Queues

1: SW 12th Avenue & Hillsboro Blvd

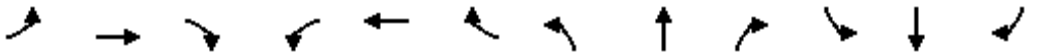
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	315	2310	370	1554	505	109	152	261	27	27	27
v/c Ratio	0.91	0.74	0.98	0.57	0.47	0.30	0.77	0.49	0.36	0.35	0.07
Control Delay	99.3	26.5	112.2	23.8	7.5	75.1	102.4	15.6	95.6	95.0	0.3
Queue Delay	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.3	26.5	112.2	24.1	7.6	75.1	102.4	15.6	95.6	95.0	0.3
Queue Length 50th (ft)	362	663	227	322	116	62	178	50	33	33	0
Queue Length 95th (ft)	#526	839	#343	404	135	93	255	136	72	72	1
Internal Link Dist (ft)		580		548			436			396	
Turn Bay Length (ft)	450		375		350	225		250	200		
Base Capacity (vph)	371	3125	379	2724	1215	610	331	536	252	257	425
Starvation Cap Reductn	0	0	0	469	165	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.74	0.98	0.69	0.48	0.18	0.46	0.49	0.11	0.11	0.06

Intersection Summary

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

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	1935	190	340	1430	465	100	140	240	40	10	25
Future Volume (vph)	290	1935	190	340	1430	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	5017		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	5017		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	2103	207	370	1554	505	109	152	261	43	11	27
RTOR Reduction (vph)	0	5	0	0	0	106	0	0	165	0	0	21
Lane Group Flow (vph)	315	2305	0	370	1554	399	109	152	96	27	27	6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	pm+ov
Protected Phases	1	6		5	2	3	4	4	5	3	3	1
Permitted Phases						2			4			3
Actuated Green, G (s)	33.4	109.9		17.9	94.4	102.5	19.1	19.1	37.0	8.1	8.1	41.5
Effective Green, g (s)	35.4	111.9		19.9	96.4	106.5	19.1	19.1	37.0	8.1	8.1	41.5
Actuated g/C Ratio	0.20	0.62		0.11	0.54	0.59	0.11	0.11	0.21	0.04	0.04	0.23
Clearance Time (s)	6.5	6.5		6.5	6.5	6.0	6.0	6.0	6.5	6.0	6.0	6.5
Vehicle Extension (s)	1.5	3.0		2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5
Lane Grp Cap (vph)	348	3118		379	2723	936	364	197	325	75	77	364
v/s Ratio Prot	c0.18	c0.46		0.11	0.31	c0.02	0.03	c0.08	0.03	0.02	0.02	0.00
v/s Ratio Perm						0.23			0.03			0.00
v/c Ratio	0.91	0.74		0.98	0.57	0.43	0.30	0.77	0.29	0.36	0.35	0.02
Uniform Delay, d1	70.7	23.8		79.8	28.0	20.1	74.3	78.3	60.5	83.4	83.4	53.5
Progression Factor	1.00	1.00		0.97	0.79	0.70	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.4	1.6		35.2	0.7	0.1	0.2	15.5	0.2	1.1	1.0	0.0
Delay (s)	96.0	25.5		112.9	22.7	14.1	74.4	93.9	60.6	84.5	84.4	53.5
Level of Service	F	C		F	C	B	E	F	E	F	F	D
Approach Delay (s)		33.9			34.6			73.2			74.1	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.4	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)	23.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1440	937	1549	642	853
v/c Ratio	0.28	0.59	0.60	0.83	0.70
Control Delay	0.1	6.2	24.2	53.4	43.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.1	6.2	24.2	53.4	43.3
Queue Length 50th (ft)	0	175	327	663	459
Queue Length 95th (ft)	0	297	462	702	454
Internal Link Dist (ft)	548		319		
Turn Bay Length (ft)		150			
Base Capacity (vph)	5085	1583	2597	939	1478
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	0.28	0.59	0.60	0.68	0.58

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	1325	890	0	1425	0	610	0	810	0	0
Future Volume (vph)	0	1325	890	0	1425	0	610	0	810	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		4.5		4.5		4.5		
Lane Util. Factor		0.91	1.00		0.91		1.00		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		5085	1583		5085		1770		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		5085	1583		5085		1770		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	1440	937	0	1549	0	642	0	853	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1440	937	0	1549	0	642	0	853	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm		NA		Prot		Prot		
Protected Phases		Free!			2		8!		3		
Permitted Phases			Free								
Actuated Green, G (s)		180.0	180.0		90.0		77.0		77.0		
Effective Green, g (s)		180.0	180.0		92.0		79.0		79.0		
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		2599		776		1223		
v/s Ratio Prot		0.28			0.30		c0.36		0.31		
v/s Ratio Perm			c0.59								
v/c Ratio		0.28	0.59		0.60		0.83		0.70		
Uniform Delay, d1		0.0	0.0		30.9		44.5		40.8		
Progression Factor		1.00	1.00		0.71		1.00		1.00		
Incremental Delay, d2		0.1	1.2		0.8		7.1		1.6		
Delay (s)		0.1	1.2		22.9		51.6		42.5		
Level of Service		A	A		C		D		D		
Approach Delay (s)		0.5			22.9			46.4		0.0	
Approach LOS		A			C			D		A	

Intersection Summary			
HCM 2000 Control Delay	19.5	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	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

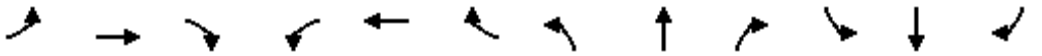
c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1495	1799	848	587	874
v/c Ratio	0.55	0.66	0.54	0.30	0.78
Control Delay	15.7	10.0	1.8	18.7	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	10.0	1.8	18.7	27.7
Queue Length 50th (ft)	330	210	29	76	223
Queue Length 95th (ft)	278	m190	m0	98	292
Internal Link Dist (ft)	286	371			
Turn Bay Length (ft)			250	350	350
Base Capacity (vph)	2713	2713	1568	2162	1231
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	0.66	0.54	0.27	0.71

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	1375	0	0	1655	780	540	0	830	0	0	0
Future Volume (vph)	0	1375	0	0	1655	780	540	0	830	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	2.0	2.0		2.0			
Lane Util. Factor		0.91			0.91	1.00	0.94		0.88			
Frt		1.00			1.00	0.85	1.00		0.85			
Flt Protected		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085			5085	1568	4990		2787			
Flt Permitted		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085			5085	1568	4990		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	1495	0	0	1799	848	587	0	874	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	25	0	0	0
Lane Group Flow (vph)	0	1495	0	0	1799	848	587	0	849	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)		46.0			46.0	90.0	33.5		33.5			
Effective Green, g (s)		48.0			48.0	90.0	35.5		35.5			
Actuated g/C Ratio		0.53			0.53	1.00	0.39		0.39			
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)		2712			2712	1568	1968		1099			
v/s Ratio Prot		0.29			c0.35		0.12		c0.30			
v/s Ratio Perm						0.54						
v/c Ratio		0.55			0.66	0.54	0.30		0.77			
Uniform Delay, d1		13.9			15.2	0.0	18.7		23.7			
Progression Factor		1.04			0.59	1.00	1.00		1.00			
Incremental Delay, d2		0.8			0.7	0.7	0.1		3.4			
Delay (s)		15.2			9.7	0.7	18.8		27.2			
Level of Service		B			A	A	B		C			
Approach Delay (s)		15.2			6.8			23.8			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues

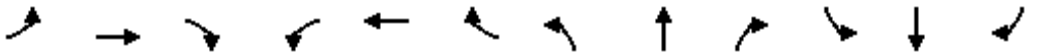
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	342	1924	130	87	2071	103	484	92	174	37	5	92
v/c Ratio	0.92	0.58	0.12	0.76	0.67	0.10	1.69	0.32	0.45	0.45	0.08	0.42
Control Delay	105.6	16.1	2.0	117.7	24.7	0.2	362.4	72.0	14.7	81.3	87.0	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.6	16.1	2.0	117.7	24.7	0.2	362.4	72.0	14.7	81.3	87.0	5.7
Queue Length 50th (ft)	213	323	4	103	573	0	~769	100	10	36	6	0
Queue Length 95th (ft)	#310	409	m23	#195	620	0	#1003	164	89	74	22	0
Internal Link Dist (ft)		660			631			513			403	
Turn Bay Length (ft)	300		150	100		200	125					340
Base Capacity (vph)	371	3309	1075	120	3092	1029	287	600	621	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	1.69	0.15	0.28	0.45	0.01	0.20

