Queues

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	315	2435	370	1641	505	109	152	261	27	27	27
v/c Ratio	0.97	0.77	1.02	0.59	0.46	0.30	0.77	0.49	0.36	0.35	0.07
Control Delay	113.8	27.5	126.9	23.2	7.3	75.1	102.4	16.2	95.6	95.0	0.4
Queue Delay	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	113.8	27.5	126.9	23.5	7.6	75.1	102.4	16.2	95.6	95.0	0.4
Queue Length 50th (ft)	375	724	~240	409	84	62	178	52	33	33	0
Queue Length 95th (ft)	#583	914	#356	357	88	93	255	140	72	72	1
Internal Link Dist (ft)		580		548			436			396	
Turn Bay Length (ft)	450		375		350	225		250	200		
Base Capacity (vph)	325	3147	364	2789	1230	610	331	528	252	257	385
Starvation Cap Reductn	0	0	0	497	235	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	0.97	0.77	1.02	0.72	0.51	0.18	0.46	0.49	0.11	0.11	0.07

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: SW 12th Avenue & Hillsboro Bvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	290	2050	190	340	1510	465	100	140	240	40	10	25
Future Volume (vph)	290	2050	190	340	1510	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	5020		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	5020		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	2228	207	370	1641	505	109	152	261	43	11	27
RTOR Reduction (vph)	0	4	0	0	0	100	0	0	165	0	0	21
Lane Group Flow (vph)	315	2431	0	370	1641	405	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)	31.1	110.7		17.1	96.7	104.8	19.1	19.1	36.2	8.1	8.1	39.2
Effective Green, g (s)	33.1	112.7		19.1	98.7	108.8	19.1	19.1	36.2	8.1	8.1	39.2
Actuated g/C Ratio	0.18	0.63		0.11	0.55	0.60	0.11	0.11	0.20	0.04	0.04	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)	325	3143		364	2788	956	364	197	318	75	77	344
v/s Ratio Prot	c0.18	c0.48		0.11	0.32	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	0.97	0.77		1.02	0.59	0.42	0.30	0.77	0.30	0.36	0.35	0.02
Uniform Delay, d1	72.9	24.4		80.5	27.1	18.9	74.3	78.3	61.2	83.4	83.4	55.3
Progression Factor	1.00	1.00		1.05	0.80	0.74	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.9	1.9		46.4	0.7	0.1	0.2	15.5	0.2	1.1	1.0	0.0
Delay (s)	113.9	26.3		131.2	22.4	14.0	74.4	93.9	61.4	84.5	84.4	55.3
Level of Service	F	C		F	C	B	E	F	E	F	F	E
Approach Delay (s)		36.3			36.7			73.6			74.7	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1565	937	1625	642	863
v/c Ratio	0.31	0.59	0.62	0.84	0.71
Control Delay	0.1	5.2	25.6	54.8	44.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.1	5.2	25.6	54.8	44.6
Queue Length 50th (ft)	0	116	512	668	471
Queue Length 95th (ft)	0	217	584	719	473
Internal Link Dist (ft)	548		319		
Turn Bay Length (ft)		150			
Base Capacity (vph)	5085	1583	2622	919	1447
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	1	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.59	0.62	0.70	0.60

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	1440	890	0	1495	0	610	0	820	0	0
Future Volume (vph)	0	1440	890	0	1495	0	610	0	820	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	1565	937	0	1625	0	642	0	863	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1565	937	0	1625	0	642	0	863	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		90.8		76.2		76.2		
Effective Green, g (s)		180.0	180.0		92.8		78.2		78.2		
Actuated g/C Ratio		1.00	1.00		0.52		0.43		0.43		
Clearance Time (s)					6.5		6.5		6.5		
Vehicle Extension (s)					3.0		2.5		2.5		
Lane Grp Cap (vph)		5085	1583		2621		768		1210		
v/s Ratio Prot		0.31			0.32		c0.36		0.31		
v/s Ratio Perm			c0.59								
v/c Ratio		0.31	0.59		0.62		0.84		0.71		
Uniform Delay, d1		0.0	0.0		31.0		45.2		41.7		
Progression Factor		1.00	1.00		0.75		1.00		1.00		
Incremental Delay, d2		0.1	1.1		0.9		7.7		1.9		
Delay (s)		0.1	1.1		24.3		52.9		43.6		
Level of Service		A	A		C		D		D		
Approach Delay (s)		0.5			24.3			47.6		0.0	
Approach LOS		A			C			D		A	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

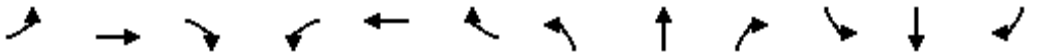
c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1511	1734	880	707	842
v/c Ratio	0.55	0.63	0.56	0.37	0.77
Control Delay	12.4	13.9	2.7	20.1	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	13.9	2.7	20.1	28.0
Queue Length 50th (ft)	194	420	58	97	215
Queue Length 95th (ft)	283	m320	m10	121	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	0.55	0.63	0.56	0.34	0.70

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	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1390	0	0	1595	810	650	0	800	0	0	0
Future Volume (vph)	0	1390	0	0	1595	810	650	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	1511	0	0	1734	880	707	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	1511	0	0	1734	880	707	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		0.30			c0.34		0.14		c0.29			
v/s Ratio Perm						0.56						
v/c Ratio		0.55			0.63	0.56	0.37		0.76			
Uniform Delay, d1		13.3			14.2	0.0	19.9		24.2			
Progression Factor		0.85			0.91	1.00	1.00		1.00			
Incremental Delay, d2		0.7			0.6	0.8	0.1		3.3			
Delay (s)		12.0			13.4	0.8	20.1		27.5			
Level of Service		B			B	A	C		C			
Approach Delay (s)		12.0			9.2			24.1			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	14.0	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	61.9%	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)	342	1908	130	87	2038	103	484	92	174	43	5	92
v/c Ratio	0.92	0.58	0.12	0.76	0.67	0.10	1.64	0.31	0.44	0.52	0.08	0.42
Control Delay	96.8	18.1	2.2	117.7	25.1	0.2	340.1	70.9	14.3	87.2	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	0.0
Total Delay	96.8	18.1	2.2	117.7	25.1	0.2	340.1	70.9	14.3	87.2	87.0	5.7
Queue Length 50th (ft)	205	456	15	103	567	0	~757	99	10	42	6	0
Queue Length 95th (ft)	#307	447	m28	#195	614	0	#991	163	88	82	22	0
Internal Link Dist (ft)		660			631			513			403	
Turn Bay Length (ft)	300		150	100		200	125					340
Base Capacity (vph)	371	3280	1067	120	3064	1021	296	610	629	82	393	470
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	0.92	0.58	0.12	0.72	0.67	0.10	1.64	0.15	0.28	0.52	0.01	0.20

Intersection Summary

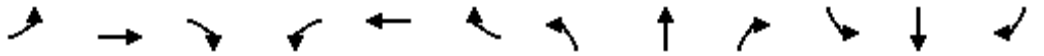
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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.

