40	0.28	0.77	0.12	0.31	0.30	0.01
Uniform Delay, d1	72.5	21.4		78.4	23.8	17.7	74.5	78.6	58.5	83.6	83.5	56.6
Progression Factor	1.00	1.00		1.03	0.73	0.44	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.1	1.1		12.7	0.5	0.1	0.2	15.0	0.1	0.9	0.8	0.0
Delay (s)	97.5	22.5		93.5	17.8	7.9	74.6	93.6	58.6	84.5	84.4	56.7
Level of Service	F	C		F	B	A	E	F	E	F	F	E
Approach Delay (s)		31.4			26.6			73.8			75.2	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	180.0	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			

Queues

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	0.72
Control Delay	0.1	1.2	16.1	62.0	52.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.1	1.2	16.1	62.0	52.3
Queue Length 50th (ft)	0	0	390	575	424
Queue Length 95th (ft)	0	5	461	644	445
Internal Link Dist (ft)	548		319		
Turn Bay Length (ft)		150			
Base Capacity (vph)	5085	1583	2957	899	1416
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

HCM Signalized Intersection Capacity Analysis

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)		180.0	180.0		102.7		64.3		64.3		
Effective Green, g (s)		180.0	180.0		104.7		66.3		66.3		
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		2957		651		1026		
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		0.72		
Uniform Delay, d1		0.0	0.0		22.0		51.6		48.8		
Progression Factor		1.00	1.00		0.67		1.00		1.00		
Incremental Delay, d2		0.1	0.7		0.5		8.2		2.3		
Delay (s)		0.1	0.7		15.2		59.8		51.1		
Level of Service		A	A		B		E		D		
Approach Delay (s)		0.3			15.2			54.8		0.0	
Approach LOS		A			B			D		A	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

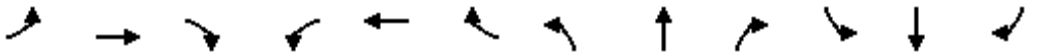
! Phase conflict between lane groups.

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1364	1549	772	576	758
v/c Ratio	0.47	0.53	0.49	0.32	0.74
Control Delay	9.8	12.0	2.1	20.9	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	12.0	2.1	20.9	27.7
Queue Length 50th (ft)	103	323	13	81	194
Queue Length 95th (ft)	238	m245	m2	98	242
Internal Link Dist (ft)	286	371			
Turn Bay Length (ft)			250	350	350
Base Capacity (vph)	2900	2900	1568	2106	1205
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	0.53	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	32	0	0	0
Lane Group Flow (vph)	0	1364	0	0	1549	772	576	0	726	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)		49.3			49.3	90.0	30.2		30.2			
Effective Green, g (s)		51.3			51.3	90.0	32.2		32.2			
Actuated g/C Ratio		0.57			0.57	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)		2898			2898	1568	1785		997			
v/s Ratio Prot		0.27			0.30		0.12		c0.26			
v/s Ratio Perm						c0.49						
v/c Ratio		0.47			0.53	0.49	0.32		0.73			
Uniform Delay, d1		11.4			12.0	0.0	21.0		25.1			
Progression Factor		0.77			0.92	1.00	1.00		1.00			
Incremental Delay, d2		0.5			0.5	0.7	0.1		2.7			
Delay (s)		9.3			11.4	0.7	21.1		27.8			
Level of Service		A			B	A	C		C			
Approach Delay (s)		9.3			7.9			24.9			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.0	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			

Queues

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	315	1717	114	76	1815	87	435	87	147	33	5	71
v/c Ratio	0.83	0.54	0.11	0.60	0.61	0.09	1.33	0.26	0.37	0.40	0.08	0.39
Control Delay	85.9	16.7	2.2	100.5	25.5	0.6	218.5	67.4	11.2	75.0	87.0	6.3
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	85.9	16.7	2.2	100.5	25.5	0.6	218.5	67.4	11.2	75.0	87.0	6.3
Queue Length 50th (ft)	199	284	4	88	499	0	~601	91	0	31	6	0
Queue Length 95th (ft)	#263	367	30	150	545	5	#828	151	68	66	22	0
Internal Link Dist (ft)		660			631			513			403	
Turn Bay Length (ft)	300		150	100		200	125					340
Base Capacity (vph)	390	3167	1035	149	2965	977	326	641	641	82	393	439
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	0.81	0.54	0.11	0.51	0.61	0.09	1.33	0.14	0.23	0.40	0.01	0.16

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.