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	1770	120	80	1905	95	445	85	160	34	5	85
Future Volume (vph)	315	1770	120	80	1905	95	445	85	160	34	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	1924	130	87	2071	103	484	92	174	37	5	92
RTOR Reduction (vph)	0	0	46	0	0	41	0	0	138	0	0	88
Lane Group Flow (vph)	342	1924	84	87	2071	62	484	92	36	37	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	114.0	114.0	9.8	106.3	106.3	37.2	28.0	28.0	10.4	7.2	7.2
Effective Green, g (s)	19.5	116.0	116.0	11.8	108.3	108.3	37.2	28.0	28.0	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	3277	1020	116	3059	952	292	289	246	83	74	63
v/s Ratio Prot	c0.10	0.38		0.05	c0.41		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	0.68	0.07	1.66	0.32	0.14	0.45	0.07	0.06
Uniform Delay, d1	79.5	18.3	12.0	82.7	24.1	14.9	68.9	67.5	65.7	81.6	83.2	83.1
Progression Factor	1.02	0.87	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.5	0.6	0.1	21.2	1.2	0.1	310.7	0.2	0.1	1.4	0.1	0.1
Delay (s)	104.2	16.5	13.3	103.8	25.3	15.0	379.6	67.8	65.8	83.0	83.3	83.3
Level of Service	F	B	B	F	C	B	F	E	E	F	F	F
Approach Delay (s)		28.9			27.9			268.6			83.2	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	62.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

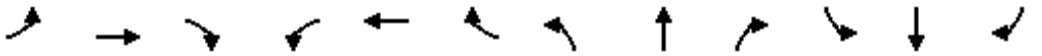
Queues

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	326	1125	158	370	1016	543	185	728	739	533	576	337
v/c Ratio	0.76	0.97	0.20	0.54	0.72	0.57	0.66	1.03	0.99	1.00	0.59	0.52
Control Delay	88.2	79.8	3.7	81.6	54.1	16.3	91.7	109.3	72.0	112.1	59.8	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.2	79.8	3.7	81.6	54.1	16.3	91.7	109.3	72.0	112.1	59.8	12.8
Queue Length 50th (ft)	194	694	0	237	420	157	110	~480	775	329	315	46
Queue Length 95th (ft)	251	#845	39	295	521	222	157	#615	#1073	#460	384	149
Internal Link Dist (ft)		620			1082			752			457	
Turn Bay Length (ft)	550		500	550		500	300		300	650		650
Base Capacity (vph)	472	1156	785	680	1416	947	301	709	748	535	972	642
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	0.69	0.97	0.20	0.54	0.72	0.57	0.61	1.03	0.99	1.00	0.59	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.

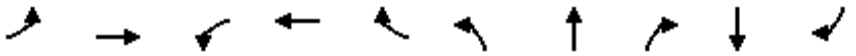


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	300	1035	145	340	935	500	170	670	680	490	530	310
Future Volume (vph)	300	1035	145	340	935	500	170	670	680	490	530	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	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)	326	1125	158	370	1016	543	185	728	739	533	576	337
RTOR Reduction (vph)	0	0	93	0	0	33	0	0	69	0	0	208
Lane Group Flow (vph)	326	1125	65	370	1016	510	185	728	670	533	576	129
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)	20.4	56.8	69.6	33.7	70.1	96.2	12.8	34.1	67.8	26.1	47.4	47.4
Effective Green, g (s)	22.4	58.8	73.6	35.7	72.1	100.2	14.8	36.1	71.8	28.1	49.4	49.4
Actuated g/C Ratio	0.12	0.33	0.41	0.20	0.40	0.56	0.08	0.20	0.40	0.16	0.27	0.27
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)	427	1156	647	680	1417	881	282	709	631	535	971	434
v/s Ratio Prot	0.09	c0.32	0.01	0.11	0.29	0.09	0.05	0.21	c0.21	c0.16	0.16	
v/s Ratio Perm			0.03			0.23			0.21			0.08
v/c Ratio	0.76	0.97	0.10	0.54	0.72	0.58	0.66	1.03	1.06	1.00	0.59	0.30
Uniform Delay, d1	76.2	59.8	32.8	64.8	45.4	26.1	80.1	72.0	54.1	75.9	56.6	51.6
Progression Factor	1.00	1.00	1.00	1.22	1.12	0.69	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.1	20.8	0.0	0.3	2.3	0.4	4.1	40.8	53.6	37.7	1.0	0.4
Delay (s)	83.4	80.6	32.8	79.3	53.2	18.5	84.3	112.8	107.7	113.6	57.6	52.0
Level of Service	F	F	C	E	D	B	F	F	F	F	E	D
Approach Delay (s)		76.5			48.4			107.3			76.9	
Approach LOS		E			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	76.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

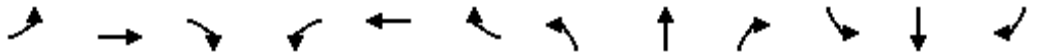
Queues



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	397	2533	484	2049	473	49	49	141	71	103
v/c Ratio	0.67	0.73	0.81	0.72	0.45	0.35	0.35	0.28	0.63	0.17
Control Delay	59.7	19.1	81.8	29.9	3.8	85.4	85.1	19.3	104.8	11.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	19.1	81.8	30.1	3.8	85.4	85.1	19.3	104.8	11.5
Queue Length 50th (ft)	218	433	288	613	36	58	58	44	83	6
Queue Length 95th (ft)	m234	m560	m336	604	m29	110	110	104	143	34
Internal Link Dist (ft)		818		925			616		185	
Turn Bay Length (ft)	700		750		750			150		
Base Capacity (vph)	592	3483	686	2841	1060	140	142	546	140	635
Starvation Cap Reductn	0	0	0	187	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	0.67	0.73	0.71	0.77	0.45	0.35	0.35	0.26	0.51	0.16

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	365	1780	550	445	1885	435	80	10	130	55	10	95
Future Volume (vph)	365	1780	550	445	1885	435	80	10	130	55	10	95
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	0.96	1.00		0.96	1.00
Satd. Flow (prot)	3367	6181		3433	5085	1524	1681	1704	1583		1578	2030
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.96	1.00		0.96	1.00
Satd. Flow (perm)	3367	6181		3433	5085	1524	1681	1704	1583		1578	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)	397	1935	598	484	2049	473	87	11	141	60	11	103
RTOR Reduction (vph)	0	28	0	0	0	209	0	0	65	0	0	66
Lane Group Flow (vph)	397	2505	0	484	2049	264	49	49	76	0	71	37
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)	29.6	98.5		29.6	98.5	98.5	15.0	15.0	50.6		12.9	48.5
Effective Green, g (s)	31.6	100.5		31.6	100.5	100.5	15.0	15.0	50.6		12.9	48.5
Actuated g/C Ratio	0.18	0.56		0.18	0.56	0.56	0.08	0.08	0.28		0.07	0.27
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)	591	3451		602	2839	850	140	142	444		113	546
v/s Ratio Prot	0.12	c0.41		c0.14	c0.40	0.17	c0.03	0.03	0.05		c0.04	0.02
v/s Ratio Perm												
v/c Ratio	0.67	0.73		0.80	0.72	0.31	0.35	0.35	0.17		0.63	0.07
Uniform Delay, d1	69.4	29.5		71.2	29.4	21.2	77.9	77.9	48.8		81.2	48.9
Progression Factor	0.80	0.62		1.05	0.96	1.88	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.8		5.0	1.1	0.6	1.5	1.5	0.2		10.4	0.1
Delay (s)	57.2	19.0		79.6	29.4	40.5	79.4	79.3	49.0		91.7	49.0
Level of Service	E	B		E	C	D	E	E	D		F	D
Approach Delay (s)		24.1			39.2			61.5			66.4	
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	0.71		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

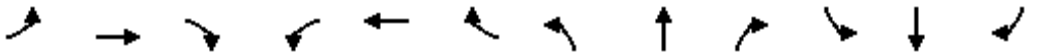
Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2117	816	2082	432	895
v/c Ratio	1.08dr	0.84	0.67	0.37	0.94
Control Delay	42.7	80.2	10.7	45.7	74.7
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	42.7	80.2	10.9	45.7	74.7
Queue Length 50th (ft)	579	452	169	198	585
Queue Length 95th (ft)	#626	m531	317	250	#732
Internal Link Dist (ft)	925		307		
Turn Bay Length (ft)		500		500	500
Base Capacity (vph)	2253	991	3093	1174	953
Starvation Cap Reductn	0	0	336	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	0.82	0.76	0.37	0.94

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.