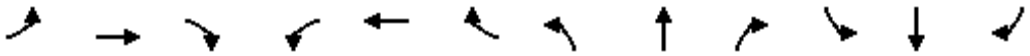
HCM Signalized Intersection Capacity Analysis

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)	315	1755	120	80	1875	95	445	85	160	40	5	85
Future Volume (vph)	315	1755	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	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	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	1908	130	87	2038	103	484	92	174	43	5	92
RTOR Reduction (vph)	0	0	47	0	0	42	0	0	138	0	0	88
Lane Group Flow (vph)	342	1908	83	87	2038	61	484	92	36	43	5	4
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)	17.5	113.0	113.0	9.8	105.3	105.3	38.2	29.0	29.0	10.4	7.2	7.2
Effective Green, g (s)	19.5	115.0	115.0	11.8	107.3	107.3	38.2	29.0	29.0	10.4	7.2	7.2
Actuated g/C Ratio	0.11	0.64	0.64	0.07	0.60	0.60	0.21	0.16	0.16	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)	371	3248	1011	116	3031	943	302	300	255	83	74	63
v/s Ratio Prot	c0.10	0.38		0.05	c0.40		c0.22	0.05		0.01	0.00	
v/s Ratio Perm			0.05			0.04	c0.12		0.02	0.02		0.00
v/c Ratio	0.92	0.59	0.08	0.75	0.67	0.07	1.60	0.31	0.14	0.52	0.07	0.06
Uniform Delay, d1	79.5	18.8	12.4	82.7	24.5	15.3	68.4	66.6	64.8	81.9	83.2	83.1
Progression Factor	0.90	0.95	1.20	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.6	0.6	0.1	21.2	1.2	0.1	286.2	0.2	0.1	2.3	0.1	0.1
Delay (s)	94.9	18.6	15.0	103.8	25.7	15.4	354.6	66.8	64.9	84.2	83.3	83.3
Level of Service	F	B	B	F	C	B	F	E	E	F	F	F
Approach Delay (s)		29.4			28.3			252.1			83.6	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	60.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

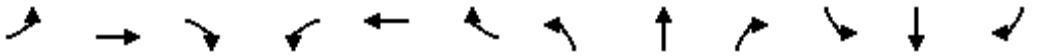


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	364	2598	174	364	1696	375	207	929	701	522	658	315
v/c Ratio	1.00	1.47	0.18	1.03	0.97	0.36	0.92	1.52	1.35	1.43	0.87	0.66
Control Delay	125.3	247.9	5.6	140.2	50.0	17.7	123.0	288.2	200.3	262.3	81.8	33.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	125.3	247.9	5.6	140.2	50.0	17.7	123.0	288.2	200.3	262.3	81.8	33.5
Queue Length 50th (ft)	225	~2204	25	~242	558	168	127	~802	~778	~428	401	146
Queue Length 95th (ft)	#342	#2305	62	#359	#1164	256	#212	#942	#1038	#553	#496	265
Internal Link Dist (ft)		620			1082			569			457	
Turn Bay Length (ft)	550		500	550		500	300		300	650		650
Base Capacity (vph)	364	1769	981	352	1757	1035	226	611	520	364	753	480
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	1.47	0.18	1.03	0.97	0.36	0.92	1.52	1.35	1.43	0.87	0.66

Intersection Summary

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

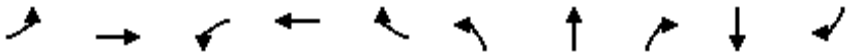
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	335	2390	160	335	1560	345	190	855	645	480	605	290
Future Volume (vph)	335	2390	160	335	1560	345	190	855	645	480	605	290
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)	364	2598	174	364	1696	375	207	929	701	522	658	315
RTOR Reduction (vph)	0	0	53	0	0	49	0	0	81	0	0	144
Lane Group Flow (vph)	364	2598	121	364	1696	326	207	929	620	522	658	171
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)	17.1	88.0	97.9	16.5	87.4	104.5	9.9	29.1	45.6	17.1	36.3	36.3
Effective Green, g (s)	19.1	90.0	101.9	18.5	89.4	108.5	11.9	31.1	49.6	19.1	38.3	38.3
Actuated g/C Ratio	0.11	0.50	0.57	0.10	0.50	0.60	0.07	0.17	0.28	0.11	0.21	0.21
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)	364	1769	896	352	1757	1006	226	611	436	364	753	336
v/s Ratio Prot	0.11	c0.73	0.01	0.11	0.48	0.03	0.06	c0.26	c0.15	c0.15	0.19	
v/s Ratio Perm			0.07			0.17			0.25			0.11
v/c Ratio	1.00	1.47	0.13	1.03	0.97	0.32	0.92	1.52	1.42	1.43	0.87	0.51
Uniform Delay, d1	80.5	45.0	18.3	80.8	43.8	17.6	83.6	74.5	65.2	80.5	68.5	62.5
Progression Factor	1.00	1.00	1.00	1.22	0.88	1.62	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	47.2	214.0	0.0	49.4	11.6	0.0	36.8	242.5	202.8	210.5	11.0	1.2
Delay (s)	127.6	259.0	18.4	148.0	50.1	28.7	120.4	317.0	268.0	290.9	79.5	63.8
Level of Service	F	F	B	F	D	C	F	F	F	F	E	E
Approach Delay (s)		230.4			61.4			276.1			150.0	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	180.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	132.5%	ICU Level of Service	H
Analysis Period (min)	15		

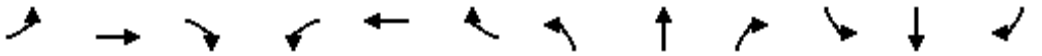
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	332	3489	440	2283	370	35	36	114	54	92
v/c Ratio	0.66	0.91	0.85	0.74	0.35	0.25	0.25	0.24	0.71	0.18
Control Delay	57.0	16.2	89.4	24.9	2.3	82.2	82.2	15.2	126.6	10.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	16.2	89.4	25.1	2.3	82.2	82.2	15.2	126.6	10.5
Queue Length 50th (ft)	188	632	261	631	32	41	43	21	64	0
Queue Length 95th (ft)	m125	m275	m289	m512	m6	86	87	78	#140	30
Internal Link Dist (ft)		818		925			695		185	
Turn Bay Length (ft)	700		750		750			150		
Base Capacity (vph)	506	3814	534	3135	1081	140	142	480	79	524
Starvation Cap Reductn	0	0	0	236	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	0.66	0.91	0.82	0.79	0.34	0.25	0.25	0.24	0.68	0.18

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)	305	2705	505	405	2100	340	55	10	105	40	10	85
Future Volume (vph)	305	2705	505	405	2100	340	55	10	105	40	10	85
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	0.98		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	6257		3433	5085	1524	1681	1710	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	6257		3433	5085	1524	1681	1710	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	2940	549	440	2283	370	60	11	114	43	11	92
RTOR Reduction (vph)	0	18	0	0	0	146	0	0	68	0	0	72
Lane Group Flow (vph)	332	3471	0	440	2283	224	35	36	46	0	54	20
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)	25.2	107.2		25.1	107.1	107.1	15.0	15.0	46.1		8.7	39.9
Effective Green, g (s)	27.2	109.2		27.1	109.1	109.1	15.0	15.0	46.1		8.7	39.9
Actuated g/C Ratio	0.15	0.61		0.15	0.61	0.61	0.08	0.08	0.26		0.05	0.22
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)	508	3795		516	3082	923	140	142	405		76	449
v/s Ratio Prot	0.10	c0.55		c0.13	0.45	0.15	0.02	c0.02	0.03		c0.03	0.01
v/s Ratio Perm												
v/c Ratio	0.65	0.91		0.85	0.74	0.24	0.25	0.25	0.11		0.71	0.05
Uniform Delay, d1	72.0	31.3		74.5	25.3	16.4	77.2	77.3	51.3		84.4	55.1
Progression Factor	0.77	0.50		1.07	0.95	1.53	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.5		7.6	0.9	0.4	0.9	0.9	0.1		26.7	0.0
Delay (s)	55.7	16.0		87.5	25.0	25.4	78.2	78.2	51.4		111.1	55.1
Level of Service	E	B		F	C	C	E	E	D		F	E
Approach Delay (s)		19.5			33.9			61.7			75.8	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	3074	879	2016	453	1042
v/c Ratio	1.23dr	0.99	0.62	0.42	1.19
Control Delay	103.7	103.4	8.2	50.2	148.2
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	103.7	103.4	8.4	50.2	148.2
Queue Length 50th (ft)	~1044	547	145	219	~838
Queue Length 95th (ft)	#1076	m#640	m219	274	#990
Internal Link Dist (ft)	925		295		
Turn Bay Length (ft)		500		500	500
Base Capacity (vph)	2640	884	3234	1079	876
Starvation Cap Reductn	0	0	470	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.16	0.99	0.73	0.42	1.19