HCM Signalized Intersection Capacity Analysis

4: SW Natura Boulevard/Fairway Drive & Hillsboro Bvd

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	4.5	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	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	1770	5085	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.41	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5085	1583	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	44	0	0	37	0	0	121	0	0	68
Lane Group Flow (vph)	315	1717	70	76	1815	50	435	87	26	33	5	3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
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)	18.0	109.0	109.0	10.8	101.8	101.8	41.2	32.0	32.0	10.4	7.2	7.2
Effective Green, g (s)	20.0	111.0	111.0	12.8	103.8	103.8	41.2	32.0	32.0	10.4	7.2	7.2
Actuated g/C Ratio	0.11	0.62	0.62	0.07	0.58	0.58	0.23	0.18	0.18	0.06	0.04	0.04
Clearance Time (s)	6.5	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	3.0	1.5	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	381	3135	976	125	2932	912	331	331	281	83	74	63
v/s Ratio Prot	c0.09	0.34		0.04	c0.36		c0.20	0.05		0.01	0.00	
v/s Ratio Perm			0.04			0.03	c0.10		0.02	0.02		0.00
v/c Ratio	0.83	0.55	0.07	0.61	0.62	0.06	1.31	0.26	0.09	0.40	0.07	0.05
Uniform Delay, d1	78.3	20.0	13.8	81.2	25.1	16.7	66.8	63.8	61.9	81.4	83.2	83.1
Progression Factor	0.89	0.82	1.49	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.5	0.6	0.1	5.6	1.0	0.1	161.3	0.2	0.1	1.1	0.1	0.1
Delay (s)	81.2	17.0	20.7	86.8	26.1	16.8	228.1	64.0	61.9	82.6	83.3	83.2
Level of Service	F	B	C	F	C	B	F	E	E	F	F	F
Approach Delay (s)		26.6			28.0			170.2			83.0	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	48.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

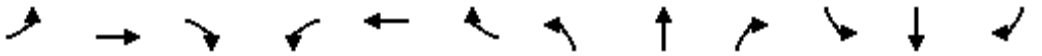
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	386	1429	141	342	891	505	190	723	620	500	598	310
v/c Ratio	0.79	1.00	0.16	0.74	0.63	0.55	0.66	1.03	0.95	1.02	0.66	0.50
Control Delay	86.5	75.6	5.2	108.9	25.5	11.5	91.2	110.6	69.8	118.5	64.0	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.5	75.6	5.2	108.9	25.5	11.5	91.2	110.6	69.8	118.5	64.0	10.5
Queue Length 50th (ft)	229	~932	10	219	166	77	113	~478	610	~320	338	23
Queue Length 95th (ft)	288	#1069	49	276	321	198	160	#615	#871	#443	410	117
Internal Link Dist (ft)		620			1001			569			457	
Turn Bay Length (ft)	550		500	550		500	300		300	650		650
Base Capacity (vph)	545	1433	879	486	1405	923	310	701	661	492	911	619
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	1.00	0.16	0.70	0.63	0.55	0.61	1.03	0.94	1.02	0.66	0.50

Intersection Summary

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

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

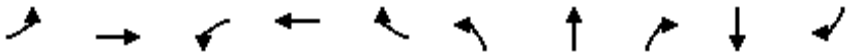
HCM Signalized Intersection Capacity Analysis



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	5.9
Lane Util. Factor	0.97	0.95	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	3539	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	3539	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	63	0	0	34	0	0	76	0	0	212
Lane Group Flow (vph)	386	1429	78	342	891	471	190	723	544	500	598	98
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	23.7	70.9	84.0	22.3	69.5	93.3	13.1	33.7	56.0	23.8	44.4	44.4
Effective Green, g (s)	25.7	72.9	88.0	24.3	71.5	97.3	15.1	35.7	60.0	25.8	46.4	46.4
Actuated g/C Ratio	0.14	0.41	0.49	0.14	0.40	0.54	0.08	0.20	0.33	0.14	0.26	0.26
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)	490	1433	773	463	1405	855	287	701	527	492	912	408
v/s Ratio Prot	0.11	c0.40	0.01	0.10	0.25	0.08	0.06	0.20	c0.14	c0.15	0.17	
v/s Ratio Perm			0.04			0.22			0.20			0.06
v/c Ratio	0.79	1.00	0.10	0.74	0.63	0.55	0.66	1.03	1.03	1.02	0.66	0.24
Uniform Delay, d1	74.5	53.4	24.7	74.8	43.7	27.0	80.0	72.2	60.0	77.1	59.7	52.9
Progression Factor	1.00	1.00	1.00	1.34	0.53	0.44	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	23.1	0.0	4.5	1.9	0.4	4.4	42.3	47.7	44.7	1.7	0.3
Delay (s)	82.1	76.6	24.8	104.7	25.1	12.4	84.4	114.4	107.7	121.8	61.4	53.2
Level of Service	F	E	C	F	C	B	F	F	F	F	E	D
Approach Delay (s)		73.9			37.1			108.0			81.0	
Approach LOS		E			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	73.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