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	1420	545	775	1915	0	0	0	0	410	0	850
Future Volume (vph)	0	1420	545	775	1915	0	0	0	0	410	0	850
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)		7237		3433	5085					3433		2787
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		7237		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	1543	574	816	2082	0	0	0	0	432	0	895
RTOR Reduction (vph)	0	37	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2080	0	816	2082	0	0	0	0	432	0	895
Turn Type		NA		Prot	NA					Prot		Prot
Protected Phases		6		5 4	2 4					3		3
Permitted Phases												
Actuated Green, G (s)		53.2		48.8	107.5					59.6		59.6
Effective Green, g (s)		55.2		46.4	105.1					61.6		61.6
Actuated g/C Ratio		0.31		0.26	0.58					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)		2219		884	2969					1174		953
v/s Ratio Prot		c0.29		c0.24	0.41					0.13		c0.32
v/s Ratio Perm												
v/c Ratio		1.08dr		0.92	0.70					0.37		0.94
Uniform Delay, d1		60.7		65.1	26.4					44.6		57.4
Progression Factor		0.60		1.19	0.41					1.00		1.00
Incremental Delay, d2		7.0		13.2	0.7					0.1		16.1
Delay (s)		43.2		90.5	11.5					44.6		73.4
Level of Service		D		F	B					D		E
Approach Delay (s)		43.2			33.8			0.0			64.1	
Approach LOS		D			C			A			E	

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	74.2%	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)	1413	558	2402	811	495
v/c Ratio	0.41	0.20	0.41	0.93	0.78
Control Delay	1.2	0.1	6.6	89.5	80.6
Queue Delay	0.3	0.0	0.2	0.0	0.0
Total Delay	1.5	0.1	6.9	89.5	80.6
Queue Length 50th (ft)	14	0	120	339	248
Queue Length 95th (ft)	m15	m0	120	#417	307
Internal Link Dist (ft)	248		630	1225	
Turn Bay Length (ft)		700		410	430
Base Capacity (vph)	3423	2787	5846	876	633
Starvation Cap Reductn	1121	0	2241	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.20	0.67	0.93	0.78

Intersection Summary

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

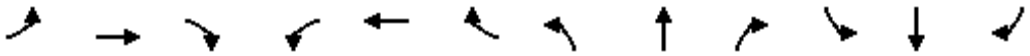
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1300	530	0	2210	770	470
Future Volume (vph)	1300	530	0	2210	770	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)	1413	558	0	2402	811	495
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1413	558	0	2402	811	495
Turn Type	NA	Free		NA	Prot	Prot
Protected Phases	6 3			2 3	4	4
Permitted Phases		Free				
Actuated Green, G (s)	118.8	180.0		137.6	29.6	29.6
Effective Green, g (s)	120.8	180.0		139.6	31.6	31.6
Actuated g/C Ratio	0.67	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)	3412	2787		5850	876	633
v/s Ratio Prot	c0.28			c0.32	c0.16	0.14
v/s Ratio Perm		0.20				
v/c Ratio	0.41	0.20		0.41	0.93	0.78
Uniform Delay, d1	13.5	0.0		6.7	73.0	70.9
Progression Factor	0.08	1.00		0.97	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.0	15.5	6.4
Delay (s)	1.0	0.1		6.5	88.6	77.3
Level of Service	A	A		A	F	E
Approach Delay (s)	0.8			6.5	84.3	
Approach LOS	A			A	F	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	18.8
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

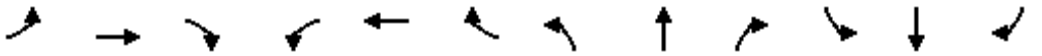


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	277	1304	342	228	1598	103	380	212	196	266	217	424
v/c Ratio	0.81	0.58	0.39	0.71	0.72	0.14	0.90	0.25	0.37	0.67	0.69	0.95
Control Delay	77.7	27.9	5.2	91.6	45.4	3.1	68.2	55.1	7.6	50.0	80.7	65.7
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.7	28.0	5.2	91.6	45.4	3.1	68.2	55.1	7.6	50.0	80.7	65.7
Queue Length 50th (ft)	160	259	55	136	580	0	347	107	0	225	243	265
Queue Length 95th (ft)	m#217	315	75	186	693	27	#435	138	65	284	323	401
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	300		300	200		200	260		260	170		170
Base Capacity (vph)	354	2256	868	354	2223	761	426	1026	598	405	417	523
Starvation Cap Reductn	0	252	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	0.78	0.65	0.39	0.64	0.72	0.14	0.89	0.21	0.33	0.66	0.52	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)	255	1200	315	210	1470	95	350	195	180	245	200	390
Future Volume (vph)	255	1200	315	210	1470	95	350	195	180	245	200	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	4.4	4.4	4.4	5.7	5.7	5.7	5.7	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	1770	3539	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.27	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	501	3539	1583	1153	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	277	1304	342	228	1598	103	380	212	196	266	217	424
RTOR Reduction (vph)	0	0	166	0	0	58	0	0	150	0	0	181
Lane Group Flow (vph)	277	1304	176	228	1598	45	380	212	46	266	217	243
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)	16.1	77.8	77.8	14.9	76.6	76.6	68.8	42.6	42.6	50.9	30.4	30.4
Effective Green, g (s)	18.1	79.8	79.8	16.9	78.6	78.6	68.8	42.6	42.6	50.9	30.4	30.4
Actuated g/C Ratio	0.10	0.44	0.44	0.09	0.44	0.44	0.38	0.24	0.24	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)	345	2254	701	322	2220	691	422	837	374	396	314	267
v/s Ratio Prot	c0.08	0.26		0.07	c0.31		c0.16	0.06		0.08	0.12	
v/s Ratio Perm			0.11			0.03	c0.18		0.03	0.11		0.15
v/c Ratio	0.80	0.58	0.25	0.71	0.72	0.07	0.90	0.25	0.12	0.67	0.69	0.91
Uniform Delay, d1	79.2	37.5	31.4	79.2	41.7	29.4	45.5	55.8	54.0	54.5	70.4	73.4
Progression Factor	0.78	0.68	0.66	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.6	1.0	0.8	5.7	1.1	0.0	21.4	0.1	0.1	3.5	5.2	31.4
Delay (s)	72.0	26.6	21.4	84.9	42.8	29.4	66.9	55.8	54.1	58.1	75.6	104.8
Level of Service	E	C	C	F	D	C	E	E	D	E	E	F
Approach Delay (s)		32.2			47.1			60.7			84.1	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	49.9	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)	20.2
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2538	174	1973	158	207
v/c Ratio	0.59	0.79	0.52	0.69	0.54
Control Delay	17.8	78.2	2.0	64.9	11.3
Queue Delay	0.0	1.5	0.1	0.0	0.0
Total Delay	17.8	79.7	2.0	64.9	11.3
Queue Length 50th (ft)	296	104	35	119	0
Queue Length 95th (ft)	374	#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	0.59	0.81	0.59	0.29	0.33

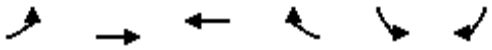
Intersection Summary

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)	2220	115	160	1815	145	190
Future Volume (vph)	2220	115	160	1815	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)	7488		1770	5085	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	7488		1770	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2413	125	174	1973	158	207
RTOR Reduction (vph)	5	0	0	0	0	180
Lane Group Flow (vph)	2533	0	174	1973	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	0.39	c0.09	
v/s Ratio Perm						0.02
v/c Ratio	0.59		0.79	0.52	0.69	0.13
Uniform Delay, d1	16.7		51.0	6.3	50.0	46.3
Progression Factor	1.00		1.10	0.22	1.00	1.00
Incremental Delay, d2	0.1		14.1	0.1	7.1	0.1
Delay (s)	16.8		69.9	1.4	57.1	46.4
Level of Service	B		E	A	E	D
Approach Delay (s)	16.8			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	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