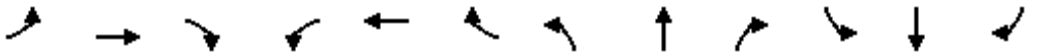
Intersection Summary

~ 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.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2135	715	835	1855	0	0	0	0	430	0	990
Future Volume (vph)	0	2135	715	835	1855	0	0	0	0	430	0	990
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		0.96		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		7267		3433	5085					3433		2787
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		7267		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	2321	753	879	2016	0	0	0	0	453	0	1042
RTOR Reduction (vph)	0	33	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	3041	0	879	2016	0	0	0	0	453	0	1042
Turn Type		NA		Prot	NA					Prot		Prot
Protected Phases		6		5 4	2 4					3		3
Permitted Phases												
Actuated Green, G (s)		62.6		44.4	112.5					54.6		54.6
Effective Green, g (s)		64.6		42.0	110.1					56.6		56.6
Actuated g/C Ratio		0.36		0.23	0.61					0.31		0.31
Clearance Time (s)		6.0								6.4		6.4
Vehicle Extension (s)		3.0								2.0		2.0
Lane Grp Cap (vph)		2608		801	3110					1079		876
v/s Ratio Prot		c0.42		c0.26	0.40					0.13		c0.37
v/s Ratio Perm												
v/c Ratio		1.23dr		1.10	0.65					0.42		1.19
Uniform Delay, d1		57.7		69.0	22.5					48.7		61.7
Progression Factor		0.49		1.19	0.37					1.00		1.00
Incremental Delay, d2		76.8		59.2	0.4					0.1		96.7
Delay (s)		105.0		141.5	8.8					48.8		158.4
Level of Service		F		F	A					D		F
Approach Delay (s)		105.0			49.1			0.0			125.2	
Approach LOS		F			D			A			F	

Intersection Summary			
HCM 2000 Control Delay	87.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBL	NBR
Lane Group Flow (vph)	1299	1442	2315	895	495
v/c Ratio	0.37	0.52	0.39	1.08	0.82
Control Delay	0.7	6.3	7.0	122.0	84.7
Queue Delay	0.3	0.0	0.2	0.0	0.0
Total Delay	1.0	6.3	7.1	122.0	84.7
Queue Length 50th (ft)	9	178	74	~415	251
Queue Length 95th (ft)	m8	m44	100	#509	310
Internal Link Dist (ft)	260		630	1225	
Turn Bay Length (ft)		700		410	430
Base Capacity (vph)	3548	2787	5913	831	601
Starvation Cap Reductn	1373	0	2140	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.52	0.61	1.08	0.82

Intersection Summary

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

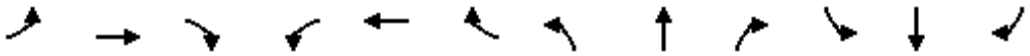
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1195	1370	0	2130	850	470
Future Volume (vph)	1195	1370	0	2130	850	470
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	1442	0	2315	895	495
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1299	1442	0	2315	895	495
Turn Type	NA	Free		NA	Prot	Prot
Protected Phases	6 3			2 3	4	4
Permitted Phases		Free				
Actuated Green, G (s)	123.2	180.0		139.2	28.0	28.0
Effective Green, g (s)	125.2	180.0		141.2	30.0	30.0
Actuated g/C Ratio	0.70	1.00		0.78	0.17	0.17
Clearance Time (s)					6.4	6.4
Vehicle Extension (s)					3.5	3.5
Lane Grp Cap (vph)	3536	2787		5917	831	601
v/s Ratio Prot	0.26			0.31	c0.18	0.14
v/s Ratio Perm		c0.52				
v/c Ratio	0.37	0.52		0.39	1.08	0.82
Uniform Delay, d1	11.2	0.0		6.0	75.0	72.4
Progression Factor	0.06	1.00		1.12	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.0	54.1	9.2
Delay (s)	0.7	0.1		6.8	129.1	81.6
Level of Service	A	A		A	F	F
Approach Delay (s)	0.4			6.8	112.2	
Approach LOS	A			A	F	

Intersection Summary			
HCM 2000 Control Delay	26.8	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)	18.8
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

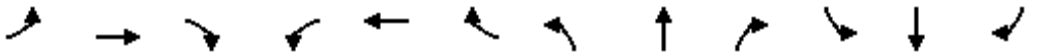
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	272	1234	304	168	1685	92	239	163	163	250	201	391
v/c Ratio	0.74	0.44	0.30	0.65	0.64	0.11	0.83	0.29	0.42	0.70	0.76	0.89
Control Delay	76.2	19.0	3.5	93.1	34.3	5.4	74.2	66.7	10.8	63.2	90.7	49.6
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	76.2	19.0	3.5	93.1	34.3	5.4	74.2	66.7	10.8	63.2	90.7	49.6
Queue Length 50th (ft)	153	221	47	101	522	1	233	91	0	245	233	183
Queue Length 95th (ft)	m217	261	m68	145	675	40	291	120	66	303	305	303
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	300		300	200		300	260		260	170		170
Base Capacity (vph)	411	2800	1008	278	2636	864	298	886	518	364	437	561
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	0.66	0.44	0.30	0.60	0.64	0.11	0.80	0.18	0.31	0.69	0.46	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)	250	1135	280	155	1550	85	220	150	150	230	185	360
Future Volume (vph)	250	1135	280	155	1550	85	220	150	150	230	185	360
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	0.27	1.00	1.00	0.65	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	506	3539	1583	1208	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)	272	1234	304	168	1685	92	239	163	163	250	201	391
RTOR Reduction (vph)	0	0	137	0	0	43	0	0	137	0	0	212
Lane Group Flow (vph)	272	1234	167	168	1685	49	239	163	26	250	201	179
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)	17.3	97.1	97.1	11.5	91.3	91.3	49.6	28.2	28.2	44.8	25.8	25.8
Effective Green, g (s)	19.3	99.1	99.1	13.5	93.3	93.3	49.6	28.2	28.2	44.8	25.8	25.8
Actuated g/C Ratio	0.11	0.55	0.55	0.08	0.52	0.52	0.28	0.16	0.16	0.25	0.14	0.14
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)	368	2799	871	257	2635	820	289	554	248	359	267	226
v/s Ratio Prot	c0.08	0.24		0.05	c0.33		c0.10	0.05		0.07	0.11	
v/s Ratio Perm			0.11			0.03	c0.13		0.02	0.10		0.11
v/c Ratio	0.74	0.44	0.19	0.65	0.64	0.06	0.83	0.29	0.10	0.70	0.75	0.79
Uniform Delay, d1	77.9	24.0	20.3	81.0	31.2	21.5	55.5	67.1	65.1	59.2	74.0	74.5
Progression Factor	0.84	0.73	1.19	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.9	0.4	0.4	4.5	0.5	0.0	16.6	0.1	0.1	4.7	10.2	15.9
Delay (s)	71.0	18.0	24.5	85.5	31.7	21.6	72.1	67.2	65.1	63.9	84.2	90.4
Level of Service	E	B	C	F	C	C	E	E	E	E	F	F
Approach Delay (s)		27.0			35.9			68.7			81.1	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	77.6%	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)	2554	174	2011	158	207
v/c Ratio	0.60	0.79	0.53	0.69	0.54
Control Delay	17.9	78.8	2.1	64.9	11.3
Queue Delay	0.0	1.5	0.1	0.0	0.0
Total Delay	17.9	80.3	2.1	64.9	11.3
Queue Length 50th (ft)	298	104	37	119	0
Queue Length 95th (ft)	377	#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	0.60	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)	2235	115	160	1850	145	190
Future Volume (vph)	2235	115	160	1850	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)	2429	125	174	2011	158	207
RTOR Reduction (vph)	5	0	0	0	0	180
Lane Group Flow (vph)	2549	0	174	2011	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	0.40	c0.09	
v/s Ratio Perm						0.02
v/c Ratio	0.60		0.79	0.53	0.69	0.13
Uniform Delay, d1	16.8		51.0	6.4	50.0	46.3
Progression Factor	1.00		1.11	0.23	1.00	1.00
Incremental Delay, d2	0.2		14.0	0.1	7.1	0.1
Delay (s)	16.9		70.6	1.5	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	15.1	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

