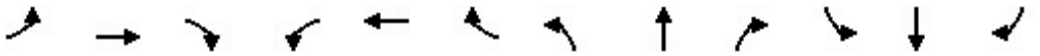
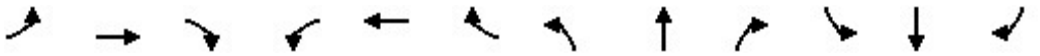


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	430	545	205	1080	0	0	0	0	145	5	335
Future Volume (vph)	0	430	545	205	1080	0	0	0	0	145	5	335
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0	5.0	4.6	5.0						5.0	5.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3260	1415	1646	3292						1637	1458
Flt Permitted		1.00	1.00	0.43	1.00						0.95	1.00
Satd. Flow (perm)		3260	1415	752	3292						1637	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	430	545	205	1080	0	0	0	0	145	5	335
RTOR Reduction (vph)	0	0	295	0	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	0	430	250	205	1080	0	0	0	0	0	150	238
Confl. Peds. (#/hr)			6									
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	2%	2%	2%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		26.2	26.2	32.6	27.2						33.2	33.2
Effective Green, g (s)		26.2	26.2	32.6	27.2						33.2	33.2
Actuated g/C Ratio		0.33	0.33	0.41	0.34						0.42	0.42
Clearance Time (s)		5.0	5.0	4.6	5.0						5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1075	466	369	1127						684	609
v/s Ratio Prot		0.13		c0.04	c0.33							
v/s Ratio Perm			0.18	0.19							0.09	c0.16
v/c Ratio		0.40	0.54	0.56	0.96						0.22	0.39
Uniform Delay, d1		20.5	21.6	16.5	25.5						14.8	16.1
Progression Factor		1.00	1.00	0.94	0.98						1.00	1.00
Incremental Delay, d2		0.2	1.2	1.5	15.0						0.2	0.4
Delay (s)		20.8	22.8	17.0	40.1						15.0	16.5
Level of Service		C	C	B	D						B	B
Approach Delay (s)		21.9			36.4			0.0			16.0	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	14.6
Intersection Capacity Utilization	115.0%	ICU Level of Service	H
Analysis Period (min)	15		

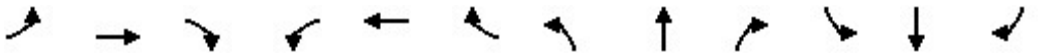
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	435	0	0	520	110	765	5	285	0	0	0
Future Volume (vph)	140	435	0	0	520	110	765	5	285	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.6	5.0			5.0	5.0	5.0	5.0				
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95				
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	0.99				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.92				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.98				
Satd. Flow (prot)	1646	3292			3292	1436	1564	1465				
Flt Permitted	0.40	1.00			1.00	1.00	0.95	0.98				
Satd. Flow (perm)	694	3292			3292	1436	1564	1465				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	140	435	0	0	520	110	765	5	285	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	56	0	57	0	0	0	0
Lane Group Flow (vph)	140	435	0	0	520	54	543	455	0	0	0	0
Confl. Peds. (#/hr)						3			3			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA				
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8					
Actuated Green, G (s)	30.6	26.2			27.2	27.2	33.2	33.2				
Effective Green, g (s)	30.6	26.2			27.2	27.2	33.2	33.2				
Actuated g/C Ratio	0.39	0.33			0.34	0.34	0.42	0.42				
Clearance Time (s)	4.6	5.0			5.0	5.0	5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	320	1086			1127	491	653	612				
v/s Ratio Prot	c0.02	0.13			c0.16							
v/s Ratio Perm	0.14					0.04	c0.35	0.31				
v/c Ratio	0.44	0.40			0.46	0.11	0.83	0.74				
Uniform Delay, d1	16.6	20.5			20.4	17.8	20.6	19.5				
Progression Factor	0.62	0.56			1.00	1.00	1.00	1.00				
Incremental Delay, d2	0.9	0.2			0.3	0.1	8.9	4.9				
Delay (s)	11.2	11.7			20.7	17.9	29.5	24.4				
Level of Service	B	B			C	B	C	C				
Approach Delay (s)		11.6			20.2			27.0			0.0	
Approach LOS		B			C			C			A	

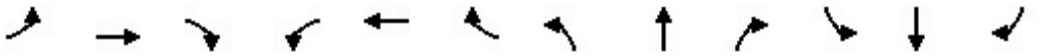
Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	14.6
Intersection Capacity Utilization	115.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



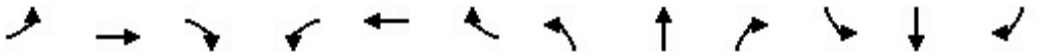
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	275	60	155	295	40	70	240	160	55	435	120
Future Volume (vph)	80	275	60	155	295	40	70	240	160	55	435	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		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)	1614	3126		1630	3193		1614	1699	1424	1630	1716	1435
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1614	3126		1630	3193		1614	1699	1424	1630	1716	1435
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	275	60	155	295	40	70	240	160	55	435	120
RTOR Reduction (vph)	0	25	0	0	15	0	0	0	106	0	0	81
Lane Group Flow (vph)	80	310	0	155	320	0	70	240	54	55	435	39
Confl. Peds. (#/hr)	2		6	6		2	5		3	3		5
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	5.3	13.6		6.3	14.6		3.8	21.8	21.8	3.2	21.2	21.2
Effective Green, g (s)	5.3	13.6		6.3	14.6		3.8	21.8	21.8	3.2	21.2	21.2
Actuated g/C Ratio	0.08	0.21		0.10	0.22		0.06	0.34	0.34	0.05	0.33	0.33
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	131	655		158	718		94	570	478	80	560	468
v/s Ratio Prot	0.05	0.10		c0.10	c0.10		c0.04	0.14		0.03	c0.25	
v/s Ratio Perm									0.04			0.03
v/c Ratio	0.61	0.47		0.98	0.45		0.74	0.42	0.11	0.69	0.78	0.08
Uniform Delay, d1	28.8	22.5		29.2	21.7		30.1	16.7	14.9	30.4	19.7	15.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.2		65.5	0.2		24.0	0.2	0.0	17.8	6.1	0.0
Delay (s)	34.6	22.7		94.7	21.8		54.1	16.9	14.9	48.1	25.8	15.2
Level of Service	C	C		F	C		D	B	B	D	C	B
Approach Delay (s)		25.0			44.9			21.7			25.7	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	155	80	15	195	30	90	100	10	30	185	60
Future Volume (vph)	70	155	80	15	195	30	90	100	10	30	185	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.96			0.98			0.99			0.97	
Flt Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		1610			1649			1698			1633	
Flt Permitted		0.86			0.97			0.78			0.94	
Satd. Flow (perm)		1407			1597			1362			1549	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	155	80	15	195	30	90	100	10	30	185	60
RTOR Reduction (vph)	0	24	0	0	10	0	0	3	0	0	14	0
Lane Group Flow (vph)	0	281	0	0	230	0	0	197	0	0	261	0
Confl. Peds. (#/hr)			4	4			1					1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	0%	0%	0%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		11.5			11.5			10.3			10.3	
Effective Green, g (s)		11.5			11.5			10.3			10.3	
Actuated g/C Ratio		0.36			0.36			0.32			0.32	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		508			577			441			501	
v/s Ratio Prot												
v/s Ratio Perm		c0.20			0.14			0.14			c0.17	
v/c Ratio		0.55			0.40			0.45			0.52	
Uniform Delay, d1		8.1			7.6			8.5			8.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			0.2			0.3			0.5	
Delay (s)		8.8			7.7			8.8			9.2	
Level of Service		A			A			A			A	
Approach Delay (s)		8.8			7.7			8.8			9.2	
Approach LOS		A			A			A			A	