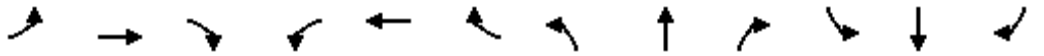
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	332	2217	402	1576	364	38	38	109	54	98
v/c Ratio	0.46	0.61	0.76	0.59	0.37	0.27	0.27	0.23	0.55	0.14
Control Delay	50.3	16.4	83.1	31.6	6.1	82.8	82.6	12.3	101.1	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	16.4	83.1	31.6	6.1	82.8	82.6	12.3	101.1	7.6
Queue Length 50th (ft)	165	293	241	434	45	45	45	13	63	0
Queue Length 95th (ft)	m176	m338	291	420	68	91	91	64	114	26
Internal Link Dist (ft)		900		925			695		185	
Turn Bay Length (ft)	700		750		700			150		
Base Capacity (vph)	723	3658	667	2757	993	158	161	508	132	717
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	0.46	0.61	0.60	0.57	0.37	0.24	0.24	0.21	0.41	0.14

Intersection Summary

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

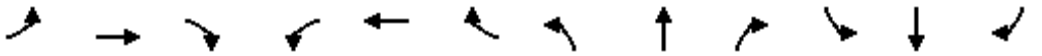


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	1530	510	370	1450	335	60	10	100	40	10	90
Future Volume (vph)	305	1530	510	370	1450	335	60	10	100	40	10	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	0.97	0.86		0.97	0.91	1.00	0.95	0.95	1.00		1.00	0.88
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00		0.96	1.00
Satd. Flow (prot)	3367	6168		3433	5085	1524	1681	1709	1583		1593	2030
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00		0.96	1.00
Satd. Flow (perm)	3367	6168		3433	5085	1524	1681	1709	1583		1593	2030
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	65	11	109	43	11	98
RTOR Reduction (vph)	0	28	0	0	0	172	0	0	70	0	0	69
Lane Group Flow (vph)	332	2189	0	402	1576	192	38	38	39	0	54	29
Heavy Vehicles (%)	4%	2%	2%	2%	2%	6%	2%	2%	2%	18%	2%	40%
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA	pt+ov	Split	NA	pt+ov
Protected Phases	1	6		5	2	2	3	3	3 5	4	4	4 1
Permitted Phases												
Actuated Green, G (s)	36.7	103.9		25.8	93.0	93.0	15.0	15.0	46.8		11.3	54.0
Effective Green, g (s)	38.7	105.9		27.8	95.0	95.0	15.0	15.0	46.8		11.3	54.0
Actuated g/C Ratio	0.22	0.59		0.15	0.53	0.53	0.08	0.08	0.26		0.06	0.30
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		2.5	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	723	3628		530	2683	804	140	142	411		100	609
v/s Ratio Prot	0.10	c0.35		c0.12	0.31	0.13	c0.02	0.02	0.02		c0.03	0.01
v/s Ratio Perm												
v/c Ratio	0.46	0.60		0.76	0.59	0.24	0.27	0.27	0.09		0.54	0.05
Uniform Delay, d1	61.5	23.6		72.9	29.1	23.0	77.4	77.3	50.5		81.8	44.7
Progression Factor	0.80	0.69		1.03	1.04	2.66	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.2		5.0	0.8	0.6	1.1	1.0	0.1		5.8	0.0
Delay (s)	49.5	16.4		80.2	31.1	61.7	78.4	78.4	50.6		87.7	44.8
Level of Service	D	B		F	C	E	E	E	D		F	D
Approach Delay (s)		20.7			44.3			62.0			60.0	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1803	616	1810	337	516
v/c Ratio	0.73	0.60	0.53	0.36	0.67
Control Delay	32.2	28.8	12.3	53.7	63.1
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	32.2	28.8	12.5	53.7	63.1
Queue Length 50th (ft)	404	201	209	166	310
Queue Length 95th (ft)	405	189	364	215	387
Internal Link Dist (ft)	925		322		
Turn Bay Length (ft)		500		500	500
Base Capacity (vph)	2479	1048	3432	945	767
Starvation Cap Reductn	0	0	690	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.73	0.59	0.66	0.36	0.67