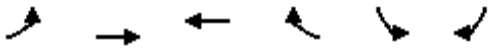


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	103	2516	1967	92	272	179
v/c Ratio	0.78	0.53	0.49	0.09	0.61	0.53
Control Delay	70.9	2.7	10.7	1.2	54.8	15.9
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	70.9	2.7	10.7	1.2	54.8	15.9
Queue Length 50th (ft)	79	29	227	1	104	17
Queue Length 95th (ft)	m#175	46	278	m5	140	81
Internal Link Dist (ft)		175	1004		271	
Turn Bay Length (ft)				450		
Base Capacity (vph)	132	4778	3977	1017	1058	595
Starvation Cap Reductn	0	476	0	0	0	0
Spillback Cap Reductn	0	0	40	0	0	5
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.58	0.50	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	2315	1810	85	250	165
Future Volume (vph)	95	2315	1810	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	2516	1967	92	272	179
RTOR Reduction (vph)	0	0	0	35	0	135
Lane Group Flow (vph)	103	2516	1967	57	272	44
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	3	1 2 3	1 2		4	
Permitted Phases				1 2		4
Actuated Green, G (s)	7.0	87.5	72.5	72.5	15.5	15.5
Effective Green, g (s)	9.0	89.5	74.5	74.5	15.5	15.5
Actuated g/C Ratio	0.08	0.75	0.62	0.62	0.13	0.13
Clearance Time (s)	8.0				9.0	9.0
Vehicle Extension (s)	1.5				2.0	2.0
Lane Grp Cap (vph)	132	4779	3978	982	443	204
v/s Ratio Prot	c0.06	c0.39	0.31		c0.08	
v/s Ratio Perm				0.04		0.03
v/c Ratio	0.78	0.53	0.49	0.06	0.61	0.22
Uniform Delay, d1	54.5	6.4	12.4	8.9	49.4	46.8
Progression Factor	0.71	0.34	0.80	0.44	1.00	1.00
Incremental Delay, d2	20.0	0.0	0.0	0.0	1.8	0.2
Delay (s)	58.5	2.2	9.9	3.9	51.2	47.0
Level of Service	E	A	A	A	D	D
Approach Delay (s)		4.4	9.7		49.5	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	10.5	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	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	1712	1042	1478	521	563
v/c Ratio	0.47	0.66	0.52	0.60	0.80
Control Delay	6.1	9.8	7.6	22.9	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.1	9.8	7.6	22.9	31.2
Queue Length 50th (ft)	84	329	139	84	107
Queue Length 95th (ft)	164	453	164	128	#185
Internal Link Dist (ft)	1004		259		
Turn Bay Length (ft)		250			
Base Capacity (vph)	3605	1583	2861	886	719
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.66	0.52	0.59	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	1575	990	0	1360	0	495	0	535	0	0
Future Volume (vph)	0	1575	990	0	1360	0	495	0	535	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	1712	1042	0	1478	0	521	0	563	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1712	1042	0	1478	0	521	0	563	0	0
Turn Type		NA	Free		NA		Prot		Prot		
Protected Phases		6			2		3		3		
Permitted Phases			Free								
Actuated Green, G (s)		31.8	60.0		31.8		13.2		13.2		
Effective Green, g (s)		33.8	60.0		33.8		15.2		15.2		
Actuated g/C Ratio		0.56	1.00		0.56		0.25		0.25		
Clearance Time (s)		7.5			7.5		7.5		7.5		
Vehicle Extension (s)		3.0			3.0		2.5		2.5		
Lane Grp Cap (vph)		3609	1583		2864		869		706		
v/s Ratio Prot		0.27			0.29		0.15		0.20		
v/s Ratio Perm			c0.66								
v/c Ratio		0.47	0.66		0.52		0.60		0.80		
Uniform Delay, d1		7.8	0.0		8.1		19.7		21.0		
Progression Factor		0.72	1.00		0.87		1.00		1.00		
Incremental Delay, d2		0.4	1.9		0.5		0.9		6.1		
Delay (s)		6.0	1.9		7.5		20.7		27.0		
Level of Service		A	A		A		C		C		
Approach Delay (s)		4.5			7.5			24.0		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	0.81		
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)	1272	1929	600	584	447
v/c Ratio	0.44	0.67	0.38	0.69	0.65
Control Delay	6.7	7.2	0.2	25.1	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	7.2	0.2	25.1	25.1
Queue Length 50th (ft)	109	165	0	96	81
Queue Length 95th (ft)	102	m158	m0	144	127
Internal Link Dist (ft)	270	1155			
Turn Bay Length (ft)			250		
Base Capacity (vph)	2891	2891	1583	886	719
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.67	0.38	0.66	0.62

Intersection Summary

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

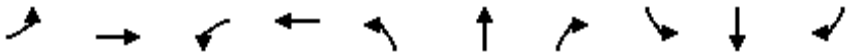
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations		↑↑↑			↑↑↑	↱	↰↰		↱↱		
Traffic Volume (vph)	0	1170	0	0	1775	570	555	0	425	0	0
Future Volume (vph)	0	1170	0	0	1775	570	555	0	425	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			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	1272	0	0	1929	600	584	0	447	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1272	0	0	1929	600	584	0	447	0	0
Turn Type		NA			NA	Free	Prot		Prot		
Protected Phases		6			2		4		4		
Permitted Phases						Free					
Actuated Green, G (s)		32.1			32.1	60.0	12.9		12.9		
Effective Green, g (s)		34.1			34.1	60.0	14.9		14.9		
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)		2889			2889	1583	852		692		
v/s Ratio Prot		0.25			c0.38		c0.17		0.16		
v/s Ratio Perm						0.38					
v/c Ratio		0.44			0.67	0.38	0.69		0.65		
Uniform Delay, d1		7.5			9.0	0.0	20.4		20.2		
Progression Factor		0.83			0.75	1.00	1.00		1.00		
Incremental Delay, d2		0.4			0.3	0.2	2.1		1.8		
Delay (s)		6.6			7.1	0.2	22.5		22.0		
Level of Service		A			A	A	C		C		
Approach Delay (s)		6.6			5.4			22.3		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	0.67		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

5: NE 3rd Ave & Sample Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	424	1310	60	1820	250	228	82	109	223	571
v/c Ratio	1.00	0.60	0.48	0.99	0.72	0.45	0.15	0.32	0.45	1.07
Control Delay	87.9	20.8	66.9	56.9	44.6	39.3	0.6	28.9	40.3	88.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.9	20.8	66.9	56.9	44.6	39.3	0.6	28.9	40.3	88.2
Queue Length 50th (ft)	168	250	45	507	140	146	0	56	144	~390
Queue Length 95th (ft)	#281	301	91	#628	#220	225	0	98	222	#613
Internal Link Dist (ft)		1155		834		912			742	
Turn Bay Length (ft)	550		490		250		225	200		
Base Capacity (vph)	425	2194	131	1836	345	509	544	338	492	536
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	0.99	0.72	0.45	0.15	0.32	0.45	1.07

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	390	1060	145	55	1590	85	230	210	75	100	205	525
Future Volume (vph)	390	1060	145	55	1590	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	4945		1752	4998		1752	1845	1568	1752	1845	1568
Flt Permitted	0.95	1.00		0.95	1.00		0.48	1.00	1.00	0.51	1.00	1.00
Satd. Flow (perm)	3400	4945		1752	4998		882	1845	1568	941	1845	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	424	1152	158	60	1728	92	250	228	82	109	223	571
RTOR Reduction (vph)	0	14	0	0	5	0	0	0	59	0	0	119
Lane Group Flow (vph)	424	1296	0	60	1815	0	250	228	23	109	223	452
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases							4		4	8		8
Actuated Green, G (s)	13.0	49.5		5.5	42.0		40.1	33.1	33.1	37.9	32.0	32.0
Effective Green, g (s)	15.0	51.5		7.5	44.0		40.1	33.1	33.1	37.9	32.0	32.0
Actuated g/C Ratio	0.12	0.43		0.06	0.37		0.33	0.28	0.28	0.32	0.27	0.27
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	3.0		1.5	3.0		1.5	2.0	2.0	1.5	2.0	2.0
Lane Grp Cap (vph)	425	2122		109	1832		345	508	432	337	492	418
v/s Ratio Prot	c0.12	0.26		0.03	c0.36		c0.04	0.12		0.02	0.12	
v/s Ratio Perm							0.20		0.01	0.09		c0.29
v/c Ratio	1.00	0.61		0.55	0.99		0.72	0.45	0.05	0.32	0.45	1.08
Uniform Delay, d1	52.5	26.5		54.6	37.8		35.1	35.9	31.9	30.1	36.7	44.0
Progression Factor	0.89	0.77		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	18.9		6.3	0.2	0.0	0.2	0.2	67.8
Delay (s)	86.7	21.5		58.0	56.7		41.3	36.1	31.9	30.3	36.9	111.8
Level of Service	F	C		E	E		D	D	C	C	D	F
Approach Delay (s)		37.4			56.8			37.8			83.4	
Approach LOS		D			E			D			F	