Queues

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	103	2533	2005	92	272	179
v/c Ratio	0.78	0.53	0.50	0.09	0.61	0.53
Control Delay	70.9	2.7	11.1	1.4	54.8	16.1
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	70.9	2.7	11.1	1.4	54.8	16.1
Queue Length 50th (ft)	80	29	233	1	104	17
Queue Length 95th (ft)	m#174	46	298	m6	140	82
Internal Link Dist (ft)		175	1004		271	
Turn Bay Length (ft)				450		
Base Capacity (vph)	132	4778	3977	1017	1058	594
Starvation Cap Reductn	0	476	0	0	0	0
Spillback Cap Reductn	0	0	40	0	0	5
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.59	0.51	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	2330	1845	85	250	165
Future Volume (vph)	95	2330	1845	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	2533	2005	92	272	179
RTOR Reduction (vph)	0	0	0	35	0	134
Lane Group Flow (vph)	103	2533	2005	57	272	45
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	c0.40	0.31		c0.08	
v/s Ratio Perm				0.04		0.03
v/c Ratio	0.78	0.53	0.50	0.06	0.61	0.22
Uniform Delay, d1	54.5	6.4	12.6	8.9	49.4	46.8
Progression Factor	0.71	0.34	0.82	0.55	1.00	1.00
Incremental Delay, d2	19.9	0.0	0.0	0.0	1.8	0.2
Delay (s)	58.5	2.2	10.3	4.9	51.2	47.0
Level of Service	E	A	B	A	D	D
Approach Delay (s)		4.4	10.1		49.5	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	10.6	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	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1717	1053	1500	526	579
v/c Ratio	0.48	0.67	0.53	0.59	0.80
Control Delay	6.3	10.1	7.9	22.5	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	10.1	7.9	22.5	30.9
Queue Length 50th (ft)	86	344	146	84	109
Queue Length 95th (ft)	159	456	168	127	#189
Internal Link Dist (ft)	1004		259		
Turn Bay Length (ft)		250			
Base Capacity (vph)	3567	1583	2830	909	738
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	0.67	0.53	0.58	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	1580	1000	0	1380	0	500	0	550	0	0
Future Volume (vph)	0	1580	1000	0	1380	0	500	0	550	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	1717	1053	0	1500	0	526	0	579	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1717	1053	0	1500	0	526	0	579	0	0
Turn Type		NA	Free		NA		Prot		Prot		
Protected Phases		6			2		3		3		
Permitted Phases			Free								
Actuated Green, G (s)		31.4	60.0		31.4		13.6		13.6		
Effective Green, g (s)		33.4	60.0		33.4		15.6		15.6		
Actuated g/C Ratio		0.56	1.00		0.56		0.26		0.26		
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)		3567	1583		2830		892		724		
v/s Ratio Prot		0.27			0.29		0.15		0.21		
v/s Ratio Perm			c0.67								
v/c Ratio		0.48	0.67		0.53		0.59		0.80		
Uniform Delay, d1		8.1	0.0		8.4		19.4		20.7		
Progression Factor		0.72	1.00		0.88		1.00		1.00		
Incremental Delay, d2		0.4	2.0		0.5		0.8		6.0		
Delay (s)		6.2	2.0		7.9		20.2		26.7		
Level of Service		A	A		A		C		C		
Approach Delay (s)		4.6			7.9			23.6		0.0	
Approach LOS		A			A			C		A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.81		
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)	1293	1957	600	579	442
v/c Ratio	0.45	0.68	0.38	0.68	0.64
Control Delay	6.8	7.3	0.2	25.0	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	7.3	0.2	25.0	24.9
Queue Length 50th (ft)	111	172	0	95	79
Queue Length 95th (ft)	97	m160	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	0.45	0.68	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	1190	0	0	1800	570	550	0	420	0	0
Future Volume (vph)	0	1190	0	0	1800	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	1293	0	0	1957	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	1293	0	0	1957	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		0.45			0.68	0.38	0.68		0.64		
Uniform Delay, d1		7.4			9.0	0.0	20.5		20.2		
Progression Factor		0.84			0.75	1.00	1.00		1.00		
Incremental Delay, d2		0.4			0.3	0.2	2.1		1.8		
Delay (s)		6.7			7.1	0.2	22.6		22.1		
Level of Service		A			A	A	C		C		
Approach Delay (s)		6.7			5.5			22.4		0.0	
Approach LOS		A			A			C		A	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
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

Queues

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	424	1326	60	1847	250	228	82	109	223	571
v/c Ratio	1.00	0.60	0.48	1.00	0.73	0.45	0.15	0.32	0.44	1.04
Control Delay	87.3	20.6	66.9	60.1	46.2	39.3	0.6	28.7	39.2	80.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.3	20.6	66.9	60.1	46.2	39.3	0.6	28.7	39.2	80.7
Queue Length 50th (ft)	168	252	45	~524	140	146	0	56	143	~381
Queue Length 95th (ft)	#281	307	91	#645	#224	225	0	98	219	#604
Internal Link Dist (ft)		1155		834		912			742	
Turn Bay Length (ft)	550		490		250		225	200		
Base Capacity (vph)	425	2194	131	1838	341	509	544	338	507	548
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	0.60	0.46	1.00	0.73	0.45	0.15	0.32	0.44	1.04

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	1075	145	55	1615	85	230	210	75	100	205	525
Future Volume (vph)	390	1075	145	55	1615	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	4946		1752	4998		1752	1845	1568	1752	1845	1568
Flt Permitted	0.95	1.00		0.95	1.00		0.50	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	3400	4946		1752	4998		921	1845	1568	913	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	1168	158	60	1755	92	250	228	82	109	223	571
RTOR Reduction (vph)	0	14	0	0	4	0	0	0	59	0	0	117
Lane Group Flow (vph)	424	1312	0	60	1843	0	250	228	23	109	223	454
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		39.1	33.1	33.1	38.9	33.0	33.0
Effective Green, g (s)	15.0	51.5		7.5	44.0		39.1	33.1	33.1	38.9	33.0	33.0
Actuated g/C Ratio	0.12	0.43		0.06	0.37		0.33	0.28	0.28	0.32	0.28	0.28
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	2122		109	1832		341	508	432	337	507	431
v/s Ratio Prot	c0.12	0.27		0.03	c0.37		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	0.62		0.55	1.01		0.73	0.45	0.05	0.32	0.44	1.05
Uniform Delay, d1	52.5	26.6		54.6	38.0		36.0	35.9	31.9	29.4	35.9	43.5
Progression Factor	0.87	0.75		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.2	1.2		3.4	22.4		6.9	0.2	0.0	0.2	0.2	57.8
Delay (s)	86.0	21.2		58.0	60.4		42.9	36.1	31.9	29.6	36.1	101.3
Level of Service	F	C		E	E		D	D	C	C	D	F
Approach Delay (s)		36.9			60.3			38.5			76.5	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	52.8	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	92.5%	ICU Level of Service	F
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)	49	2316	299	2397	65	250	11	402	274	281	359
v/c Ratio	0.47	0.89	1.03	0.87	0.05	0.73	0.06	1.05	0.97	0.97	0.92
Control Delay	87.7	40.3	134.7	19.9	0.2	82.0	63.8	109.3	110.8	111.2	62.2
Queue Delay	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.7	40.3	134.7	21.1	0.2	82.0	63.8	109.3	110.8	111.2	62.2
Queue Length 50th (ft)	51	778	~175	260	0	132	11	~399	304	311	233
Queue Length 95th (ft)	100	900	m#261	533	m1	177	31	#574	#504	#516	#420
Internal Link Dist (ft)		580		548			436			396	
Turn Bay Length (ft)	450		375		350	225		250	200		
Base Capacity (vph)	105	2598	289	2747	1202	686	372	383	283	289	392
Starvation Cap Reductn	0	0	0	166	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	0.47	0.89	1.03	0.93	0.05	0.36	0.03	1.05	0.97	0.97	0.92