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		4.0	4.5					4.4		4.4
Lane Util. Factor		0.81		0.97	0.91					0.97		0.88
Frt		0.97		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		7296		3433	5085					3433		2787
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		7296		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	28	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1775	0	616	1810	0	0	0	0	337	0	516
Turn Type		NA		Prot	NA					Prot		Prot
Protected Phases		6		5 4	2 4					3		3
Permitted Phases												
Actuated Green, G (s)		58.5		49.1	119.6					47.6		47.6
Effective Green, g (s)		60.5		53.1	121.6					49.6		49.6
Actuated g/C Ratio		0.34		0.30	0.68					0.28		0.28
Clearance Time (s)		6.0								6.4		6.4
Vehicle Extension (s)		3.0								2.0		2.0
Lane Grp Cap (vph)		2452		1012	3435					945		767
v/s Ratio Prot		c0.24		c0.18	0.36					0.10		c0.19
v/s Ratio Perm												
v/c Ratio		0.72		0.61	0.53					0.36		0.67
Uniform Delay, d1		52.4		54.5	14.7					52.4		58.0
Progression Factor		0.59		0.96	0.79					1.00		1.00
Incremental Delay, d2		1.6		1.0	0.2					0.1		1.8
Delay (s)		32.7		53.5	11.8					52.5		59.8
Level of Service		C		D	B					D		E
Approach Delay (s)		32.7			22.4			0.0			56.9	
Approach LOS		C			C			A			E	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	180.0	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	NBL	NBR
Lane Group Flow (vph)	1299	442	2087	632	442
v/c Ratio	0.42	0.16	0.36	0.68	0.66
Control Delay	3.3	0.1	5.8	72.4	73.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	0.1	5.8	72.4	73.2
Queue Length 50th (ft)	47	0	86	250	215
Queue Length 95th (ft)	50	0	233	297	269
Internal Link Dist (ft)	233		630	1225	
Turn Bay Length (ft)		700		410	430
Base Capacity (vph)	3121	2787	5762	931	673
Starvation Cap Reductn	30	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	0.16	0.36	0.68	0.66

Intersection Summary

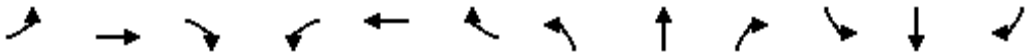
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1195	420	0	1920	600	420
Future Volume (vph)	1195	420	0	1920	600	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0		4.5	4.4	4.4
Lane Util. Factor	0.91	0.88		0.81	0.94	0.76
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	5085	2787		7544	4990	3610
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	5085	2787		7544	4990	3610
Peak-hour factor, PHF	0.92	0.95	0.92	0.92	0.95	0.95
Adj. Flow (vph)	1299	442	0	2087	632	442
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1299	442	0	2087	632	442
Turn Type	NA	Free		NA	Prot	Prot
Protected Phases	6 3			2 3	4	4
Permitted Phases		Free				
Actuated Green, G (s)	106.1	180.0		135.5	31.6	31.6
Effective Green, g (s)	110.1	180.0		133.1	33.6	33.6
Actuated g/C Ratio	0.61	1.00		0.74	0.19	0.19
Clearance Time (s)					6.4	6.4
Vehicle Extension (s)					3.5	3.5
Lane Grp Cap (vph)	3110	2787		5578	931	673
v/s Ratio Prot	c0.26			c0.28	c0.13	0.12
v/s Ratio Perm		0.16				
v/c Ratio	0.42	0.16		0.37	0.68	0.66
Uniform Delay, d1	18.2	0.0		8.4	68.2	67.9
Progression Factor	0.32	1.00		0.82	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.0	2.1	2.4
Delay (s)	5.9	0.1		6.9	70.2	70.3
Level of Service	A	A		A	E	E
Approach Delay (s)	4.4			6.9	70.3	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	180.0	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	0.69	0.43	0.28	0.54	0.55	0.10	0.81	0.27	0.38	0.71	0.77	0.84
Control Delay	70.4	14.3	1.5	93.3	30.0	1.2	71.7	68.1	11.2	64.3	99.3	39.9
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	14.5	1.5	93.3	30.0	1.2	71.7	68.1	11.2	64.3	99.3	39.9
Queue Length 50th (ft)	121	126	9	62	434	0	255	78	0	230	191	108
Queue Length 95th (ft)	182	177	14	97	545	10	326	109	60	299	265	226
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	300		300	200		300	260		260	170		170
Base Capacity (vph)	373	2919	1031	202	2720	904	342	890	497	350	396	523
Starvation Cap Reductn	0	648	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	0.60	0.55	0.28	0.51	0.55	0.10	0.76	0.16	0.26	0.68	0.41	0.62