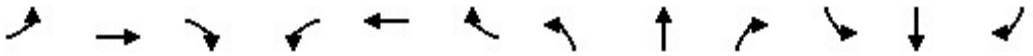
Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	31.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	5	145	10	10	5	190	290	10	10	335	50
Future Volume (Veh/h)	45	5	145	10	10	5	190	290	10	10	335	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	45	5	145	10	10	5	190	290	10	10	335	50
Pedestrians		4			2			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1069	1066	365	1206	1086	297	389			302		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1069	1066	365	1206	1086	297	389			302		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	73	97	79	91	94	99	84			99		
cM capacity (veh/h)	164	183	677	108	180	746	1160			1251		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	195	25	490	395
Volume Left	45	10	190	10
Volume Right	145	5	10	50
cSH	378	161	1160	1251
Volume to Capacity	0.52	0.16	0.16	0.01
Queue Length 95th (ft)	71	13	15	1
Control Delay (s)	24.3	31.4	4.4	0.3
Lane LOS	C	D	A	A
Approach Delay (s)	24.3	31.4	4.4	0.3
Approach LOS	C	D		

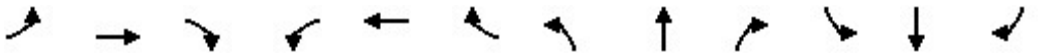
Intersection Summary				
Average Delay	7.1			
Intersection Capacity Utilization	76.0%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	305	60	40	300	30	40	85	40	55	220	80
Future Volume (vph)	45	305	60	40	300	30	40	85	40	55	220	80
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.98			0.99			0.97			0.97	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1683			1701			1672			1643	
Flt Permitted		0.93			0.93			0.86			0.93	
Satd. Flow (perm)		1568			1582			1463			1535	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	305	60	40	300	30	40	85	40	55	220	80
RTOR Reduction (vph)	0	11	0	0	5	0	0	13	0	0	12	0
Lane Group Flow (vph)	0	399	0	0	365	0	0	152	0	0	343	0
Confl. Peds. (#/hr)	5		3	3		5	1					1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		17.5			17.5			15.4			15.4	
Effective Green, g (s)		17.5			17.5			15.4			15.4	
Actuated g/C Ratio		0.41			0.41			0.36			0.36	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		639			645			525			551	
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.23			0.10			c0.22	
v/c Ratio		0.62			0.57			0.29			0.62	
Uniform Delay, d1		10.1			9.8			9.8			11.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.9			1.1			0.3			2.2	
Delay (s)		12.0			10.9			10.1			13.5	
Level of Service		B			B			B			B	
Approach Delay (s)		12.0			10.9			10.1			13.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	165	65	80	140	40	110	425	145	50	495	85
Future Volume (vph)	55	165	65	80	140	40	110	425	145	50	495	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	16	16	16	12	12	12	12	12	12
Total Lost time (s)		8.3			8.3		8.0	8.0		8.0	8.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.98		1.00	0.96		1.00	0.98	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1873			1885		1630	1650		1614	1662	
Flt Permitted		0.88			0.81		0.33	1.00		0.34	1.00	
Satd. Flow (perm)		1666			1541		564	1650		575	1662	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	165	65	80	140	40	110	425	145	50	495	85
RTOR Reduction (vph)	0	13	0	0	8	0	0	17	0	0	9	0
Lane Group Flow (vph)	0	272	0	0	252	0	110	553	0	50	571	0
Confl. Peds. (#/hr)	2		3	3		2						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		15.7			15.7		27.5	27.5		27.5	27.5	
Effective Green, g (s)		15.7			15.7		27.5	27.5		27.5	27.5	
Actuated g/C Ratio		0.26			0.26		0.46	0.46		0.46	0.46	
Clearance Time (s)		8.3			8.3		8.0	8.0		8.0	8.0	
Vehicle Extension (s)		3.0			3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		439			406		260	762		265	768	
v/s Ratio Prot								0.33			c0.34	
v/s Ratio Perm		0.16			c0.16		0.19			0.09		
v/c Ratio		0.62			0.62		0.42	0.73		0.19	0.74	
Uniform Delay, d1		19.3			19.3		10.7	12.9		9.4	13.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.6			2.9		0.4	2.9		0.1	3.4	
Delay (s)		21.9			22.2		11.1	15.9		9.6	16.6	
Level of Service		C			C		B	B		A	B	
Approach Delay (s)		21.9			22.2			15.1			16.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	16.3
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	340	20	10	250	10	15
Future Volume (Veh/h)	340	20	10	250	10	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	340	20	10	250	10	15
Pedestrians					8	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	956					
pX, platoon unblocked						
vC, conflicting volume			368		628	358
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			368		628	358
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1194		443	686

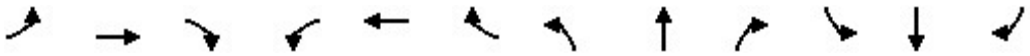
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	360	260	25
Volume Left	0	10	10
Volume Right	20	0	15
cSH	1700	1194	563
Volume to Capacity	0.21	0.01	0.04
Queue Length 95th (ft)	0	1	3
Control Delay (s)	0.0	0.4	11.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	11.7
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	65	170	120	230	315	85
Future Volume (vph)	65	170	120	230	315	85
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	65	170	120	230	315	85

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	235	350	400
Volume Left (vph)	65	120	0
Volume Right (vph)	170	0	85
Hadj (s)	-0.34	0.10	-0.08
Departure Headway (s)	5.4	5.2	5.0
Degree Utilization, x	0.35	0.51	0.56
Capacity (veh/h)	606	653	693
Control Delay (s)	11.3	13.5	14.1
Approach Delay (s)	11.3	13.5	14.1
Approach LOS	B	B	B

Intersection Summary			
Delay	13.2		
Level of Service	B		
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	5	10	10	15	15	10	330	15	35	445	5
Future Volume (Veh/h)	5	5	10	10	15	15	10	330	15	35	445	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	5	10	10	15	15	10	330	15	35	445	5
Pedestrians		2									5	
Lane Width (ft)		12.0									12.0	
Walking Speed (ft/s)		4.0									4.0	
Percent Blockage		0									0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	904	884	450	888	880	342	452			345		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	904	884	450	888	880	342	452			345		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	98	96	95	98	99			97		
cM capacity (veh/h)	235	275	613	251	277	702	1107			1208		

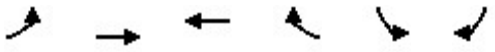
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	20	40	355	485
Volume Left	5	10	10	35
Volume Right	10	15	15	5
cSH	359	347	1107	1208
Volume to Capacity	0.06	0.12	0.01	0.03
Queue Length 95th (ft)	4	10	1	2
Control Delay (s)	15.6	16.7	0.3	0.9
Lane LOS	C	C	A	A
Approach Delay (s)	15.6	16.7	0.3	0.9
Approach LOS	C	C		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	55.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	45	30	500	595	10
Future Volume (Veh/h)	10	45	30	500	595	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	45	30	500	595	10
Pedestrians	5				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1166	605	610			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1166	605	610			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	91	97			
cM capacity (veh/h)	209	499	965			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	55	530	605
Volume Left	10	30	0
Volume Right	45	0	10
cSH	398	965	1700
Volume to Capacity	0.14	0.03	0.36
Queue Length 95th (ft)	12	2	0
Control Delay (s)	15.5	0.9	0.0
Lane LOS	C	A	
Approach Delay (s)	15.5	0.9	0.0
Approach LOS	C		