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)	45	1985	145	275	2205	60	230	10	370	420	90	330
Future Volume (vph)	45	1985	145	275	2205	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	5033		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	5033		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	2158	158	299	2397	65	250	11	402	457	98	359
RTOR Reduction (vph)	0	4	0	0	0	18	0	0	54	0	0	56
Lane Group Flow (vph)	49	2312	0	299	2397	47	250	11	348	274	281	303
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)	7.5	80.4		11.5	84.4	111.4	16.1	16.1	27.6	27.0	27.0	34.5
Effective Green, g (s)	9.5	82.4		13.5	86.4	115.4	16.1	16.1	27.6	27.0	27.0	34.5
Actuated g/C Ratio	0.06	0.52		0.08	0.54	0.72	0.10	0.10	0.17	0.17	0.17	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)	105	2591		289	2745	1141	345	187	273	283	289	341
v/s Ratio Prot	0.03	0.46		0.09	c0.47	0.01	0.07	0.01	c0.09	0.16	c0.16	0.04
v/s Ratio Perm						0.02			0.13			0.15
v/c Ratio	0.47	0.89		1.03	0.87	0.04	0.72	0.06	1.28	0.97	0.97	0.89
Uniform Delay, d1	72.8	34.8		73.2	32.0	6.4	69.8	65.1	66.2	66.1	66.1	60.9
Progression Factor	1.00	1.00		1.22	0.52	0.08	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	5.2		52.4	2.9	0.0	6.3	0.0	149.3	44.1	44.9	22.8
Delay (s)	74.0	40.0		141.5	19.4	0.5	76.1	65.1	215.5	110.1	111.1	83.7
Level of Service	E	D		F	B	A	E	E	F	F	F	F
Approach Delay (s)		40.7			32.2			160.4			100.0	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	2114	874	2098	695	642
v/c Ratio	0.42	0.55	0.81	0.90	0.53
Control Delay	0.1	0.5	33.3	57.5	34.3
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	0.1	0.5	33.6	57.5	34.3
Queue Length 50th (ft)	0	0	665	653	270
Queue Length 95th (ft)	m0	m0	657	816	321
Internal Link Dist (ft)	548		319		
Turn Bay Length (ft)		150			
Base Capacity (vph)	5085	1583	2583	835	1315
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	109	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.55	0.85	0.83	0.49

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	1945	830	0	1930	0	660	0	610	0	0
Future Volume (vph)	0	1945	830	0	1930	0	660	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	2114	874	0	2098	0	695	0	642	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2114	874	0	2098	0	695	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)		160.0	160.0		79.3		67.7		67.7		
Effective Green, g (s)		160.0	160.0		81.3		69.7		69.7		
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		2583		771		1214		
v/s Ratio Prot		0.42			c0.41		c0.39		0.23		
v/s Ratio Perm			0.55								
v/c Ratio		0.42	0.55		0.81		0.90		0.53		
Uniform Delay, d1		0.0	0.0		33.0		42.0		33.1		
Progression Factor		1.00	1.00		0.91		1.00		1.00		
Incremental Delay, d2		0.1	0.5		2.1		13.7		0.3		
Delay (s)		0.1	0.5		32.1		55.7		33.4		
Level of Service		A	A		C		E		C		
Approach Delay (s)		0.2			32.1			45.0		0.0	
Approach LOS		A			C			D		A	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

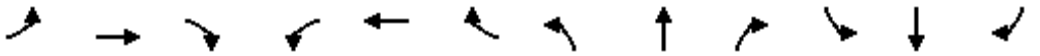
! Phase conflict between lane groups.

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	2038	2315	804	750	789
v/c Ratio	0.69	0.79	0.51	0.44	0.81
Control Delay	12.0	14.2	0.7	21.4	30.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	14.2	0.7	21.4	30.1
Queue Length 50th (ft)	268	470	0	100	186
Queue Length 95th (ft)	352	m367	m0	132	263
Internal Link Dist (ft)	286	371			
Turn Bay Length (ft)			250	350	350
Base Capacity (vph)	2949	2949	1568	1746	1006
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	0.69	0.79	0.51	0.43	0.78

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	1875	0	0	2130	740	690	0	750	0	0	0
Future Volume (vph)	0	1875	0	0	2130	740	690	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	750	0	789	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	32	0	0	0
Lane Group Flow (vph)	0	2038	0	0	2315	804	750	0	757	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)		44.4			44.4	80.0	25.1		25.1			
Effective Green, g (s)		46.4			46.4	80.0	27.1		27.1			
Actuated g/C Ratio		0.58			0.58	1.00	0.34		0.34			
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)		2949			2949	1568	1690		944			
v/s Ratio Prot		0.40			c0.46		0.15		c0.27			
v/s Ratio Perm						0.51						
v/c Ratio		0.69			0.79	0.51	0.44		0.80			
Uniform Delay, d1		11.8			13.0	0.0	20.6		24.0			
Progression Factor		0.90			0.97	1.00	1.00		1.00			
Incremental Delay, d2		1.2			1.3	0.7	0.2		5.0			
Delay (s)		11.8			13.9	0.7	20.8		29.0			
Level of Service		B			B	A	C		C			
Approach Delay (s)		11.8			10.5			25.0			0.0	
Approach LOS		B			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	80.0	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	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	103	2413	337	152	2467	38	315	11	141	136	54	337
v/c Ratio	0.68	0.82	0.35	0.94	0.78	0.04	1.10	0.04	0.38	0.46	0.19	0.90
Control Delay	88.2	23.8	8.3	126.4	25.6	0.1	136.9	51.9	8.4	55.6	56.6	61.3
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	88.2	23.8	8.3	126.4	25.6	0.1	136.9	51.9	8.4	55.6	56.6	61.3
Queue Length 50th (ft)	55	569	79	161	661	0	~343	10	0	119	50	201
Queue Length 95th (ft)	m78	754	m137	#307	876	0	#407	27	49	166	86	303
Internal Link Dist (ft)		660			631			513			403	
Turn Bay Length (ft)	300		150	100		200	125					340
Base Capacity (vph)	152	2934	976	162	3175	1028	287	442	492	295	442	492
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	0.68	0.82	0.35	0.94	0.78	0.04	1.10	0.02	0.29	0.46	0.12	0.68

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.