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	92.0%	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	2294	299	2277	65	250	11	402	274	281	359
v/c Ratio	0.52	0.95	1.33	0.91	0.06	0.68	0.06	1.04	0.87	0.88	0.79
Control Delay	79.2	43.0	220.8	24.7	0.1	65.3	50.8	98.0	77.5	78.2	34.2
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	79.2	43.0	220.8	25.8	0.1	65.3	50.8	98.0	77.5	78.2	34.2
Queue Length 50th (ft)	41	687	~172	231	0	106	8	~310	231	238	129
Queue Length 95th (ft)	#90	#873	m#248	#822	m0	146	27	#475	#369	#377	249
Internal Link Dist (ft)		580		548			436			396	
Turn Bay Length (ft)	450		375		350	225		250	200		
Base Capacity (vph)	95	2414	224	2493	1204	845	458	385	349	355	452
Starvation Cap Reductn	0	0	0	81	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	0.52	0.95	1.33	0.94	0.05	0.30	0.02	1.04	0.79	0.79	0.79

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 Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	1965	145	275	2095	60	230	10	370	420	90	330
Future Volume (vph)	45	1965	145	275	2095	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	2136	158	299	2277	65	250	11	402	457	98	359
RTOR Reduction (vph)	0	5	0	0	0	20	0	0	67	0	0	101
Lane Group Flow (vph)	49	2289	0	299	2277	45	250	11	335	274	281	258
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	60.2		6.5	61.7	86.1	13.9	13.9	20.4	24.4	24.4	29.4
Effective Green, g (s)	7.0	62.2		8.5	63.7	90.1	13.9	13.9	20.4	24.4	24.4	29.4
Actuated g/C Ratio	0.05	0.48		0.07	0.49	0.69	0.11	0.11	0.16	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)	95	2408		224	2491	1097	367	199	248	315	321	358
v/s Ratio Prot	0.03	c0.45		c0.09	0.45	0.01	0.07	0.01	c0.07	0.16	c0.16	0.03
v/s Ratio Perm						0.02			0.14			0.14
v/c Ratio	0.52	0.95		1.33	0.91	0.04	0.68	0.06	1.35	0.87	0.88	0.72
Uniform Delay, d1	59.9	32.4		60.8	30.6	6.3	55.9	52.2	54.8	51.3	51.3	46.5
Progression Factor	1.00	1.00		1.17	0.60	0.05	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	10.0		170.1	4.7	0.0	4.1	0.0	181.3	21.0	21.7	6.0
Delay (s)	61.8	42.4		241.0	23.1	0.3	60.0	52.2	236.1	72.3	73.1	52.5
Level of Service	E	D		F	C	A	E	D	F	E	E	D
Approach Delay (s)		42.8			47.2			166.7			64.7	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	60.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	2092	874	1989	695	632
v/c Ratio	0.41	0.55	0.80	0.89	0.51
Control Delay	0.1	1.2	24.6	47.4	27.2
Queue Delay	0.0	0.0	0.7	0.0	0.0
Total Delay	0.1	1.2	25.3	47.4	27.2
Queue Length 50th (ft)	0	0	400	512	207
Queue Length 95th (ft)	m0	m0	628	669	256
Internal Link Dist (ft)	548		319		
Turn Bay Length (ft)		150			
Base Capacity (vph)	5085	1583	2483	850	1339
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	202	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.41	0.55	0.87	0.82	0.47

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	1925	830	0	1830	0	660	0	600	0	0
Future Volume (vph)	0	1925	830	0	1830	0	660	0	600	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		4.5		4.5		4.5		
Lane Util. Factor		0.91	1.00		0.91		1.00		0.88		
Frt		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		5085	1583		5085		1770		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		5085	1583		5085		1770		2787		
Peak-hour factor, PHF	0.92	0.92	0.95	0.92	0.92	0.92	0.95	0.92	0.95	0.92	0.92
Adj. Flow (vph)	0	2092	874	0	1989	0	695	0	632	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2092	874	0	1989	0	695	0	632	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)		130.0	130.0		61.5		55.5		55.5		
Effective Green, g (s)		130.0	130.0		63.5		57.5		57.5		
Actuated g/C Ratio		1.00	1.00		0.49		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		2483		782		1232		
v/s Ratio Prot		0.41			c0.39		c0.39		0.23		
v/s Ratio Perm			0.55								
v/c Ratio		0.41	0.55		0.80		0.89		0.51		
Uniform Delay, d1		0.0	0.0		27.9		33.3		26.1		
Progression Factor		1.00	1.00		0.78		1.00		1.00		
Incremental Delay, d2		0.1	0.5		1.9		11.9		0.3		
Delay (s)		0.1	0.5		23.6		45.2		26.4		
Level of Service		A	A		C		D		C		
Approach Delay (s)		0.2			23.6			36.3		0.0	
Approach LOS		A			C			D		A	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

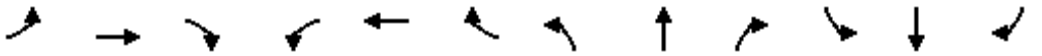
Lane Group	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	2103	2348	804	630	821
v/c Ratio	0.73	0.81	0.51	0.38	0.85
Control Delay	13.4	12.1	0.9	17.3	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	12.1	0.9	17.3	29.0
Queue Length 50th (ft)	226	228	0	65	155
Queue Length 95th (ft)	236	m320	m0	92	#263
Internal Link Dist (ft)	286	371			
Turn Bay Length (ft)			250	350	350
Base Capacity (vph)	2883	2883	1568	1688	982
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.73	0.81	0.51	0.37	0.84

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	1935	0	0	2160	740	580	0	780	0	0	0
Future Volume (vph)	0	1935	0	0	2160	740	580	0	780	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	2103	0	0	2348	804	630	0	821	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	39	0	0	0
Lane Group Flow (vph)	0	2103	0	0	2348	804	630	0	782	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)		34.9			34.9	65.0	19.6		19.6			
Effective Green, g (s)		36.9			36.9	65.0	21.6		21.6			
Actuated g/C Ratio		0.57			0.57	1.00	0.33		0.33			
Clearance Time (s)		6.5			6.5		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		2886			2886	1568	1658		926			
v/s Ratio Prot		0.41			c0.46		0.13		c0.28			
v/s Ratio Perm						0.51						
v/c Ratio		0.73			0.81	0.51	0.38		0.84			
Uniform Delay, d1		10.4			11.3	0.0	16.6		20.1			
Progression Factor		1.13			0.93	1.00	1.00		1.00			
Incremental Delay, d2		1.4			1.4	0.6	0.1		7.1			
Delay (s)		13.1			11.8	0.6	16.7		27.2			
Level of Service		B			B	A	B		C			
Approach Delay (s)		13.1			9.0			22.7			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	71.8%	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	2511	337	152	2500	38	315	11	141	37	54	337
v/c Ratio	0.56	0.88	0.36	1.18	0.85	0.04	1.08	0.03	0.34	0.12	0.17	0.87
Control Delay	71.5	22.9	7.0	185.9	27.5	0.1	119.9	39.6	8.4	34.6	43.3	52.7
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	71.5	22.9	7.0	185.9	27.5	0.1	119.9	39.6	8.4	34.6	43.3	52.7
Queue Length 50th (ft)	42	556	73	~153	610	0	~276	8	0	24	39	174
Queue Length 95th (ft)	m57	#915	m173	#295	#886	0	#343	23	52	47	70	265
Internal Link Dist (ft)		660			631			513			402	
Turn Bay Length (ft)	300		150	100		200	125					340
Base Capacity (vph)	184	2846	943	129	2944	971	293	544	562	298	544	557
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	0.56	0.88	0.36	1.18	0.85	0.04	1.08	0.02	0.25	0.12	0.10	0.61

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.