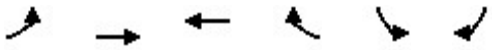
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	480	240	0	70	485
Future Volume (Veh/h)	0	480	240	0	70	485
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	480	240	0	70	485
Pedestrians					1	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	241				721	241
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	241				721	241
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	39
cM capacity (veh/h)	1319				394	797

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	480	240	70	485
Volume Left	0	0	70	0
Volume Right	0	0	0	485
cSH	1700	1700	394	797
Volume to Capacity	0.28	0.14	0.18	0.61
Queue Length 95th (ft)	0	0	16	105
Control Delay (s)	0.0	0.0	16.1	16.3
Lane LOS			C	C
Approach Delay (s)	0.0	0.0	16.2	
Approach LOS			C	

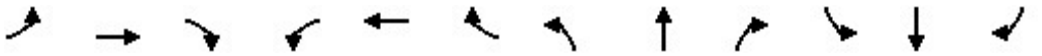
Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	265	285	240	30	0	0
Future Volume (Veh/h)	265	285	240	30	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	265	285	240	30	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	240				1070	255
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	240				1070	255
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	80				100	100
cM capacity (veh/h)	1321				197	789

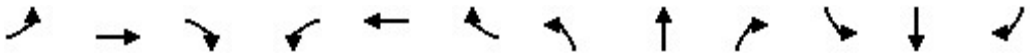
Direction, Lane #	EB 1	WB 1
Volume Total	550	270
Volume Left	265	0
Volume Right	0	30
cSH	1321	1700
Volume to Capacity	0.20	0.16
Queue Length 95th (ft)	19	0
Control Delay (s)	5.1	0.0
Lane LOS	A	
Approach Delay (s)	5.1	0.0
Approach LOS		

Intersection Summary				
Average Delay		3.4		
Intersection Capacity Utilization		54.6%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	120	70	80	180	45	45	490	100	50	445	70
Future Volume (vph)	50	120	70	80	180	45	45	490	100	50	445	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	10.0	10.0			10.0		5.0	10.0		5.0	10.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99			1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94			0.98		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	1547			1621		1614	1645		1599	1648	
Flt Permitted	0.28	1.00			0.85		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	462	1547			1394		1614	1645		1599	1648	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	120	70	80	180	45	45	490	100	50	445	70
RTOR Reduction (vph)	0	14	0	0	4	0	0	5	0	0	4	0
Lane Group Flow (vph)	50	176	0	0	301	0	45	585	0	50	511	0
Confl. Peds. (#/hr)						1			4			
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	3%	3%	3%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4								
Actuated Green, G (s)	18.2	18.2			32.9		6.5	53.1		6.7	53.3	
Effective Green, g (s)	18.2	18.2			32.9		6.5	53.1		6.7	53.3	
Actuated g/C Ratio	0.12	0.12			0.23		0.04	0.36		0.05	0.37	
Clearance Time (s)	10.0	10.0			10.0		5.0	10.0		5.0	10.0	
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	57	192			314		71	598		73	602	
v/s Ratio Prot		c0.11					0.03	c0.36		c0.03	0.31	
v/s Ratio Perm	0.11				c0.22							
v/c Ratio	0.88	0.92			0.96		0.63	0.98		0.68	0.85	
Uniform Delay, d1	62.8	63.1			55.8		68.5	45.8		68.6	42.6	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	73.9	41.2			39.1		12.8	30.8		19.1	10.4	
Delay (s)	136.7	104.3			94.9		81.3	76.6		87.6	53.0	
Level of Service	F	F			F		F	E		F	D	
Approach Delay (s)		111.0			94.9			77.0			56.1	
Approach LOS		F			F			E			E	

Intersection Summary			
HCM 2000 Control Delay	78.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	145.9	Sum of lost time (s)	35.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	40	50	70	35	15	35	95	280	50	65	345	55
Future Volume (vph)	40	50	70	35	15	35	95	280	50	65	345	55
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	50	70	35	15	35	95	280	50	65	345	55

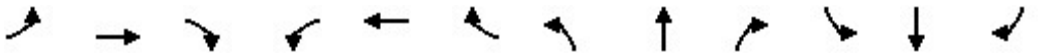
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	160	85	425	465
Volume Left (vph)	40	35	95	65
Volume Right (vph)	70	35	50	55
Hadj (s)	-0.06	-0.13	0.03	-0.01
Departure Headway (s)	6.4	6.6	5.5	5.4
Degree Utilization, x	0.28	0.16	0.65	0.70
Capacity (veh/h)	481	455	629	647
Control Delay (s)	11.9	10.8	17.9	19.7
Approach Delay (s)	11.9	10.8	17.9	19.7
Approach LOS	B	B	C	C

Intersection Summary				
Delay	17.3			
Level of Service	C			
Intersection Capacity Utilization	58.0%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	80	105	320	60	105	345
Future Volume (Veh/h)	80	105	320	60	105	345
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	80	105	320	60	105	345
Pedestrians	1					2
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	906	353			381	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	906	353			381	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	71	85			91	
cM capacity (veh/h)	280	691			1166	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	185	380	450
Volume Left	80	0	105
Volume Right	105	60	0
cSH	423	1700	1166
Volume to Capacity	0.44	0.22	0.09
Queue Length 95th (ft)	54	0	7
Control Delay (s)	20.0	0.0	2.7
Lane LOS	C		A
Approach Delay (s)	20.0	0.0	2.7
Approach LOS	C		

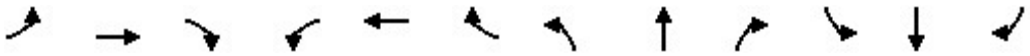
Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	20	105	10	15	15	95	345	25	35	350	40
Future Volume (Veh/h)	20	20	105	10	15	15	95	345	25	35	350	40
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	20	105	10	15	15	95	345	25	35	350	40
Pedestrians		2			1			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1000	1003	373	1084	1010	358	392			371		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1000	1003	373	1084	1010	358	392			371		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	91	84	93	93	98	92			97		
cM capacity (veh/h)	188	215	671	139	212	683	1159			1176		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	125	40	95	370	35	390
Volume Left	20	0	10	95	0	35	0
Volume Right	0	105	15	0	25	0	40
cSH	188	501	243	1159	1700	1176	1700
Volume to Capacity	0.11	0.25	0.16	0.08	0.22	0.03	0.23
Queue Length 95th (ft)	9	24	14	7	0	2	0
Control Delay (s)	26.4	14.6	22.7	8.4	0.0	8.2	0.0
Lane LOS	D	B	C	A		A	
Approach Delay (s)	16.2		22.7	1.7		0.7	
Approach LOS	C		C				

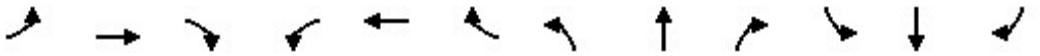
Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	50.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	195	45	80	295	100	65	185	60	200	365	15
Future Volume (vph)	5	195	45	80	295	100	65	185	60	200	365	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	195	45	80	295	100	65	185	60	200	365	15

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	245	475	65	245	200	380
Volume Left (vph)	5	80	65	0	200	0
Volume Right (vph)	45	100	0	60	0	15
Hadj (s)	-0.11	-0.08	0.52	-0.15	0.53	0.01
Departure Headway (s)	8.4	7.6	9.5	8.8	9.0	8.4
Degree Utilization, x	0.57	1.00	0.17	0.60	0.50	0.89
Capacity (veh/h)	417	469	381	407	409	437
Control Delay (s)	22.3	69.2	13.2	22.7	19.3	48.0
Approach Delay (s)	22.3	69.2	20.7		38.1	
Approach LOS	C	F	C		E	