Intersection Summary

HCM Signalized Intersection Capacity Analysis

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

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	0.26	1.00	1.00	0.66	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	483	3539	1583	1234	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	123	0	0	41	0	0	111	0	0	210
Lane Group Flow (vph)	223	1245	165	103	1500	46	261	141	19	239	163	116
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)	15.1	101.3	101.3	8.0	94.2	94.2	52.2	26.3	26.3	40.8	20.6	20.6
Effective Green, g (s)	17.1	103.3	103.3	10.0	96.2	96.2	52.2	26.3	26.3	40.8	20.6	20.6
Actuated g/C Ratio	0.10	0.57	0.57	0.06	0.53	0.53	0.29	0.15	0.15	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)	326	2918	908	190	2717	846	325	517	231	339	213	181
v/s Ratio Prot	c0.06	0.24		0.03	c0.29		c0.12	0.04		0.08	0.09	
v/s Ratio Perm			0.10			0.03	c0.12		0.01	0.08		0.07
v/c Ratio	0.68	0.43	0.18	0.54	0.55	0.05	0.80	0.27	0.08	0.71	0.77	0.64
Uniform Delay, d1	78.8	21.6	18.2	82.8	27.7	20.1	54.1	68.3	66.4	62.3	77.4	76.2
Progression Factor	0.77	0.61	0.43	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	0.4	0.4	1.7	0.2	0.0	12.6	0.1	0.1	5.4	13.7	5.7
Delay (s)	64.7	13.6	8.2	84.5	27.9	20.1	66.8	68.4	66.5	67.6	91.0	81.9
Level of Service	E	B	A	F	C	C	E	E	E	E	F	F
Approach Delay (s)		19.2			31.0			67.1			79.2	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	180.0	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

Queues

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

Queues

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	192.8	24.0	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	192.8	24.0	0.1	60.0	47.6	59.8	68.4	69.0	17.9
Queue Length 50th (ft)	33	475	~128	426	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

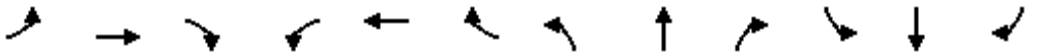
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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.

HCM Signalized Intersection Capacity Analysis

1: SW 12th Avenue & Hillsboro Bvd



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		1.20	0.60	0.02	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		208.0	21.9	0.1	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			40.3			113.5			54.9	
Approach LOS		C			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	46.3	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	18.9	44.9	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.1	0.4	18.9	44.9	29.2
Queue Length 50th (ft)	0	0	238	390	176
Queue Length 95th (ft)	0	m0	527	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.

HCM Signalized Intersection Capacity Analysis

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		0.82		1.00		1.00		
Incremental Delay, d2		0.1	0.4		1.1		8.7		0.3		
Delay (s)		0.1	0.4		17.7		42.4		28.5		
Level of Service		A	A		B		D		C		
Approach Delay (s)		0.2			17.7			35.6		0.0	
Approach LOS		A			B			D		A	

Intersection Summary			
HCM 2000 Control Delay	13.2	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

Queues

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	10.6	9.3	0.6	17.2	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	9.3	0.6	17.2	24.9
Queue Length 50th (ft)	194	134	0	60	119
Queue Length 95th (ft)	199	m267	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.

HCM Signalized Intersection Capacity Analysis

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		1.16			0.90	1.00	1.00		1.00			
Incremental Delay, d2		0.9			1.0	0.6	0.2		4.5			
Delay (s)		10.4			9.2	0.6	16.5		23.3			
Level of Service		B			A	A	B		C			
Approach Delay (s)		10.4			7.1			20.1			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	11.0	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			

Queues

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	87	2207	277	130	2250	33	288	11	125	120	54	310
v/c Ratio	0.43	0.77	0.29	1.01	0.76	0.03	1.14	0.04	0.36	0.44	0.19	0.85
Control Delay	61.9	17.0	4.8	136.9	22.5	0.1	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	0.0
Total Delay	61.9	17.0	4.8	136.9	22.5	0.1	141.6	39.3	7.1	42.1	42.4	46.3
Queue Length 50th (ft)	32	382	38	~103	455	0	~238	7	0	77	37	129
Queue Length 95th (ft)	m50	513	m101	#234	638	0	#294	23	36	116	68	215
Internal Link Dist (ft)		660			631			513			403	
Turn Bay Length (ft)	300		150	100		200	125					340
Base Capacity (vph)	200	2876	956	129	2952	978	253	574	588	275	589	600
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	0.43	0.77	0.29	1.01	0.76	0.03	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.

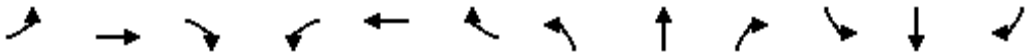
HCM Signalized Intersection Capacity Analysis