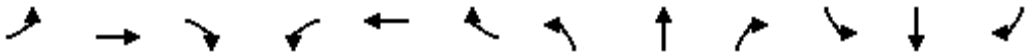
HCM Signalized Intersection Capacity Analysis

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)	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	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	0.75	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5085	1583	1345	1863	1583	1398	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	63	0	0	14	0	0	119	0	0	129
Lane Group Flow (vph)	103	2413	274	152	2467	24	315	11	22	136	54	208
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)	5.1	90.3	90.3	12.7	97.9	97.9	32.0	25.0	25.0	32.0	25.0	25.0
Effective Green, g (s)	7.1	92.3	92.3	14.7	99.9	99.9	32.0	25.0	25.0	32.0	25.0	25.0
Actuated g/C Ratio	0.04	0.58	0.58	0.09	0.62	0.62	0.20	0.16	0.16	0.20	0.16	0.16
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)	152	2933	913	162	3174	988	287	291	247	295	291	247
v/s Ratio Prot	0.03	c0.47		c0.09	0.49		c0.05	0.01		0.02	0.03	
v/s Ratio Perm			0.17			0.01	c0.17		0.01	0.07		0.13
v/c Ratio	0.68	0.82	0.30	0.94	0.78	0.02	1.10	0.04	0.09	0.46	0.19	0.84
Uniform Delay, d1	75.3	27.3	17.3	72.2	21.9	11.5	63.2	57.3	57.8	55.6	58.7	65.6
Progression Factor	0.97	0.76	0.72	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.3	1.9	0.6	51.6	1.9	0.0	81.8	0.0	0.1	0.4	0.1	21.3
Delay (s)	79.1	22.5	13.1	123.8	23.9	11.5	144.9	57.3	57.8	56.0	58.8	86.8
Level of Service	E	C	B	F	C	B	F	E	E	E	E	F
Approach Delay (s)		23.4			29.4			116.6			76.0	
Approach LOS		C			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues



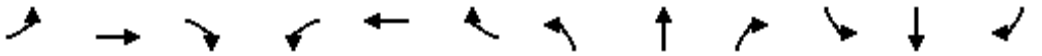
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	397	1924	212	473	2571	554	223	717	391	272	967	538
v/c Ratio	1.35	1.04	0.22	1.34	1.35	0.54	1.16	1.07	0.70	1.18	1.36	1.27
Control Delay	233.2	74.0	10.9	220.7	188.2	12.5	184.0	121.5	51.3	184.5	223.2	181.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	233.2	74.0	10.9	220.7	188.2	12.5	184.0	121.5	51.3	184.5	223.2	181.6
Queue Length 50th (ft)	~313	~1286	69	~382	~2076	153	~159	~491	343	~197	~787	~672
Queue Length 95th (ft)	#431	#1413	115	m#416	m#2171	m189	#256	#627	476	#300	#927	#919
Internal Link Dist (ft)		620			1082			569			457	
Turn Bay Length (ft)	550		500	550		500	300		300	650		650
Base Capacity (vph)	295	1848	980	352	1907	1022	192	670	559	230	709	422
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	1.35	1.04	0.22	1.34	1.35	0.54	1.16	1.07	0.70	1.18	1.36	1.27

Intersection Summary

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

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

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

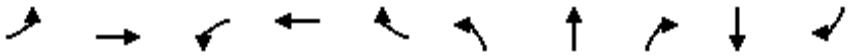


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	365	1770	195	435	2365	510	205	660	360	250	890	495
Future Volume (vph)	365	1770	195	435	2365	510	205	660	360	250	890	495
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	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)	397	1924	212	473	2571	554	223	717	391	272	967	538
RTOR Reduction (vph)	0	0	32	0	0	30	0	0	47	0	0	105
Lane Group Flow (vph)	397	1924	180	473	2571	524	223	717	344	272	967	433
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)	13.5	92.0	100.1	16.5	95.0	105.1	8.1	32.1	48.6	10.1	34.1	34.1
Effective Green, g (s)	15.5	94.0	104.1	18.5	97.0	109.1	10.1	34.1	52.6	12.1	36.1	36.1
Actuated g/C Ratio	0.09	0.52	0.58	0.10	0.54	0.61	0.06	0.19	0.29	0.07	0.20	0.20
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)	295	1848	915	352	1907	959	192	670	462	230	709	317
v/s Ratio Prot	0.12	0.54	0.01	c0.14	c0.73	0.04	0.06	0.20	0.08	c0.08	0.27	
v/s Ratio Perm			0.10			0.29			0.14			c0.27
v/c Ratio	1.35	1.04	0.20	1.34	1.35	0.55	1.16	1.07	0.75	1.18	1.36	1.37
Uniform Delay, d1	82.2	43.0	18.1	80.8	41.5	20.9	85.0	73.0	57.6	84.0	72.0	72.0
Progression Factor	1.00	1.00	1.00	1.07	0.82	0.73	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	176.5	32.5	0.0	161.4	158.0	0.1	115.2	55.1	5.6	117.6	172.8	184.0
Delay (s)	258.8	75.5	18.1	248.0	192.1	15.3	200.1	128.0	63.3	201.5	244.7	256.0
Level of Service	F	E	B	F	F	B	F	F	E	F	F	F
Approach Delay (s)		99.4			172.2			121.1			241.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	158.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	124.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

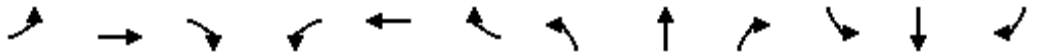


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	82	2505	152	2815	125	187	188	457	146	424
v/c Ratio	0.73	0.73	0.62	0.96	0.13	0.69	0.69	0.97	0.81	1.00
Control Delay	82.6	27.6	94.9	33.8	1.1	85.7	85.5	86.0	108.3	100.2
Queue Delay	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.6	27.6	94.9	35.9	1.1	85.7	85.5	86.0	108.3	100.2
Queue Length 50th (ft)	49	404	90	1120	1	223	224	452	171	234
Queue Length 95th (ft)	m51	m389	m105	m812	m2	324	325	#692	#298	#372
Internal Link Dist (ft)		818		925			695		185	
Turn Bay Length (ft)	700		750		750			150		
Base Capacity (vph)	112	3438	247	2938	933	270	272	472	180	424
Starvation Cap Reductn	0	0	0	64	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	0.73	0.73	0.62	0.98	0.13	0.69	0.69	0.97	0.81	1.00

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)	75	2235	70	140	2590	115	330	15	420	130	5	390
Future Volume (vph)	75	2235	70	140	2590	115	330	15	420	130	5	390
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	1.00		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	0.96	1.00		0.95	1.00
Satd. Flow (prot)	3367	6379		3433	5085	1524	1681	1692	1583		1543	2030
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.96	1.00		0.95	1.00
Satd. Flow (perm)	3367	6379		3433	5085	1524	1681	1692	1583		1543	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)	82	2429	76	152	2815	125	359	16	457	141	5	424
RTOR Reduction (vph)	0	2	0	0	0	53	0	0	68	0	0	75
Lane Group Flow (vph)	82	2503	0	152	2815	72	187	188	389	0	146	349
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)	4.0	95.0		11.0	102.0	102.0	29.0	29.0	46.0		21.0	31.0
Effective Green, g (s)	6.0	97.0		13.0	104.0	104.0	29.0	29.0	46.0		21.0	31.0
Actuated g/C Ratio	0.03	0.54		0.07	0.58	0.58	0.16	0.16	0.26		0.12	0.17
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)	112	3437		247	2938	880	270	272	404		180	349
v/s Ratio Prot	0.02	0.39		0.04	c0.55	0.05	0.11	0.11	c0.25		0.09	c0.17
v/s Ratio Perm												
v/c Ratio	0.73	0.73		0.62	0.96	0.08	0.69	0.69	0.96		0.81	1.00
Uniform Delay, d1	86.2	31.5		81.1	35.9	16.8	71.3	71.3	66.2		77.6	74.5
Progression Factor	0.92	0.87		1.10	0.80	0.41	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.9	0.1		1.8	5.0	0.1	7.5	7.4	35.1		23.4	47.6
Delay (s)	81.6	27.5		91.1	33.6	7.0	78.8	78.6	101.3		101.0	122.0
Level of Service	F	C		F	C	A	E	E	F		F	F
Approach Delay (s)		29.2			35.4			91.1			116.7	
Approach LOS		C			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	46.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	3003	884	1799	326	1253
v/c Ratio	1.35dr	1.05	0.58	0.28	1.34
Control Delay	147.8	99.0	9.1	44.6	203.1
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	147.8	99.0	9.4	44.6	203.1
Queue Length 50th (ft)	~1081	~428	180	146	~1089
Queue Length 95th (ft)	#1118	m#492	m175	190	#1240
Internal Link Dist (ft)	925		295		
Turn Bay Length (ft)		500		500	500
Base Capacity (vph)	2412	839	3121	1155	938
Starvation Cap Reductn	0	0	611	0	0
Spillback Cap Reductn	0	0	317	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.25	1.05	0.72	0.28	1.34