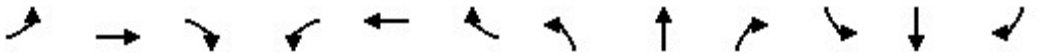
Intersection Summary				
Delay	41.5			
Level of Service	E			
Intersection Capacity Utilization	82.6%	ICU Level of Service	E	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	335	105	135	460	60	115	540	75	70	970	65
Future Volume (vph)	100	335	105	135	460	60	115	540	75	70	970	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.94	1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		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)	1630	1638		1662	1711		1614	3228	1361	1630	3260	1358
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1630	1638		1662	1711		1614	3228	1361	1630	3260	1358
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	335	105	135	460	60	115	540	75	70	970	65
RTOR Reduction (vph)	0	11	0	0	5	0	0	0	51	0	0	46
Lane Group Flow (vph)	100	429	0	135	515	0	115	540	24	70	970	19
Confl. Peds. (#/hr)	34		30	30		34	22		17	17		22
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	3%	3%	3%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	9.0	31.0		9.7	31.7		9.4	32.1	32.1	7.2	29.9	29.9
Effective Green, g (s)	9.0	31.0		9.7	31.7		9.4	32.1	32.1	7.2	29.9	29.9
Actuated g/C Ratio	0.09	0.31		0.10	0.32		0.09	0.32	0.32	0.07	0.30	0.30
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	146	507		161	542		151	1036	436	117	974	406
v/s Ratio Prot	0.06	0.26		c0.08	c0.30		c0.07	0.17		0.04	c0.30	
v/s Ratio Perm									0.02			0.01
v/c Ratio	0.68	0.85		0.84	0.95		0.76	0.52	0.06	0.60	1.00	0.05
Uniform Delay, d1	44.1	32.3		44.4	33.4		44.2	27.7	23.5	45.0	35.0	24.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.1	15.9		28.8	28.2		18.2	1.9	0.2	5.4	27.9	0.2
Delay (s)	54.2	48.1		73.2	61.6		62.4	29.6	23.7	50.4	62.9	25.1
Level of Service	D	D		E	E		E	C	C	D	E	C
Approach Delay (s)		49.3			64.0			34.1			59.8	
Approach LOS		D			E			C			E	

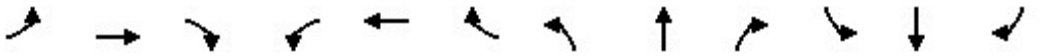
Intersection Summary			
HCM 2000 Control Delay	52.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



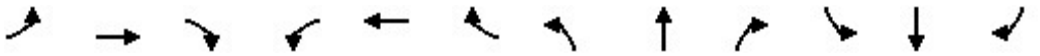
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	630	95	425	895	425	170	485	365	480	710	150
Future Volume (vph)	100	630	95	425	895	425	170	485	365	480	710	150
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	11	12	12	11	11	12	11	11	12	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		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	1.00	1.00
Satd. Flow (prot)	1614	3059		3162	3151	1388	1646	3182	1407	3193	3182	1392
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1614	3059		3162	3151	1388	1646	3182	1407	3193	3182	1392
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	630	95	425	895	425	170	485	365	480	710	150
RTOR Reduction (vph)	0	9	0	0	0	60	0	0	54	0	0	56
Lane Group Flow (vph)	100	716	0	425	895	365	170	485	311	480	710	94
Confl. Peds. (#/hr)						8			5			12
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4	5	1	6	7	5	2	3
Permitted Phases						4			6			2
Actuated Green, G (s)	13.0	35.9		21.6	44.5	68.5	19.0	38.5	60.1	24.0	43.5	56.5
Effective Green, g (s)	13.0	35.9		21.6	44.5	68.5	19.0	38.5	60.1	24.0	43.5	56.5
Actuated g/C Ratio	0.09	0.26		0.15	0.32	0.49	0.14	0.28	0.43	0.17	0.31	0.40
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	149	784		487	1001	679	223	875	654	547	988	611
v/s Ratio Prot	0.06	c0.23		0.13	c0.28	0.09	c0.10	0.15	0.07	c0.15	c0.22	0.01
v/s Ratio Perm						0.17			0.15			0.05
v/c Ratio	0.67	0.91		0.87	0.89	0.54	0.76	0.55	0.48	0.88	0.72	0.15
Uniform Delay, d1	61.4	50.5		57.9	45.5	24.8	58.3	43.4	28.7	56.6	42.8	26.5
Progression Factor	1.00	1.00		1.29	0.94	0.54	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	14.7		7.8	5.0	0.2	12.9	2.5	0.2	14.3	4.5	0.0
Delay (s)	70.4	65.3		82.3	47.8	13.7	71.3	45.9	28.9	70.9	47.3	26.6
Level of Service	E	E		F	D	B	E	D	C	E	D	C
Approach Delay (s)		65.9			47.9			44.0			53.4	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1190	285	530	1580	0	0	0	0	1020	5	165
Future Volume (vph)	0	1190	285	530	1580	0	0	0	0	1020	5	165
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	12	12	11	11	12	12	12	12	12	12	11
Total Lost time (s)		6.0		6.0	7.5					7.9	7.9	7.9
Lane Util. Factor		0.91		0.97	0.95					0.95	0.91	0.95
Frpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.97		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4548		3027	3121					1548	1483	1339
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4548		3027	3121					1548	1483	1339
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1190	285	530	1580	0	0	0	0	1020	5	165
RTOR Reduction (vph)	0	29	0	0	0	0	0	0	0	0	1	53
Lane Group Flow (vph)	0	1446	0	530	1580	0	0	0	0	520	521	95
Confl. Peds. (#/hr)						4						
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	2%	2%	2%
Turn Type		NA		Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		46.0		25.0	75.5					49.1	49.1	49.1
Effective Green, g (s)		46.0		25.0	75.5					49.1	49.1	49.1
Actuated g/C Ratio		0.33		0.18	0.54					0.35	0.35	0.35
Clearance Time (s)		6.0		6.0	7.5					7.9	7.9	7.9
Vehicle Extension (s)		2.0		2.5	2.5					4.0	4.0	4.0
Lane Grp Cap (vph)		1494		540	1683					542	520	469
v/s Ratio Prot		c0.32		0.18	c0.51					0.34	c0.35	
v/s Ratio Perm												0.07
v/c Ratio		0.97		0.98	0.94					0.96	1.00	0.20
Uniform Delay, d1		46.3		57.3	30.1					44.5	45.5	31.8
Progression Factor		0.89		1.04	0.84					1.00	1.00	1.00
Incremental Delay, d2		12.2		26.5	8.2					28.5	40.1	0.3
Delay (s)		53.2		86.1	33.3					73.0	85.6	32.1
Level of Service		D		F	C					E	F	C
Approach Delay (s)		53.2			46.6			0.0			73.4	
Approach LOS		D			D			A			E	