4: SW Natura Boulevard/Fairway Drive & Hillsboro Bvd

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	4.5	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	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	1770	5085	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.72	1.00	1.00	0.71	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5085	1583	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	0	14	0	0	107	0	0	123
Lane Group Flow (vph)	87	2207	216	130	2250	19	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	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)	5.0	65.9	65.9	6.8	67.7	67.7	21.3	17.3	17.3	23.3	18.3	18.3
Effective Green, g (s)	7.0	67.9	67.9	8.8	69.7	69.7	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	0.58	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	6.5	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	3.0	1.5	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	200	2877	895	129	2953	919	252	268	228	275	284	241
v/s Ratio Prot	0.03	0.43		c0.07	c0.44		c0.04	0.01		0.02	0.03	
v/s Ratio Perm			0.14			0.01	c0.16		0.01	0.07		0.12
v/c Ratio	0.43	0.77	0.24	1.01	0.76	0.02	1.14	0.04	0.08	0.44	0.19	0.78
Uniform Delay, d1	54.6	20.0	13.1	55.6	18.9	10.7	48.8	44.2	44.5	42.1	44.4	48.9
Progression Factor	1.03	0.71	0.56	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.5	0.5	81.3	1.9	0.0	100.7	0.0	0.1	0.4	0.1	13.3
Delay (s)	56.9	15.7	7.8	136.9	20.8	10.7	149.6	44.2	44.5	42.5	44.5	62.2
Level of Service	E	B	A	F	C	B	F	D	D	D	D	E
Approach Delay (s)		16.2			26.9			115.9			55.3	
Approach LOS		B			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	86.1%	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	1.00	0.90	0.25	0.96	1.04	0.54	0.93	0.77	0.52	0.87	0.82	1.05
Control Delay	124.3	60.7	11.3	88.4	85.5	30.0	131.4	77.7	31.5	93.3	68.4	91.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	124.3	60.7	11.3	88.4	85.5	30.0	131.4	77.7	31.5	93.3	68.4	91.1
Queue Length 50th (ft)	232	731	51	293	~1064	435	110	310	211	262	474	~613
Queue Length 95th (ft)	#349	834	107	#420	#1208	608	#192	382	317	#343	559	#868
Internal Link Dist (ft)		620			1001			569			457	
Turn Bay Length (ft)	550		500	550		500	300		300	650		650
Base Capacity (vph)	375	1397	814	516	1543	991	192	674	663	513	990	594
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	1.00	0.90	0.25	0.96	1.04	0.53	0.93	0.77	0.52	0.85	0.82	1.05

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.

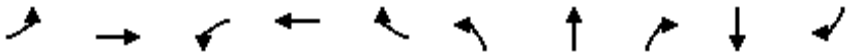
HCM Signalized Intersection Capacity Analysis

1: S Military Trail & SR 869/SW 10th Street

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	5.9
Lane Util. Factor	0.97	0.95	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	3539	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	3539	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	68	0	0	31	0	0	75	0	0	151
Lane Group Flow (vph)	375	1255	133	495	1603	496	179	516	267	435	810	474
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	1	6	7	5	2	3	7	4	5	3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	17.7	69.1	77.2	25.1	76.5	100.7	8.1	32.3	57.4	24.2	48.4	48.4
Effective Green, g (s)	19.7	71.1	81.2	27.1	78.5	104.7	10.1	34.3	61.4	26.2	50.4	50.4
Actuated g/C Ratio	0.11	0.39	0.45	0.15	0.44	0.58	0.06	0.19	0.34	0.15	0.28	0.28
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)	375	1397	714	516	1543	920	192	674	539	499	990	443
v/s Ratio Prot	0.11	0.35	0.01	c0.14	c0.45	0.08	0.05	0.15	0.07	c0.13	0.23	
v/s Ratio Perm			0.07			0.23			0.09			c0.30
v/c Ratio	1.00	0.90	0.19	0.96	1.04	0.54	0.93	0.77	0.50	0.87	0.82	1.07
Uniform Delay, d1	80.2	51.1	29.6	75.9	50.8	22.9	84.6	69.0	47.0	75.3	60.5	64.8
Progression Factor	1.00	1.00	1.00	0.84	1.14	1.62	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.5	9.4	0.0	23.5	30.4	0.2	45.3	5.2	0.3	14.9	5.3	62.6
Delay (s)	126.6	60.5	29.7	87.6	88.5	37.4	130.0	74.2	47.3	90.2	65.9	127.4
Level of Service	F	E	C	F	F	D	F	E	D	F	E	F
Approach Delay (s)		70.7			78.0			75.0			92.1	
Approach LOS		E			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	79.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

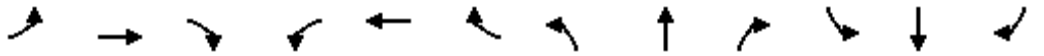
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	87	1946	109	1777	98	211	213	429	114	435
v/c Ratio	0.52	0.63	0.58	0.71	0.12	0.67	0.67	0.77	0.45	0.80
Control Delay	74.5	22.6	91.1	45.8	9.2	77.7	77.8	42.7	72.8	61.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.5	22.6	91.1	45.8	9.2	77.7	77.8	42.7	72.8	61.8
Queue Length 50th (ft)	54	511	61	573	5	242	245	274	122	222
Queue Length 95th (ft)	m67	615	m101	718	m45	332	334	400	189	291
Internal Link Dist (ft)		900		925			695		185	
Turn Bay Length (ft)	700		750		750			150		
Base Capacity (vph)	168	3087	190	2487	795	392	394	560	300	608
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	0.52	0.63	0.57	0.71	0.12	0.54	0.54	0.77	0.38	0.72