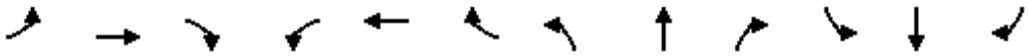
HCM Signalized Intersection Capacity Analysis

4: SW Natura Boulevard/Fairway Drive & Hillsboro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	2310	310	140	2300	35	290	10	130	34	50	310
Future Volume (vph)	95	2310	310	140	2300	35	290	10	130	34	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	0.70	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5085	1583	1301	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	2511	337	152	2500	38	315	11	141	37	54	337
RTOR Reduction (vph)	0	0	58	0	0	16	0	0	114	0	0	109
Lane Group Flow (vph)	103	2511	279	152	2500	22	315	11	27	37	54	228
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	69.6	69.6	7.5	72.1	72.1	28.7	24.7	24.7	27.1	23.9	23.9
Effective Green, g (s)	7.0	71.6	71.6	9.5	74.1	74.1	28.7	24.7	24.7	27.1	23.9	23.9
Actuated g/C Ratio	0.05	0.55	0.55	0.07	0.57	0.57	0.22	0.19	0.19	0.21	0.18	0.18
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)	184	2800	871	129	2898	902	301	353	300	300	342	291
v/s Ratio Prot	0.03	c0.49		c0.09	0.49		c0.03	0.01		0.00	0.03	
v/s Ratio Perm			0.18			0.01	c0.20		0.02	0.02		0.14
v/c Ratio	0.56	0.90	0.32	1.18	0.86	0.02	1.05	0.03	0.09	0.12	0.16	0.78
Uniform Delay, d1	60.0	25.9	15.9	60.2	23.6	12.2	50.4	42.9	43.4	41.6	44.6	50.6
Progression Factor	1.06	0.74	0.59	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	3.3	0.6	135.0	3.7	0.0	64.6	0.0	0.0	0.1	0.1	11.9
Delay (s)	64.8	22.5	10.1	195.3	27.3	12.2	114.9	42.9	43.4	41.7	44.7	62.5
Level of Service	E	C	B	F	C	B	F	D	D	D	D	E
Approach Delay (s)		22.5			36.6			91.6			58.4	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	93.5%	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)	359	978	201	538	1261	587	310	636	424	478	902	668
v/c Ratio	0.97	0.89	0.26	0.96	0.98	0.65	0.99	0.72	0.55	0.87	0.80	1.02
Control Delay	117.3	70.3	7.6	83.6	79.4	40.3	126.9	67.5	29.4	91.0	62.9	79.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	117.3	70.3	7.6	83.6	79.4	40.3	126.9	67.5	29.4	91.0	62.9	79.2
Queue Length 50th (ft)	221	583	23	336	788	442	192	368	272	287	517	~642
Queue Length 95th (ft)	#330	677	79	m#408	#938	m510	#301	444	389	#367	604	#899
Internal Link Dist (ft)		620			1082			752			457	
Turn Bay Length (ft)	550		500	550		500	300		300	650		650
Base Capacity (vph)	371	1097	767	558	1289	906	314	882	767	566	1122	655
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	0.97	0.89	0.26	0.96	0.98	0.65	0.99	0.72	0.55	0.84	0.80	1.02

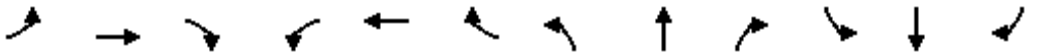
Intersection Summary

~ 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

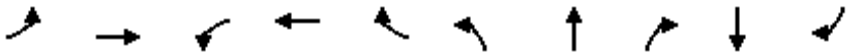


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	330	900	185	495	1160	540	285	585	390	440	830	615
Future Volume (vph)	330	900	185	495	1160	540	285	585	390	440	830	615
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	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)	359	978	201	538	1261	587	310	636	424	478	902	668
RTOR Reduction (vph)	0	0	101	0	0	36	0	0	67	0	0	153
Lane Group Flow (vph)	359	978	100	538	1261	551	310	636	357	478	902	515
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)	17.5	53.8	68.3	27.3	63.6	90.3	14.5	42.9	70.2	26.7	55.1	55.1
Effective Green, g (s)	19.5	55.8	72.3	29.3	65.6	94.3	16.5	44.9	74.2	28.7	57.1	57.1
Actuated g/C Ratio	0.11	0.31	0.40	0.16	0.36	0.52	0.09	0.25	0.41	0.16	0.32	0.32
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)	371	1097	635	558	1289	829	314	882	652	547	1122	502
v/s Ratio Prot	0.10	0.28	0.01	c0.16	c0.36	0.11	0.09	0.18	0.09	c0.14	0.25	
v/s Ratio Perm			0.05			0.24			0.14			c0.33
v/c Ratio	0.97	0.89	0.16	0.96	0.98	0.67	0.99	0.72	0.55	0.87	0.80	1.03
Uniform Delay, d1	79.9	59.2	34.4	74.8	56.5	31.3	81.6	61.8	40.2	73.9	56.3	61.5
Progression Factor	1.00	1.00	1.00	0.88	1.20	1.54	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	37.6	11.0	0.0	18.0	12.8	0.7	46.8	2.9	0.5	14.0	4.3	47.0
Delay (s)	117.5	70.2	34.4	83.5	80.7	49.1	128.4	64.7	40.7	87.9	60.6	108.4
Level of Service	F	E	C	F	F	D	F	E	D	F	E	F
Approach Delay (s)		76.6			73.6			71.7			82.6	
Approach LOS		E			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	76.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

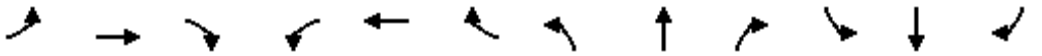


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	103	2125	136	1973	130	246	243	511	168	554
v/c Ratio	0.69	0.82	0.61	0.91	0.18	0.68	0.66	0.88	0.55	0.91
Control Delay	82.9	31.1	95.8	57.6	8.5	74.8	74.1	59.0	71.8	73.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.9	31.1	95.8	57.6	8.5	74.8	74.1	59.0	71.8	73.0
Queue Length 50th (ft)	61	577	85	766	16	282	277	434	179	311
Queue Length 95th (ft)	m79	622	m117	858	m45	394	389	#640	266	#432
Internal Link Dist (ft)		818		925			616		185	
Turn Bay Length (ft)	700		750		750			150		
Base Capacity (vph)	149	2593	228	2172	725	373	375	582	316	618
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	0.69	0.82	0.60	0.91	0.18	0.66	0.65	0.88	0.53	0.90

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	1870	85	125	1815	120	435	15	470	150	5	510
Future Volume (vph)	95	1870	85	125	1815	120	435	15	470	150	5	510
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	0.96	1.00		0.95	1.00
Satd. Flow (prot)	3367	6366		3433	5085	1524	1681	1691	1583		1542	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	6366		3433	5085	1524	1681	1691	1583		1542	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)	103	2033	92	136	1973	130	473	16	511	163	5	554
RTOR Reduction (vph)	0	4	0	0	0	74	0	0	101	0	0	67
Lane Group Flow (vph)	103	2121	0	136	1973	56	246	243	410	0	168	487
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)	6.0	71.2		9.7	74.9	74.9	39.0	39.0	54.7		36.1	48.1
Effective Green, g (s)	8.0	73.2		11.7	76.9	76.9	39.0	39.0	54.7		36.1	48.1
Actuated g/C Ratio	0.04	0.41		0.06	0.43	0.43	0.22	0.22	0.30		0.20	0.27
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)	149	2588		223	2172	651	364	366	481		309	542
v/s Ratio Prot	0.03	c0.33		0.04	c0.39	0.04	0.15	0.14	c0.26		0.11	c0.24
v/s Ratio Perm												
v/c Ratio	0.69	0.82		0.61	0.91	0.09	0.68	0.66	0.85		0.54	0.90
Uniform Delay, d1	84.8	47.5		81.9	48.3	30.6	64.7	64.5	58.9		64.6	63.6
Progression Factor	0.77	0.60		1.05	1.06	1.79	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	7.8	2.2		3.3	5.9	0.2	4.9	4.5	13.6		2.0	17.6
Delay (s)	73.2	30.8		88.9	57.2	55.1	69.6	69.0	72.5		66.5	81.2
Level of Service	E	C		F	E	E	E	E	E		E	F
Approach Delay (s)		32.7			59.0			70.9			77.8	
Approach LOS		C			E			E			E	