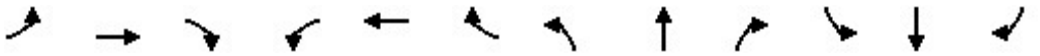
Intersection Summary			
HCM 2000 Control Delay	55.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1920	290	0	1940	1220	170	0	785	0	0	0
Future Volume (vph)	0	1920	290	0	1940	1220	170	0	785	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	12	12	12	12	12	12	15	16	12	12	12
Total Lost time (s)		5.9	5.9		5.9	4.0		5.9	4.0			
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00	1.00			
Frt		1.00	0.85		1.00	0.85		1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00		0.95	1.00			
Satd. Flow (prot)		3260	1458		3260	1458		1775	1637			
Flt Permitted		1.00	1.00		1.00	1.00		0.95	1.00			
Satd. Flow (perm)		3260	1458		3260	1458		1775	1637			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1920	290	0	1940	1220	170	0	785	0	0	0
RTOR Reduction (vph)	0	0	63	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1920	227	0	1940	1220	0	170	785	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	0%	0%	0%
Turn Type		NA	Perm		NA	Free	Split	NA	Free			
Protected Phases		2			6		8	8				
Permitted Phases			2			Free			Free			
Actuated Green, G (s)		109.8	109.8		109.8	140.0		18.4	140.0			
Effective Green, g (s)		109.8	109.8		109.8	140.0		18.4	140.0			
Actuated g/C Ratio		0.78	0.78		0.78	1.00		0.13	1.00			
Clearance Time (s)		5.9	5.9		5.9			5.9				
Vehicle Extension (s)		4.0	4.0		4.0			3.5				
Lane Grp Cap (vph)		2556	1143		2556	1458		233	1637			
v/s Ratio Prot		0.59			0.60			0.10				
v/s Ratio Perm			0.16			c0.84			0.48			
v/c Ratio		0.75	0.20		0.76	0.84		0.73	0.48			
Uniform Delay, d1		7.9	3.9		8.0	0.0		58.4	0.0			
Progression Factor		1.37	3.69		1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.6	0.1		2.2	5.9		11.2	1.0			
Delay (s)		11.4	14.4		10.2	5.9		69.6	1.0			
Level of Service		B	B		B	A		E	A			
Approach Delay (s)		11.8			8.5			13.2			0.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	0	50	0	0	0	0	175	385	245	620	0
Future Volume (Veh/h)	110	0	50	0	0	0	0	175	385	245	620	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	110	0	50	0	0	0	0	175	385	245	620	0
Pedestrians		4			7			1				
Lane Width (ft)		12.0			0.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1482	1296	625	1486	1488	374	624			182		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1482	1296	625	1486	1488	374	624			182		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	90	100	100	100	100			82		
cM capacity (veh/h)	88	132	481	80	103	676	954			1387		

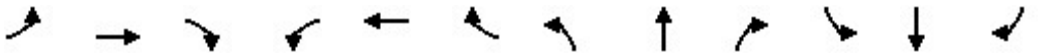
Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2
Volume Total	110	50	560	245	620
Volume Left	110	0	0	245	0
Volume Right	0	50	385	0	0
cSH	88	481	1700	1387	1700
Volume to Capacity	1.24	0.10	0.33	0.18	0.36
Queue Length 95th (ft)	198	9	0	16	0
Control Delay (s)	261.4	13.4	0.0	8.2	0.0
Lane LOS	F	B		A	
Approach Delay (s)	183.9		0.0	2.3	
Approach LOS	F				

Intersection Summary				
Average Delay	19.8			
Intersection Capacity Utilization	67.8%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	280	345	285	0	0	585
Future Volume (Veh/h)	280	345	285	0	0	585
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	280	345	285	0	0	585
Pedestrians	7					3
Lane Width (ft)	13.0					11.0
Walking Speed (ft/s)	4.0					4.0
Percent Blockage	1					0
Right turn flare (veh)		16				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	877	295			292	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	877	295			292	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	11	53			100	
cM capacity (veh/h)	316	736			1250	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	625	285	585
Volume Left	280	0	0
Volume Right	345	0	0
cSH	704	1700	1700
Volume to Capacity	0.89	0.17	0.34
Queue Length 95th (ft)	278	0	0
Control Delay (s)	36.1	0.0	0.0
Lane LOS	E		
Approach Delay (s)	36.1	0.0	0.0
Approach LOS	E		

Intersection Summary			
Average Delay	15.1		
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	20	25	0	25	15	455	30	20	425	0
Future Volume (Veh/h)	0	0	20	25	0	25	15	455	30	20	425	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	20	25	0	25	15	455	30	20	425	0
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	977	983	427	986	968	471	427			486		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	977	983	427	986	968	471	427			486		
tC, single (s)	8.1	7.5	7.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	4.4	4.9	4.2	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	96	88	100	96	99			98		
cM capacity (veh/h)	145	166	463	210	244	590	1115			1066		

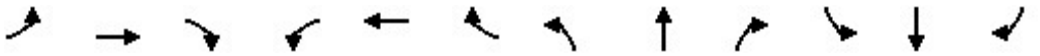
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	50	15	485	20	425
Volume Left	0	25	15	0	20	0
Volume Right	20	25	0	30	0	0
cSH	463	310	1115	1700	1066	1700
Volume to Capacity	0.04	0.16	0.01	0.29	0.02	0.25
Queue Length 95th (ft)	3	14	1	0	1	0
Control Delay (s)	13.1	18.8	8.3	0.0	8.4	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	13.1	18.8	0.2		0.4	
Approach LOS	B	C				

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	44.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	45	455	30	30	440
Future Volume (Veh/h)	20	45	455	30	30	440
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	45	455	30	30	440
Pedestrians						1
Lane Width (ft)						12.0
Walking Speed (ft/s)						4.0
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			751			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	970	471			485	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	950	433			447	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	93	93			97	
cM capacity (veh/h)	270	600			1053	

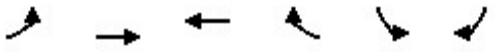
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	65	485	470
Volume Left	20	0	30
Volume Right	45	30	0
cSH	436	1700	1053
Volume to Capacity	0.15	0.29	0.03
Queue Length 95th (ft)	13	0	2
Control Delay (s)	14.7	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	14.7	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization		63.1%	ICU Level of Service B
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	425	120	130	360	205	165	165	25	105	190	165
Future Volume (vph)	115	425	120	130	360	205	165	165	25	105	190	165
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0		11.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00		1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85		0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1581	1612		1614	1592		1513	1606	1334		2896	
Flt Permitted	0.25	1.00		0.28	1.00		0.49	1.00	1.00		0.83	
Satd. Flow (perm)	423	1612		469	1592		776	1606	1334		2420	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	115	425	120	130	360	205	165	165	25	105	190	165
RTOR Reduction (vph)	0	9	0	0	19	0	0	0	15	0	62	0
Lane Group Flow (vph)	115	536	0	130	546	0	165	165	10	0	398	0
Confl. Peds. (#/hr)	2					2	8		2	2		8
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	9%	9%	9%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	37.5	37.5		37.5	37.5		37.9	37.9	37.9		37.9	
Effective Green, g (s)	37.5	37.5		37.5	37.5		37.9	37.9	37.9		37.9	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.39	0.39	0.39		0.39	
Clearance Time (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0		11.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	162	620		180	612		301	624	519		941	
v/s Ratio Prot		0.33			c0.34			0.10				
v/s Ratio Perm	0.27			0.28			c0.21		0.01		0.16	
v/c Ratio	0.71	0.86		0.72	0.89		0.55	0.26	0.02		0.42	
Uniform Delay, d1	25.3	27.6		25.5	28.1		23.1	20.3	18.3		21.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	11.0	11.6		11.4	14.9		1.1	0.1	0.0		0.1	
Delay (s)	36.4	39.2		36.9	43.0		24.2	20.3	18.3		21.9	
Level of Service	D	D		D	D		C	C	B		C	
Approach Delay (s)		38.7			41.8			22.0			21.9	
Approach LOS		D			D			C			C	