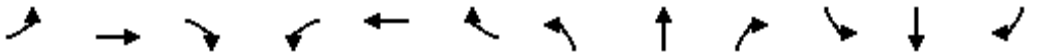
Intersection Summary

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

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

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2065	720	840	1655	0	0	0	0	310	0	1190
Future Volume (vph)	0	2065	720	840	1655	0	0	0	0	310	0	1190
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		0.96		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		7258		3433	5085					3433		2787
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		7258		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	2245	758	884	1799	0	0	0	0	326	0	1253
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2969	0	884	1799	0	0	0	0	326	0	1253
Turn Type		NA		Prot	NA					Prot		Prot
Protected Phases		6		5 4	2 4					3		3
Permitted Phases												
Actuated Green, G (s)		57.0		39.6	108.5					58.6		58.6
Effective Green, g (s)		59.0		43.6	106.1					60.6		60.6
Actuated g/C Ratio		0.33		0.24	0.59					0.34		0.34
Clearance Time (s)		6.0								6.4		6.4
Vehicle Extension (s)		3.0								2.0		2.0
Lane Grp Cap (vph)		2379		831	2997					1155		938
v/s Ratio Prot		c0.41		c0.26	0.35					0.09		c0.45
v/s Ratio Perm												
v/c Ratio		1.35dr		1.06	0.60					0.28		1.34
Uniform Delay, d1		60.5		68.2	23.5					43.8		59.7
Progression Factor		0.67		1.23	0.40					1.00		1.00
Incremental Delay, d2		114.0		46.8	0.3					0.0		158.4
Delay (s)		154.8		130.4	9.8					43.8		218.1
Level of Service		F		F	A					D		F
Approach Delay (s)		154.8			49.5			0.0			182.1	
Approach LOS		F			D			A			F	

Intersection Summary			
HCM 2000 Control Delay	121.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBL	NBR
Lane Group Flow (vph)	1495	1053	2071	958	716
v/c Ratio	0.44	0.38	0.35	1.09	1.13
Control Delay	3.7	1.4	5.2	125.4	141.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.8	1.4	5.2	125.4	141.3
Queue Length 50th (ft)	121	0	46	~450	~428
Queue Length 95th (ft)	m102	m0	69	#545	#541
Internal Link Dist (ft)	260		630	1225	
Turn Bay Length (ft)		700		410	430
Base Capacity (vph)	3390	2787	5846	876	633
Starvation Cap Reductn	236	0	0	0	0
Spillback Cap Reductn	37	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.38	0.35	1.09	1.13

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.

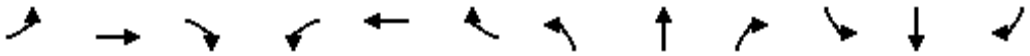
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1375	1000	0	1905	910	680
Future Volume (vph)	1375	1000	0	1905	910	680
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	2.0		4.5	4.4	4.4
Lane Util. Factor	0.91	0.88		0.81	0.94	0.76
Frt	1.00	0.85		1.00	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)	1495	1053	0	2071	958	716
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1495	1053	0	2071	958	716
Turn Type	NA	Free		NA	Prot	Prot
Protected Phases	6 3			2 3	4	4
Permitted Phases		Free				
Actuated Green, G (s)	115.6	180.0		137.6	29.6	29.6
Effective Green, g (s)	119.6	180.0		139.6	31.6	31.6
Actuated g/C Ratio	0.66	1.00		0.78	0.18	0.18
Clearance Time (s)					6.4	6.4
Vehicle Extension (s)					3.5	3.5
Lane Grp Cap (vph)	3378	2787		5850	876	633
v/s Ratio Prot	c0.29			0.27	0.19	c0.20
v/s Ratio Perm		c0.38				
v/c Ratio	0.44	0.38		0.35	1.09	1.13
Uniform Delay, d1	14.4	0.0		6.2	74.2	74.2
Progression Factor	0.47	1.00		0.80	1.00	1.00
Incremental Delay, d2	0.0	0.0		0.0	59.2	77.6
Delay (s)	6.7	0.0		5.0	133.4	151.8
Level of Service	A	A		A	F	F
Approach Delay (s)	4.0			5.0	141.3	
Approach LOS	A			A	F	

Intersection Summary			
HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	18.8
Intersection Capacity Utilization	56.9%	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

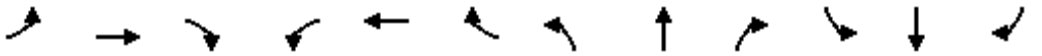


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	266	1712	255	239	1348	125	304	147	136	261	310	418
v/c Ratio	0.74	0.74	0.31	0.78	0.61	0.16	0.92	0.17	0.28	0.62	0.86	0.91
Control Delay	98.5	28.2	5.7	98.0	41.7	5.8	78.9	53.0	8.1	48.5	92.1	61.7
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.5	28.7	5.7	98.0	41.7	5.8	78.9	53.0	8.1	48.5	92.1	61.7
Queue Length 50th (ft)	147	427	22	144	455	1	278	72	0	223	359	287
Queue Length 95th (ft)	m174	m447	m54	#198	549	47	#431	101	57	288	460	421
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	300		300	200		300	260		260	170		170
Base Capacity (vph)	400	2301	813	316	2221	761	338	1008	548	427	437	518
Starvation Cap Reductn	0	220	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	0.67	0.82	0.31	0.76	0.61	0.16	0.90	0.15	0.25	0.61	0.71	0.81