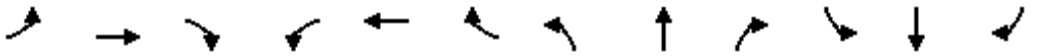
Intersection Summary			
HCM 2000 Control Delay	53.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2682	811	1620	316	600
v/c Ratio	1.12dr	0.82	0.44	0.40	0.93
Control Delay	59.1	40.2	8.4	60.4	89.3
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	59.1	40.2	8.5	60.4	89.3
Queue Length 50th (ft)	812	350	183	164	399
Queue Length 95th (ft)	837	398	202	215	#527
Internal Link Dist (ft)	925		315		
Turn Bay Length (ft)		500		500	500
Base Capacity (vph)	2849	991	3658	793	644
Starvation Cap Reductn	0	0	851	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	0.82	0.58	0.40	0.93

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
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	1780	710	770	1490	0	0	0	0	300	0	570
Future Volume (vph)	0	1780	710	770	1490	0	0	0	0	300	0	570
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)		7229		3433	5085					3433		2787
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		7229		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	1935	747	811	1620	0	0	0	0	316	0	600
RTOR Reduction (vph)	0	39	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2644	0	811	1620	0	0	0	0	316	0	600
Turn Type		NA		Prot	NA					Prot		Prot
Protected Phases		6		5 4	2 4					3		3
Permitted Phases												
Actuated Green, G (s)		68.0		47.6	127.6					39.6		39.6
Effective Green, g (s)		70.0		51.6	129.6					41.6		41.6
Actuated g/C Ratio		0.39		0.29	0.72					0.23		0.23
Clearance Time (s)		6.0								6.4		6.4
Vehicle Extension (s)		3.0								2.0		2.0
Lane Grp Cap (vph)		2811		984	3661					793		644
v/s Ratio Prot		c0.37		c0.24	0.32					0.09		c0.22
v/s Ratio Perm												
v/c Ratio		1.12dr		0.82	0.44					0.40		0.93
Uniform Delay, d1		53.0		60.0	10.4					58.6		67.8
Progression Factor		1.05		0.94	0.76					1.00		1.00
Incremental Delay, d2		4.8		5.3	0.1					0.1		20.1
Delay (s)		60.5		61.8	8.0					58.7		87.9
Level of Service		E		E	A					E		F
Approach Delay (s)		60.5			26.0			0.0			77.9	
Approach LOS		E			C			A			E	

Intersection Summary			
HCM 2000 Control Delay	49.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
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)	1326	905	2239	547	716
v/c Ratio	0.42	0.32	0.40	0.52	0.95
Control Delay	4.9	0.1	5.3	65.4	92.0
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	4.9	0.1	5.3	65.4	92.0
Queue Length 50th (ft)	65	0	131	206	371
Queue Length 95th (ft)	m98	m0	127	249	#477
Internal Link Dist (ft)	240		630	1225	
Turn Bay Length (ft)		700		410	430
Base Capacity (vph)	3164	2787	5595	1042	754
Starvation Cap Reductn	186	0	1154	0	0
Spillback Cap Reductn	40	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.32	0.50	0.52	0.95

Intersection Summary

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

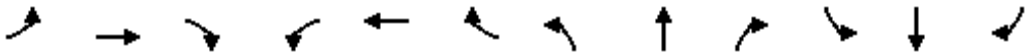
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1220	860	0	2060	520	680
Future Volume (vph)	1220	860	0	2060	520	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)	1326	905	0	2239	547	716
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1326	905	0	2239	547	716
Turn Type	NA	Free		NA	Prot	Prot
Protected Phases	6 3			2 3	4	4
Permitted Phases		Free				
Actuated Green, G (s)	107.6	180.0		131.5	35.6	35.6
Effective Green, g (s)	111.6	180.0		129.1	37.6	37.6
Actuated g/C Ratio	0.62	1.00		0.72	0.21	0.21
Clearance Time (s)					6.4	6.4
Vehicle Extension (s)					3.5	3.5
Lane Grp Cap (vph)	3152	2787		5410	1042	754
v/s Ratio Prot	c0.26			c0.30	0.11	c0.20
v/s Ratio Perm		0.32				
v/c Ratio	0.42	0.32		0.41	0.52	0.95
Uniform Delay, d1	17.6	0.0		10.2	63.3	70.3
Progression Factor	0.48	1.00		0.60	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.0	0.5	21.3
Delay (s)	8.4	0.1		6.1	63.8	91.5
Level of Service	A	A		A	E	F
Approach Delay (s)	5.1			6.1	79.5	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	18.8
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

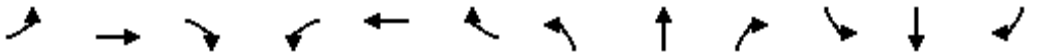


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	321	1435	310	375	1467	147	332	201	245	299	337	440
v/c Ratio	0.82	0.75	0.42	0.84	0.73	0.21	0.91	0.22	0.42	0.66	0.90	0.86
Control Delay	80.5	67.0	27.1	93.4	50.4	9.6	78.3	52.7	7.3	45.7	95.8	47.0
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.5	67.3	27.1	93.4	50.4	9.6	78.3	52.7	7.3	45.7	95.8	47.0
Queue Length 50th (ft)	205	480	120	225	561	17	316	98	0	242	389	245
Queue Length 95th (ft)	m245	m583	m181	287	639	72	#480	133	72	318	507	393
Internal Link Dist (ft)		630			1233			1112			1327	
Turn Bay Length (ft)	300		300	200		300	260		260	170		170
Base Capacity (vph)	411	1923	742	469	2003	699	377	1006	625	465	427	549
Starvation Cap Reductn	0	114	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	0.78	0.79	0.42	0.80	0.73	0.21	0.88	0.20	0.39	0.64	0.79	0.80

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	295	1320	285	345	1350	135	305	185	225	275	310	405
Future Volume (vph)	295	1320	285	345	1350	135	305	185	225	275	310	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4	4.4	4.4	4.4	4.4	5.7	5.7	5.7	5.7	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	1770	3539	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.12	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	223	3539	1583	1165	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	321	1435	310	375	1467	147	332	201	245	299	337	440
RTOR Reduction (vph)	0	0	144	0	0	75	0	0	183	0	0	193
Lane Group Flow (vph)	321	1435	166	375	1467	72	332	201	62	299	337	247
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)	18.6	66.1	66.1	21.4	68.9	68.9	74.0	45.8	45.8	58.9	36.4	36.4
Effective Green, g (s)	20.6	68.1	68.1	23.4	70.9	70.9	74.0	45.8	45.8	58.9	36.4	36.4
Actuated g/C Ratio	0.11	0.38	0.38	0.13	0.39	0.39	0.41	0.25	0.25	0.33	0.20	0.20
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)	392	1923	598	446	2002	623	365	900	402	456	376	320
v/s Ratio Prot	0.09	0.28		c0.11	c0.29		c0.16	0.06		0.08	0.18	
v/s Ratio Perm			0.11			0.05	c0.21		0.04	0.13		0.16
v/c Ratio	0.82	0.75	0.28	0.84	0.73	0.12	0.91	0.22	0.16	0.66	0.90	0.77
Uniform Delay, d1	77.9	48.5	38.9	76.5	46.5	34.6	52.8	53.0	52.1	49.1	70.0	67.9
Progression Factor	0.85	1.30	2.23	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.8	1.3	0.2	12.9	2.4	0.4	25.1	0.0	0.1	2.6	22.4	10.0
Delay (s)	76.1	64.1	86.8	89.3	48.9	35.0	78.0	53.1	52.1	51.7	92.4	77.9
Level of Service	E	E	F	F	D	D	E	D	D	D	F	E
Approach Delay (s)		69.4			55.5			63.4			75.1	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	65.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2761	272	2538	125	130
v/c Ratio	0.64	0.95	0.64	0.67	0.46
Control Delay	20.1	95.0	2.3	72.8	13.6
Queue Delay	0.0	43.4	0.3	0.0	0.0
Total Delay	20.2	138.4	2.6	72.8	13.6
Queue Length 50th (ft)	370	197	54	103	0
Queue Length 95th (ft)	444	#394	41	164	58
Internal Link Dist (ft)	575		175	531	
Turn Bay Length (ft)					
Base Capacity (vph)	4288	285	3961	503	543
Starvation Cap Reductn	0	56	613	0	0
Spillback Cap Reductn	154	0	0	0	2
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	1.19	0.76	0.25	0.24