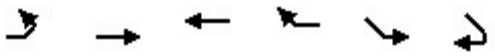
Intersection Summary			
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	97.4	Sum of lost time (s)	22.0
Intersection Capacity Utilization	128.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	555	520	0	250	175
Future Volume (Veh/h)	0	555	520	0	250	175
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	555	520	0	250	175
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		273				
pX, platoon unblocked					0.71	
vC, conflicting volume	520				1075	520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	520				902	520
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	69
cM capacity (veh/h)	1041				219	556

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	555	520	250	175
Volume Left	0	0	250	0
Volume Right	0	0	0	175
cSH	1700	1700	219	556
Volume to Capacity	0.33	0.31	1.14	0.31
Queue Length 95th (ft)	0	0	295	33
Control Delay (s)	0.0	0.0	150.5	14.4
Lane LOS			F	B
Approach Delay (s)	0.0	0.0	94.4	
Approach LOS			F	

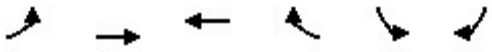
Intersection Summary			
Average Delay	26.8		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (veh/h)	0	805	520	495	0	0
Future Volume (Veh/h)	0	805	520	495	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	805	520	495	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (ft)		1187				
pX, platoon unblocked					0.78	
vC, conflicting volume	1015				1572	768
vC1, stage 1 conf vol					768	
vC2, stage 2 conf vol					805	
vCu, unblocked vol	1015				1593	768
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	683				318	405

Direction, Lane #	EB 1	WB 1
Volume Total	805	1015
Volume Left	0	0
Volume Right	0	495
cSH	1700	1700
Volume to Capacity	0.47	0.60
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

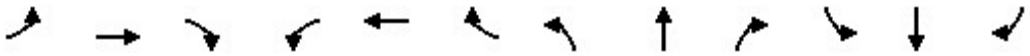
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	785	1010	5	5	5
Future Volume (Veh/h)	20	785	1010	5	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	785	1010	5	5	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1015				1838	1012
vC1, stage 1 conf vol					1012	
vC2, stage 2 conf vol					825	
vCu, unblocked vol	1015				1838	1012
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	98
cM capacity (veh/h)	676				276	293

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	805	1015	10
Volume Left	20	0	5
Volume Right	0	5	5
cSH	676	1700	284
Volume to Capacity	0.03	0.60	0.04
Queue Length 95th (ft)	2	0	3
Control Delay (s)	0.8	0.0	18.1
Lane LOS	A		C
Approach Delay (s)	0.8	0.0	18.1
Approach LOS			C

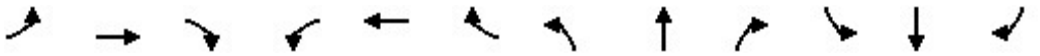
Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		72.3%	ICU Level of Service C
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	770	5	10	965	30	10	0	5	20	0	40
Future Volume (Veh/h)	15	770	5	10	965	30	10	0	5	20	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	770	5	10	965	30	10	0	5	20	0	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)					1209							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	995			775			1828	1818	772	1805	1805	980
vC1, stage 1 conf vol							802	802		1000	1000	
vC2, stage 2 conf vol							1025	1015		805	805	
vCu, unblocked vol	896			775			1892	1880	772	1865	1865	878
tC, single (s)	4.1			4.1			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)							6.2	5.6		6.1	5.5	
tF (s)	2.2			2.2			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			94	100	99	91	100	86
cM capacity (veh/h)	630			836			172	213	381	215	234	293

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	15	775	10	995	15	60
Volume Left	15	0	10	0	10	20
Volume Right	0	5	0	30	5	40
cSH	630	1700	836	1700	210	261
Volume to Capacity	0.02	0.46	0.01	0.59	0.07	0.23
Queue Length 95th (ft)	2	0	1	0	6	22
Control Delay (s)	10.9	0.0	9.4	0.0	23.4	22.8
Lane LOS	B		A		C	C
Approach Delay (s)	0.2		0.1		23.4	22.8
Approach LOS					C	C

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	67.7%	ICU Level of Service		C
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	750	10	10	925	105	15	10	30	85	5	65
Future Volume (Veh/h)	35	750	10	10	925	105	15	10	30	85	5	65
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	35	750	10	10	925	105	15	10	30	85	5	65
Pedestrians		2			3			3			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)					705							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	1033			763			1842	1881	761	1806	1781	930
vC1, stage 1 conf vol							828	828		948	948	
vC2, stage 2 conf vol							1014	1053		858	833	
vCu, unblocked vol	939			763			1912	1958	761	1868	1838	815
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			99			90	95	93	58	98	79
cM capacity (veh/h)	599			843			154	200	407	203	235	314

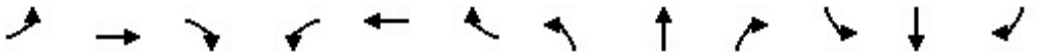
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	35	760	935	105	55	155
Volume Left	35	0	10	0	15	85
Volume Right	0	10	0	105	30	65
cSH	599	1700	843	1700	249	240
Volume to Capacity	0.06	0.45	0.01	0.06	0.22	0.65
Queue Length 95th (ft)	5	0	1	0	21	100
Control Delay (s)	11.4	0.0	0.3	0.0	23.5	43.9
Lane LOS	B		A		C	E
Approach Delay (s)	0.5		0.3		23.5	43.9
Approach LOS					C	E

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	84.7%	ICU Level of Service		E
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	865	0	0	845	195	220
Future Volume (Veh/h)	865	0	0	845	195	220
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	865	0	0	845	195	220
Pedestrians				1	2	
Lane Width (ft)				11.0	13.5	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						1
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				469		
pX, platoon unblocked					0.91	
vC, conflicting volume			867		1290	868
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			867		1119	868
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.4
p0 queue free %			100		0	23
cM capacity (veh/h)			765		175	285

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	865	422	422	415
Volume Left	0	0	0	195
Volume Right	0	0	0	220
cSH	1700	1700	1700	237
Volume to Capacity	0.51	0.25	0.25	1.75
Queue Length 95th (ft)	0	0	0	696
Control Delay (s)	0.0	0.0	0.0	389.9
Lane LOS				F
Approach Delay (s)	0.0	0.0		389.9
Approach LOS				F

Intersection Summary			
Average Delay	76.1		
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	85	10	65	95	180	0	0	0	505	50	45
Future Volume (vph)	65	85	10	65	95	180	0	0	0	505	50	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0	4.0					4.0	
Lane Util. Factor		1.00			1.00	1.00					1.00	
Frpb, ped/bikes		1.00			1.00	0.99					1.00	
Flpb, ped/bikes		1.00			0.99	1.00					1.00	
Frt		0.99			1.00	0.85					0.99	
Flt Protected		0.98			0.98	1.00					0.96	
Satd. Flow (prot)		1676			1706	1477					1639	
Flt Permitted		0.79			0.81	1.00					0.96	
Satd. Flow (perm)		1346			1412	1477					1639	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	85	10	65	95	180	0	0	0	505	50	45
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	0	0	0	0
Lane Group Flow (vph)	0	160	0	0	160	139	0	0	0	0	600	0
Confl. Peds. (#/hr)	5		9	9		5	22		7	7		22
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA	pm+ov				Split	NA	
Protected Phases		4			8	6				6	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		12.5			12.5	50.4					37.9	
Effective Green, g (s)		12.5			12.5	50.4					37.9	
Actuated g/C Ratio		0.19			0.19	0.77					0.58	
Clearance Time (s)		4.0			4.0	4.0					4.0	
Vehicle Extension (s)		3.0			3.0	3.0					3.0	
Lane Grp Cap (vph)		257			269	1228					949	
v/s Ratio Prot						0.07					c0.37	
v/s Ratio Perm		c0.12			0.11	0.03						
v/c Ratio		0.62			0.59	0.11					0.63	
Uniform Delay, d1		24.3			24.1	1.9					9.1	
Progression Factor		1.00			1.00	1.00					1.00	
Incremental Delay, d2		4.6			3.5	0.0					1.4	
Delay (s)		28.9			27.6	1.9					10.5	
Level of Service		C			C	A					B	
Approach Delay (s)		28.9			14.0			0.0			10.5	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