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)	245	1575	235	220	1240	115	280	135	125	240	285	385
Future Volume (vph)	245	1575	235	220	1240	115	280	135	125	240	285	385
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	0.15	1.00	1.00	0.66	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	273	3539	1583	1227	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)	266	1712	255	239	1348	125	304	147	136	261	310	418
RTOR Reduction (vph)	0	0	97	0	0	70	0	0	103	0	0	154
Lane Group Flow (vph)	266	1712	158	239	1348	55	304	147	33	261	310	264
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)	16.9	79.4	79.4	14.1	76.6	76.6	68.0	43.5	43.5	53.7	34.9	34.9
Effective Green, g (s)	18.9	81.4	81.4	16.1	78.6	78.6	68.0	43.5	43.5	53.7	34.9	34.9
Actuated g/C Ratio	0.10	0.45	0.45	0.09	0.44	0.44	0.38	0.24	0.24	0.30	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)	360	2299	715	307	2220	691	331	855	382	422	361	306
v/s Ratio Prot	c0.08	c0.34		0.07	0.27		c0.14	0.04		0.06	0.17	
v/s Ratio Perm			0.10			0.03	c0.21		0.02	0.12		0.17
v/c Ratio	0.74	0.74	0.22	0.78	0.61	0.08	0.92	0.17	0.09	0.62	0.86	0.86
Uniform Delay, d1	78.2	40.7	30.0	80.2	38.9	29.6	48.7	54.0	52.9	52.1	70.2	70.2
Progression Factor	1.14	0.63	0.47	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	1.7	0.5	10.8	1.2	0.2	28.8	0.0	0.0	1.9	17.4	20.7
Delay (s)	93.9	27.2	14.6	91.0	40.1	29.8	77.5	54.0	52.9	54.0	87.5	91.0
Level of Service	F	C	B	F	D	C	E	D	D	D	F	F
Approach Delay (s)		33.7			46.5			65.9			80.1	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	49.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2777	272	2571	125	130
v/c Ratio	0.65	0.95	0.65	0.67	0.46
Control Delay	20.2	96.2	2.7	72.8	13.6
Queue Delay	0.0	43.4	0.3	0.0	0.0
Total Delay	20.3	139.6	3.0	72.8	13.6
Queue Length 50th (ft)	374	198	65	103	0
Queue Length 95th (ft)	448	#397	45	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	57	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	0.77	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)	2460	95	250	2365	115	120
Future Volume (vph)	2460	95	250	2365	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)	2674	103	272	2571	125	130
RTOR Reduction (vph)	3	0	0	0	0	116
Lane Group Flow (vph)	2774	0	272	2571	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	0.37		c0.15	c0.51	c0.07	
v/s Ratio Perm						0.01
v/c Ratio	0.65		0.95	0.65	0.67	0.08
Uniform Delay, d1	18.9		54.0	6.4	56.0	52.5
Progression Factor	1.00		1.12	0.30	1.00	1.00
Incremental Delay, d2	0.3		34.2	0.2	7.3	0.1
Delay (s)	19.2		94.8	2.1	63.3	52.6
Level of Service	B		F	A	E	D
Approach Delay (s)	19.2			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	0.77		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	67.5%	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	2609	2674	315	207	168
v/c Ratio	1.03	0.52	0.67	0.28	0.57	0.53
Control Delay	106.8	2.2	13.6	1.1	61.0	13.6
Queue Delay	0.0	0.1	0.1	0.0	0.0	0.1
Total Delay	106.8	2.3	13.6	1.1	61.0	13.8
Queue Length 50th (ft)	~177	25	375	1	87	0
Queue Length 95th (ft)	#335	38	470	m11	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	192	0	0	61
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.61	0.70	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	2400	2460	290	190	155
Future Volume (vph)	180	2400	2460	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	2609	2674	315	207	168
RTOR Reduction (vph)	0	0	0	118	0	150
Lane Group Flow (vph)	196	2609	2674	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	0.41	c0.42		c0.06	
v/s Ratio Perm				0.12		0.01
v/c Ratio	1.03	0.52	0.67	0.20	0.57	0.11
Uniform Delay, d1	58.0	5.3	15.7	10.4	55.4	52.6
Progression Factor	0.68	0.33	0.80	0.61	1.00	1.00
Incremental Delay, d2	66.0	0.0	0.2	0.0	1.4	0.1
Delay (s)	105.3	1.8	12.8	6.3	56.7	52.7
Level of Service	F	A	B	A	E	D
Approach Delay (s)		9.0	12.1		54.9	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	2054	737	2174	589	789
v/c Ratio	0.62	0.47	0.83	0.55	0.90
Control Delay	11.0	2.3	14.1	20.7	37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	2.3	14.1	20.7	37.3
Queue Length 50th (ft)	204	21	230	97	167
Queue Length 95th (ft)	304	60	291	143	#279
Internal Link Dist (ft)	1004		259		
Turn Bay Length (ft)		250			
Base Capacity (vph)	3308	1583	2625	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	0.62	0.47	0.83	0.54	0.90

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	1890	700	0	2000	0	560	0	750	0	0
Future Volume (vph)	0	1890	700	0	2000	0	560	0	750	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	2054	737	0	2174	0	589	0	789	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2054	737	0	2174	0	589	0	789	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			c0.43		0.17		c0.28		
v/s Ratio Perm			0.47								
v/c Ratio		0.62	0.47		0.83		0.55		0.90		
Uniform Delay, d1		11.2	0.0		13.3		18.5		21.4		
Progression Factor		0.90	1.00		0.89		1.00		1.00		
Incremental Delay, d2		0.8	0.9		2.1		0.5		12.5		
Delay (s)		10.9	0.9		13.9		18.9		33.8		
Level of Service		B	A		B		B		C		
Approach Delay (s)		8.2			13.9			27.5		0.0	
Approach LOS		A			B			C		A	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL2	NBR
Lane Group Flow (vph)	1880	1891	453	1200	705
v/c Ratio	0.74	0.75	0.29	0.84	0.61
Control Delay	19.1	15.1	0.2	40.0	31.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	15.1	0.2	40.0	31.7
Queue Length 50th (ft)	391	170	0	453	255
Queue Length 95th (ft)	411	m213	m0	522	311
Internal Link Dist (ft)	270	1155			
Turn Bay Length (ft)			250		
Base Capacity (vph)	2537	2537	1583	1544	1254
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	0.74	0.75	0.29	0.78	0.56

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	1730	0	0	1740	430	1140	0	670	0	0
Future Volume (vph)	0	1730	0	0	1740	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	1880	0	0	1891	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	1880	0	0	1891	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)		62.9			62.9	130.0	52.1		52.1		
Effective Green, g (s)		64.9			64.9	130.0	54.1		54.1		
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)		2538			2538	1583	1428		1159		
v/s Ratio Prot		0.37			c0.37		c0.35		0.25		
v/s Ratio Perm						0.29					
v/c Ratio		0.74			0.75	0.29	0.84		0.61		
Uniform Delay, d1		25.9			26.0	0.0	34.1		29.7		
Progression Factor		0.65			0.53	1.00	1.00		1.00		
Incremental Delay, d2		1.0			0.9	0.2	4.6		0.8		
Delay (s)		17.9			14.6	0.2	38.6		30.4		
Level of Service		B			B	A	D		C		
Approach Delay (s)		17.9			11.8			35.6		0.0	
Approach LOS		B			B			D		A	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	511	2098	114	1820	261	337	120	87	266	418
v/c Ratio	0.97	0.84	0.93	0.88	1.09	0.82	0.24	0.51	0.76	0.89
Control Delay	83.2	28.7	125.3	41.7	120.8	64.3	1.1	42.8	63.2	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.2	28.7	125.3	41.7	120.8	64.3	1.1	42.8	63.2	47.0
Queue Length 50th (ft)	234	368	97	510	~197	272	0	53	214	184
Queue Length 95th (ft)	#343	#602	#217	#690	#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	2491	122	2073	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	0.84	0.93	0.88	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	1715	215	105	1545	130	240	310	110	80	245	385
Future Volume (vph)	470	1715	215	105	1545	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	5000		1770	5026		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	5000		1770	5026		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	1864	234	114	1679	141	261	337	120	87	266	418
RTOR Reduction (vph)	0	11	0	0	6	0	0	0	94	0	0	170
Lane Group Flow (vph)	511	2087	0	114	1814	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	2480		122	2068		240	409	348	170	351	298
v/s Ratio Prot	c0.15	c0.42		0.06	0.36		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	0.84		0.93	0.88		1.09	0.82	0.08	0.51	0.76	0.83
Uniform Delay, d1	54.7	28.3		60.2	35.2		43.3	48.3	40.2	40.9	49.9	50.8
Progression Factor	1.05	0.88		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.0	2.7		60.3	5.6		83.4	12.1	0.0	1.1	8.1	17.1
Delay (s)	82.4	27.7		120.6	40.8		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)		38.4			45.5			81.1			61.5	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group