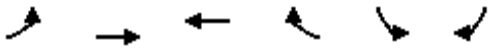
Intersection Summary

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)	2445	95	250	2335	115	120
Future Volume (vph)	2445	95	250	2335	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)	2658	103	272	2538	125	130
RTOR Reduction (vph)	3	0	0	0	0	116
Lane Group Flow (vph)	2758	0	272	2538	125	14
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2 3		1	1 2 3	4	
Permitted Phases					4	4
Actuated Green, G (s)	72.3		19.0	99.3	13.7	13.7
Effective Green, g (s)	74.3		21.0	101.3	13.7	13.7
Actuated g/C Ratio	0.57		0.16	0.78	0.11	0.11
Clearance Time (s)			8.0		9.0	9.0
Vehicle Extension (s)			1.5		2.0	2.0
Lane Grp Cap (vph)	4287		285	3962	186	166
v/s Ratio Prot	c0.37		c0.15	c0.50	c0.07	
v/s Ratio Perm						0.01
v/c Ratio	0.64		0.95	0.64	0.67	0.08
Uniform Delay, d1	18.9		54.0	6.3	56.0	52.5
Progression Factor	1.00		1.09	0.25	1.00	1.00
Incremental Delay, d2	0.3		34.5	0.2	7.3	0.1
Delay (s)	19.1		93.5	1.8	63.3	52.6
Level of Service	B		F	A	E	D
Approach Delay (s)	19.1			10.7	57.8	
Approach LOS	B			B	E	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	27.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



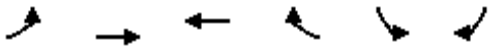
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	196	2592	2641	315	207	168
v/c Ratio	1.03	0.52	0.66	0.28	0.57	0.53
Control Delay	107.1	2.2	12.8	1.1	61.0	13.6
Queue Delay	0.0	0.1	0.1	0.0	0.0	0.1
Total Delay	107.1	2.2	12.9	1.1	61.0	13.8
Queue Length 50th (ft)	~177	25	333	11	87	0
Queue Length 95th (ft)	#335	38	429	m21	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	188	0	0	60
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.61	0.69	0.28	0.21	0.33

Intersection Summary

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

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

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	180	2385	2430	290	190	155
Future Volume (vph)	180	2385	2430	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	2592	2641	315	207	168
RTOR Reduction (vph)	0	0	0	118	0	150
Lane Group Flow (vph)	196	2592	2641	197	207	18
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	3	1 2 3	1 2		4	
Permitted Phases				1 2		4
Actuated Green, G (s)	12.0	99.3	79.3	79.3	13.7	13.7
Effective Green, g (s)	14.0	101.3	81.3	81.3	13.7	13.7
Actuated g/C Ratio	0.11	0.78	0.63	0.63	0.11	0.11
Clearance Time (s)	8.0				9.0	9.0
Vehicle Extension (s)	1.5				2.0	2.0
Lane Grp Cap (vph)	190	4993	4007	989	361	166
v/s Ratio Prot	c0.11	0.40	c0.41		c0.06	
v/s Ratio Perm				0.12		0.01
v/c Ratio	1.03	0.52	0.66	0.20	0.57	0.11
Uniform Delay, d1	58.0	5.3	15.5	10.4	55.4	52.6
Progression Factor	0.68	0.33	0.77	0.58	1.00	1.00
Incremental Delay, d2	66.1	0.0	0.2	0.0	1.4	0.1
Delay (s)	105.6	1.8	12.0	6.1	56.7	52.7
Level of Service	F	A	B	A	E	D
Approach Delay (s)		9.1	11.4		54.9	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	13.0	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	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBL2	SBR
Lane Group Flow (vph)	2060	716	2130	568	800
v/c Ratio	0.62	0.45	0.81	0.52	0.91
Control Delay	12.4	2.0	15.5	20.4	38.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	2.0	15.5	20.4	38.6
Queue Length 50th (ft)	243	12	282	93	170
Queue Length 95th (ft)	346	47	294	137	#285
Internal Link Dist (ft)	1004		259		
Turn Bay Length (ft)		250			
Base Capacity (vph)	3302	1583	2620	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	0.45	0.81	0.52	0.91

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	1895	680	0	1960	0	540	0	760	0	0
Future Volume (vph)	0	1895	680	0	1960	0	540	0	760	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	2060	716	0	2130	0	568	0	800	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2060	716	0	2130	0	568	0	800	0	0
Turn Type		NA	Free		NA		Prot		Prot		
Protected Phases		6			2		3		3		
Permitted Phases			Free								
Actuated Green, G (s)		31.5	65.0		31.5		18.5		18.5		
Effective Green, g (s)		33.5	65.0		33.5		20.5		20.5		
Actuated g/C Ratio		0.52	1.00		0.52		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)		3302	1583		2620		1082		878		
v/s Ratio Prot		0.32			c0.42		0.17		c0.29		
v/s Ratio Perm			0.45								
v/c Ratio		0.62	0.45		0.81		0.52		0.91		
Uniform Delay, d1		11.2	0.0		13.1		18.3		21.4		
Progression Factor		1.03	1.00		1.02		1.00		1.00		
Incremental Delay, d2		0.8	0.8		1.9		0.4		13.5		
Delay (s)		12.4	0.8		15.4		18.6		34.8		
Level of Service		B	A		B		B		C		
Approach Delay (s)		9.4			15.4			28.1		0.0	
Approach LOS		A			B			C		A	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	NBL2	NBR
Lane Group Flow (vph)	1853	1848	453	1200	716
v/c Ratio	0.73	0.73	0.29	0.84	0.62
Control Delay	17.1	18.4	0.2	40.0	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	18.4	0.2	40.0	32.0
Queue Length 50th (ft)	346	194	0	453	260
Queue Length 95th (ft)	315	m272	m0	522	318
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	0.73	0.73	0.29	0.78	0.57

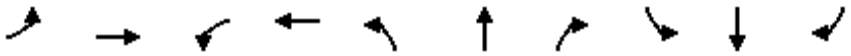
Intersection Summary

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	1705	0	0	1700	430	1140	0	680	0	0
Future Volume (vph)	0	1705	0	0	1700	430	1140	0	680	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	1853	0	0	1848	453	1200	0	716	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1853	0	0	1848	453	1200	0	716	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		c0.36			0.36		c0.35		0.26		
v/s Ratio Perm						0.29					
v/c Ratio		0.73			0.73	0.29	0.84		0.62		
Uniform Delay, d1		25.6			25.6	0.0	34.1		29.8		
Progression Factor		0.58			0.66	1.00	1.00		1.00		
Incremental Delay, d2		0.9			0.9	0.2	4.6		0.8		
Delay (s)		15.9			17.8	0.2	38.6		30.7		
Level of Service		B			B	A	D		C		
Approach Delay (s)		15.9			14.3			35.7		0.0	
Approach LOS		B			B			D		A	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	511	2082	114	1777	261	337	120	87	266	418
v/c Ratio	0.97	0.84	0.93	0.86	1.09	0.82	0.24	0.51	0.76	0.89
Control Delay	87.9	28.6	125.3	40.4	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	87.9	28.6	125.3	40.4	120.8	64.3	1.1	42.8	63.2	47.0
Queue Length 50th (ft)	234	346	97	491	~197	272	0	53	214	184
Queue Length 95th (ft)	#343	#611	#217	#662	#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	2074	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	0.86	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	1700	215	105	1505	130	240	310	110	80	245	385
Future Volume (vph)	470	1700	215	105	1505	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	5025		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.25	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	3433	5000		1770	5025		473	1863	1583	477	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	511	1848	234	114	1636	141	261	337	120	87	266	418
RTOR Reduction (vph)	0	11	0	0	7	0	0	0	94	0	0	170
Lane Group Flow (vph)	511	2071	0	114	1770	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	2067		240	409	348	170	351	298
v/s Ratio Prot	c0.15	c0.41		0.06	0.35		c0.08	c0.18		0.02	0.14	
v/s Ratio Perm							c0.24		0.02	0.10		0.16
v/c Ratio	0.97	0.84		0.93	0.86		1.09	0.82	0.08	0.51	0.76	0.83
Uniform Delay, d1	54.7	28.2		60.2	34.8		43.3	48.3	40.2	40.9	49.9	50.8
Progression Factor	1.14	0.89		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.2	2.6		60.3	4.8		83.4	12.1	0.0	1.1	8.1	17.1
Delay (s)	87.5	27.6		120.6	39.6		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)		39.4			44.5			81.1			61.5	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	48.9	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	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group