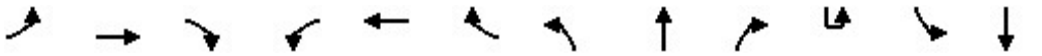
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	130	140	320	130	90	50	5	235	875	100	135	1130
Future Volume (vph)	130	140	320	130	90	50	5	235	875	100	135	1130
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		8.0	8.0		8.0	8.0		5.5	8.5	8.5	5.5	8.5
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00	1.00	0.81	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00
Flt Protected		0.98	1.00		0.97	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1692	1431		1700	1456		1630	3260	1184	1630	3253
Flt Permitted		0.98	1.00		0.97	1.00		0.07	1.00	1.00	0.24	1.00
Satd. Flow (perm)		1692	1431		1700	1456		120	3260	1184	416	3253
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	130	140	320	130	90	50	5	235	875	100	135	1130
RTOR Reduction (vph)	0	0	266	0	0	42	0	0	0	59	0	1
Lane Group Flow (vph)	0	270	54	0	220	8	0	240	875	41	135	1144
Confl. Peds. (#/hr)			9			5				35		
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	3	3		4	4		5	5	2		1	6
Permitted Phases			3			4	2	2		2	6	
Actuated Green, G (s)		24.0	24.0		22.2	22.2		76.1	59.9	59.9	62.3	51.6
Effective Green, g (s)		24.0	24.0		22.2	22.2		76.1	59.9	59.9	62.3	51.6
Actuated g/C Ratio		0.16	0.16		0.15	0.15		0.52	0.41	0.41	0.42	0.35
Clearance Time (s)		8.0	8.0		8.0	8.0		5.5	8.5	8.5	5.5	8.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	4.0	4.0	2.0	4.0
Lane Grp Cap (vph)		276	233		257	220		257	1330	483	265	1143
v/s Ratio Prot		c0.16			c0.13			c0.12	0.27		0.04	c0.35
v/s Ratio Perm			0.04			0.01		0.36		0.03	0.18	
v/c Ratio		0.98	0.23		0.86	0.03		0.93	0.66	0.08	0.51	1.00
Uniform Delay, d1		61.1	53.4		60.7	53.2		46.5	35.2	26.6	27.3	47.6
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		47.5	0.2		22.6	0.0		38.0	1.3	0.1	0.6	26.9
Delay (s)		108.6	53.6		83.3	53.2		84.4	36.5	26.7	27.8	74.5
Level of Service		F	D		F	D		F	D	C	C	E
Approach Delay (s)		78.8			77.7				45.1			69.6
Approach LOS		E			E				D			E

Intersection Summary			
HCM 2000 Control Delay	63.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	146.8	Sum of lost time (s)	30.0
Intersection Capacity Utilization	110.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	15
Future Volume (vph)	15
Ideal Flow (vphpl)	1750
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	15
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Heavy Vehicles (%)	2%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	240	465	380	265	350	165	340	805	60	5	170	1255
Future Volume (vph)	240	465	380	265	350	165	340	805	60	5	170	1255
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	12	11	12	12	12	12	12	12	12	12
Total Lost time (s)	5.5	8.9	5.5	5.5	8.9		5.5	9.3	5.5		5.5	9.3
Lane Util. Factor	0.97	1.00	1.00	0.97	0.95		1.00	0.95	1.00		1.00	0.95
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00	0.95		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3027	1642	1428	2941	2965		1630	3260	1383		1614	3228
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3027	1642	1428	2941	2965		1630	3260	1383		1614	3228
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	465	380	265	350	165	340	805	60	5	170	1255
RTOR Reduction (vph)	0	0	42	0	33	0	0	0	32	0	0	0
Lane Group Flow (vph)	240	465	338	265	482	0	340	805	28	0	175	1255
Confl. Peds. (#/hr)			6			6			33			
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	Prot	NA
Protected Phases	7	4	5!	3	8		5	2	3	1	1	6
Permitted Phases			4						2			
Actuated Green, G (s)	19.9	40.3	72.8	14.5	34.9		32.5	68.7	83.2		23.5	59.7
Effective Green, g (s)	19.9	40.3	72.8	14.5	34.9		32.5	68.7	83.2		23.5	59.7
Actuated g/C Ratio	0.11	0.23	0.41	0.08	0.20		0.18	0.39	0.47		0.13	0.34
Clearance Time (s)	5.5	8.9	5.5	5.5	8.9		5.5	9.3	5.5		5.5	9.3
Vehicle Extension (s)	2.5	3.0	2.5	2.5	3.0		2.5	3.0	2.5		2.5	3.0
Lane Grp Cap (vph)	341	375	590	242	587		300	1271	653		215	1093
v/s Ratio Prot	0.08	c0.28	0.11	c0.09	0.16		c0.21	0.25	0.00		0.11	c0.39
v/s Ratio Perm			0.13						0.02			
v/c Ratio	0.70	1.24	0.57	1.10	0.82		1.13	0.63	0.04		0.81	1.15
Uniform Delay, d1	75.3	67.9	39.7	80.8	67.7		71.8	43.5	25.1		74.2	58.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.0	128.8	1.1	85.6	9.0		92.9	1.0	0.0		20.0	77.7
Delay (s)	81.3	196.7	40.8	166.4	76.7		164.8	44.6	25.1		94.3	135.9
Level of Service	F	F	D	F	E		F	D	C		F	F
Approach Delay (s)		116.6			107.2			77.5				120.8
Approach LOS		F			F			E				F

Intersection Summary			
HCM 2000 Control Delay	106.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	176.2	Sum of lost time (s)	29.2
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	155
Future Volume (vph)	155
Ideal Flow (vphpl)	1750
Lane Width	11
Total Lost time (s)	5.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1382
Flt Permitted	1.00
Satd. Flow (perm)	1382
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	155
RTOR Reduction (vph)	57
Lane Group Flow (vph)	98
Confl. Peds. (#/hr)	1
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	3%
Turn Type	pm+ov
Protected Phases	7
Permitted Phases	6
Actuated Green, G (s)	79.6
Effective Green, g (s)	79.6
Actuated g/C Ratio	0.45
Clearance Time (s)	5.5
Vehicle Extension (s)	2.5
Lane Grp Cap (vph)	624
v/s Ratio Prot	0.02
v/s Ratio Perm	0.05
v/c Ratio	0.16
Uniform Delay, d1	28.5
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	28.6
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

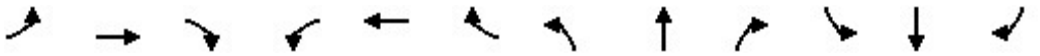
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	390	50	40	320	35	50
Future Volume (Veh/h)	390	50	40	320	35	50
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	390	50	40	320	35	50
Pedestrians				1	2	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1052					
pX, platoon unblocked						
vC, conflicting volume			442		657	223
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			442		657	223
tC, single (s)			4.4		7.3	7.4
tC, 2 stage (s)						
tF (s)			2.3		3.8	3.6
p0 queue free %			96		90	93
cM capacity (veh/h)			1038		334	710