Intersection Summary

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

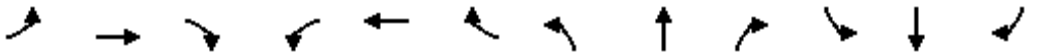


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	1715	75	100	1635	90	380	10	395	100	5	400
Future Volume (vph)	80	1715	75	100	1635	90	380	10	395	100	5	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	0.97	0.86		0.97	0.91	1.00	0.95	0.95	1.00		1.00	0.88
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.95	1.00		0.95	1.00
Satd. Flow (prot)	3367	6367		3433	5085	1524	1681	1689	1583		1546	2030
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.95	1.00		0.95	1.00
Satd. Flow (perm)	3367	6367		3433	5085	1524	1681	1689	1583		1546	2030
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	413	11	429	109	5	435
RTOR Reduction (vph)	0	3	0	0	0	50	0	0	138	0	0	70
Lane Group Flow (vph)	87	1943	0	109	1777	48	211	213	291	0	114	365
Heavy Vehicles (%)	4%	2%	2%	2%	2%	6%	2%	2%	2%	18%	2%	40%
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA	pt+ov	Split	NA	pt+ov
Protected Phases	1	6		5	2	2	3	3	3 5	4	4	4 1
Permitted Phases												
Actuated Green, G (s)	7.0	85.1		7.9	86.0	86.0	33.7	33.7	47.6		29.3	42.3
Effective Green, g (s)	9.0	87.1		9.9	88.0	88.0	33.7	33.7	47.6		29.3	42.3
Actuated g/C Ratio	0.05	0.48		0.06	0.49	0.49	0.19	0.19	0.26		0.16	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		2.5	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	168	3080		188	2486	745	314	316	418		251	477
v/s Ratio Prot	0.03	0.31		0.03	c0.35	0.03	0.13	0.13	c0.18		0.07	c0.18
v/s Ratio Perm												
v/c Ratio	0.52	0.63		0.58	0.71	0.06	0.67	0.67	0.70		0.45	0.77
Uniform Delay, d1	83.4	34.5		83.0	36.1	24.3	68.0	68.0	59.7		68.1	64.2
Progression Factor	0.82	0.60		0.96	1.14	1.69	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.5		3.2	1.6	0.1	5.6	5.6	5.0		1.3	7.2
Delay (s)	68.8	21.4		82.8	42.9	41.1	73.6	73.6	64.7		69.4	71.4
Level of Service	E	C		F	D	D	E	E	E		E	E
Approach Delay (s)		23.4			45.0			69.1			71.0	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2386	605	1592	232	379
v/c Ratio	0.84	0.54	0.42	0.34	0.69
Control Delay	24.7	45.1	4.0	63.8	74.4
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	24.7	45.1	4.1	63.8	74.4
Queue Length 50th (ft)	339	256	109	123	239
Queue Length 95th (ft)	217	315	105	169	308
Internal Link Dist (ft)	925		322		
Turn Bay Length (ft)		500		500	500
Base Capacity (vph)	2828	1125	3827	678	551
Starvation Cap Reductn	0	0	753	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.54	0.52	0.34	0.69

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		4.0	4.5					4.4		4.4
Lane Util. Factor		0.81		0.97	0.91					0.97		0.88
Frt		0.97		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		7307		3433	5085					3433		2787
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		7307		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	27	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2359	0	605	1592	0	0	0	0	232	0	379
Turn Type		NA		Prot	NA					Prot		Prot
Protected Phases		6		5 4	2 4					3		3
Permitted Phases												
Actuated Green, G (s)		67.0		54.6	133.5					33.6		33.6
Effective Green, g (s)		69.0		58.6	131.1					35.6		35.6
Actuated g/C Ratio		0.38		0.33	0.73					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)		2801		1117	3703					678		551
v/s Ratio Prot		c0.32		c0.18	0.31					0.07		c0.14
v/s Ratio Perm												
v/c Ratio		0.84		0.54	0.43					0.34		0.69
Uniform Delay, d1		50.5		49.7	9.7					62.1		67.0
Progression Factor		0.44		1.45	0.46					1.00		1.00
Incremental Delay, d2		2.5		0.5	0.1					0.1		2.9
Delay (s)		25.0		72.7	4.5					62.2		69.9
Level of Service		C		E	A					E		E
Approach Delay (s)		25.0			23.3			0.0			67.0	
Approach LOS		C			C			A			E	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBL	NBR
Lane Group Flow (vph)	1473	632	2065	463	653
v/c Ratio	0.50	0.23	0.39	0.38	0.75
Control Delay	3.0	0.1	8.6	58.1	69.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	0.1	8.6	58.1	69.3
Queue Length 50th (ft)	56	0	58	163	316
Queue Length 95th (ft)	101	0	88	202	380
Internal Link Dist (ft)	233		630	1225	
Turn Bay Length (ft)		700		410	430
Base Capacity (vph)	2966	2787	5343	1208	874
Starvation Cap Reductn	91	0	0	0	0
Spillback Cap Reductn	20	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.23	0.39	0.38	0.75

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1355	600	0	1900	440	620
Future Volume (vph)	1355	600	0	1900	440	620
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0		4.5	4.4	4.4
Lane Util. Factor	0.91	0.88		0.81	0.94	0.76
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	2787		7544	4990	3610
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	5085	2787		7544	4990	3610
Peak-hour factor, PHF	0.92	0.95	0.92	0.92	0.95	0.95
Adj. Flow (vph)	1473	632	0	2065	463	653
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1473	632	0	2065	463	653
Turn Type	NA	Free		NA	Prot	Prot
Protected Phases	6 3			2 3	4	4
Permitted Phases		Free				
Actuated Green, G (s)	100.6	180.0		125.6	41.6	41.6
Effective Green, g (s)	104.6	180.0		127.6	43.6	43.6
Actuated g/C Ratio	0.58	1.00		0.71	0.24	0.24
Clearance Time (s)					6.4	6.4
Vehicle Extension (s)					3.5	3.5
Lane Grp Cap (vph)	2954	2787		5347	1208	874
v/s Ratio Prot	c0.29			c0.27	0.09	c0.18
v/s Ratio Perm		0.23				
v/c Ratio	0.50	0.23		0.39	0.38	0.75
Uniform Delay, d1	22.2	0.0		10.5	57.0	63.1
Progression Factor	0.21	1.00		0.80	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.0	0.2	3.6
Delay (s)	4.6	0.1		8.4	57.2	66.7
Level of Service	A	A		A	E	E
Approach Delay (s)	3.3			8.4	62.8	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	180.0	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	0.76	0.68	0.32	0.77	0.60	0.17	0.88	0.15	0.33	0.64	0.83	0.87
Control Delay	91.3	33.3	6.5	92.9	40.4	6.4	71.0	54.9	8.4	52.4	92.2	48.8
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.3	33.5	6.5	92.9	40.4	6.4	71.0	54.9	8.4	52.4	92.2	48.8
Queue Length 50th (ft)	167	401	34	169	453	4	266	57	0	226	308	215
Queue Length 95th (ft)	226	519	98	225	567	54	#368	82	60	283	393	340
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	300		300	200		300	260		260	170		170
Base Capacity (vph)	442	2325	826	392	2283	779	343	996	559	404	427	541
Starvation Cap Reductn	0	174	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	0.68	0.74	0.32	0.72	0.60	0.17	0.85	0.11	0.28	0.63	0.62	0.74

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

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

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	0.18	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	331	3539	1583	1266	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	103	0	0	68	0	0	123	0	0	191
Lane Group Flow (vph)	299	1587	158	283	1370	62	293	114	35	255	266	211
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)	18.7	80.3	80.3	17.2	78.8	78.8	64.0	39.9	39.9	49.5	31.1	31.1
Effective Green, g (s)	20.7	82.3	82.3	19.2	80.8	80.8	64.0	39.9	39.9	49.5	31.1	31.1
Actuated g/C Ratio	0.11	0.46	0.46	0.11	0.45	0.45	0.36	0.22	0.22	0.28	0.17	0.17
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)	394	2324	723	366	2282	710	335	784	350	399	321	273
v/s Ratio Prot	c0.09	c0.31		0.08	0.27		c0.13	0.03		0.07	0.14	
v/s Ratio Perm			0.10			0.04	c0.18		0.02	0.11		0.13
v/c Ratio	0.76	0.68	0.22	0.77	0.60	0.09	0.87	0.15	0.10	0.64	0.83	0.77
Uniform Delay, d1	77.2	38.6	29.5	78.3	37.4	28.4	47.3	56.3	55.8	55.4	71.9	71.1
Progression Factor	1.05	0.79	0.58	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	0.7	0.1	8.9	1.2	0.2	20.9	0.0	0.0	2.5	15.3	11.7
Delay (s)	87.0	31.3	17.3	87.2	38.6	28.7	68.3	56.4	55.8	57.8	87.2	82.7
Level of Service	F	C	B	F	D	C	E	E	E	E	F	F
Approach Delay (s)		37.3			45.6			62.4			77.1	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	49.4	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)	20.2
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues

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

Queues

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

Queues

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			