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	260	180	147	213	85
Volume Left	0	0	40	0	35
Volume Right	0	50	0	0	50
cSH	1700	1700	1038	1700	485
Volume to Capacity	0.15	0.11	0.04	0.13	0.18
Queue Length 95th (ft)	0	0	3	0	16
Control Delay (s)	0.0	0.0	2.6	0.0	14.0
Lane LOS			A		B
Approach Delay (s)	0.0		1.1		14.0
Approach LOS					B

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	0	0	35	1200	390	5	450	2005
Future Volume (vph)	0	0	35	1200	390	5	450	2005
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	12	12	11	13	12	11	12
Total Lost time (s)			5.5	6.3	6.3		5.5	6.3
Lane Util. Factor			1.00	0.95	1.00		1.00	0.91
Frpb, ped/bikes			1.00	1.00	0.93		1.00	1.00
Flpb, ped/bikes			1.00	1.00	1.00		1.00	1.00
Frt			1.00	1.00	0.85		1.00	1.00
Flt Protected			0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)			1614	3121	1388		1576	4684
Flt Permitted			0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)			1614	3121	1388		1576	4684
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	35	1200	390	5	450	2005
RTOR Reduction (vph)	0	0	0	0	152	0	0	0
Lane Group Flow (vph)	0	0	35	1200	238	0	455	2005
Confl. Peds. (#/hr)					17			
Heavy Vehicles (%)	0%	0%	3%	3%	3%	2%	2%	2%
Turn Type			Prot	NA	Perm	Prot	Prot	NA
Protected Phases			5	2		1 8	1 8	6
Permitted Phases					2			
Actuated Green, G (s)			2.9	44.2	44.2		34.0	65.7
Effective Green, g (s)			2.9	44.2	44.2		29.0	65.7
Actuated g/C Ratio			0.03	0.49	0.49		0.32	0.73
Clearance Time (s)			5.5	6.3	6.3			6.3
Vehicle Extension (s)			2.5	4.0	4.0			4.0
Lane Grp Cap (vph)			52	1532	681		507	3419
v/s Ratio Prot			0.02	c0.38			c0.29	0.43
v/s Ratio Perm					0.17			
v/c Ratio			0.67	0.78	0.35		0.90	0.59
Uniform Delay, d1			43.1	18.9	14.1		29.1	5.7
Progression Factor			1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2			26.9	2.9	0.4		18.3	0.3
Delay (s)			70.0	21.8	14.5		47.4	6.0
Level of Service			E	C	B		D	A
Approach Delay (s)	0.0			21.1				13.7
Approach LOS	A			C				B

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	400	80	230	555	220	55	150	125	160	255	70
Future Volume (vph)	45	400	80	230	555	220	55	150	125	160	255	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.93		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1599	1633		1646	1648		1643	1597		1646	1666	
Flt Permitted	0.16	1.00		0.27	1.00		0.37	1.00		0.23	1.00	
Satd. Flow (perm)	263	1633		460	1648		638	1597		402	1666	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	400	80	230	555	220	55	150	125	160	255	70
RTOR Reduction (vph)	0	4	0	0	7	0	0	24	0	0	7	0
Lane Group Flow (vph)	45	476	0	230	768	0	55	251	0	160	318	0
Confl. Peds. (#/hr)	1		2	2		1	3		1	1		3
Heavy Vehicles (%)	4%	4%	4%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	64.6	59.2		82.0	71.6		34.9	28.2		48.0	36.3	
Effective Green, g (s)	64.6	59.2		82.0	71.6		34.9	28.2		48.0	36.3	
Actuated g/C Ratio	0.46	0.42		0.59	0.51		0.25	0.20		0.34	0.26	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	172	690		420	842		207	321		269	431	
v/s Ratio Prot	0.01	0.29		c0.07	c0.47		0.01	0.16		c0.06	c0.19	
v/s Ratio Perm	0.11			0.25			0.05			0.14		
v/c Ratio	0.26	0.69		0.55	0.91		0.27	0.78		0.59	0.74	
Uniform Delay, d1	25.4	32.9		18.2	31.3		41.2	53.0		35.2	47.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	5.6		0.8	15.9		0.3	11.7		2.3	5.6	
Delay (s)	25.7	38.5		19.0	47.2		41.4	64.7		37.6	53.1	
Level of Service	C	D		B	D		D	E		D	D	
Approach Delay (s)		37.4			40.7			60.8			47.9	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	44.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	700	335	245	85
Future Volume (Veh/h)	0	0	700	335	245	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	700	335	245	85
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2022	288	330			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2022	288	330			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	43			
cM capacity (veh/h)	28	756	1235			

Direction, Lane #	NB 1	SB 1
Volume Total	1035	330
Volume Left	700	0
Volume Right	0	85
cSH	1235	1700
Volume to Capacity	0.57	0.19
Queue Length 95th (ft)	93	0
Control Delay (s)	10.5	0.0
Lane LOS	B	
Approach Delay (s)	10.5	0.0
Approach LOS		

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	690	0	975	245	0
Future Volume (Veh/h)	60	690	0	975	245	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	60	690	0	975	245	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		5				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1220	245	245			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1220	245	245			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	13	100			
cM capacity (veh/h)	200	796	1327			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	750	975	245
Volume Left	60	0	0
Volume Right	690	0	0
cSH	865	1700	1700
Volume to Capacity	0.87	0.57	0.14
Queue Length 95th (ft)	276	0	0
Control Delay (s)	31.1	0.0	0.0
Lane LOS	D		
Approach Delay (s)	31.1	0.0	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	11.8		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL2	EBL	EBT	WBT	WBR	WBR2	SBL	SBR	SBR2	SEL	SER
Lane Configurations											
Traffic Volume (vph)	30	65	1780	785	945	275	170	30	20	0	0
Future Volume (vph)	30	65	1780	785	945	275	170	30	20	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Lane Util. Factor		1.00	0.91	0.95	0.95	1.00	1.00	1.00			
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.97	1.00	1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Frt		1.00	1.00	0.98	0.85	0.85	1.00	0.85			
Flt Protected		0.95	1.00	1.00	1.00	1.00	0.95	1.00			
Satd. Flow (prot)		1630	4684	1592	1385	1414	1630	1458			
Flt Permitted		0.95	1.00	1.00	1.00	1.00	0.95	1.00			
Satd. Flow (perm)		1630	4684	1592	1385	1414	1630	1458			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	65	1780	785	945	275	170	30	20	0	0
RTOR Reduction (vph)	0	0	0	0	0	36	0	43	0	0	0
Lane Group Flow (vph)	0	95	1780	927	803	239	170	7	0	0	0
Confl. Peds. (#/hr)		5				5					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	0%	0%
Turn Type	Prot	Prot	NA	NA	Perm	Perm	Prot	Perm			
Protected Phases	7	7	4	8			1				
Permitted Phases					8	8		1			
Actuated Green, G (s)		9.8	75.3	60.5	60.5	60.5	14.7	14.7			
Effective Green, g (s)		9.8	75.3	60.5	60.5	60.5	14.7	14.7			
Actuated g/C Ratio		0.10	0.75	0.60	0.60	0.60	0.15	0.15			
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Vehicle Extension (s)		3.0	4.0	4.0	4.0	4.0	2.0	2.0			
Lane Grp Cap (vph)		159	3527	963	837	855	239	214			
v/s Ratio Prot		0.06	c0.38	c0.58			c0.10				
v/s Ratio Perm					0.58	0.17		0.01			
v/c Ratio		0.60	0.50	0.96	0.96	0.28	0.71	0.03			
Uniform Delay, d1		43.2	4.9	18.7	18.6	9.4	40.6	36.6			
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		5.9	0.5	21.3	22.7	0.8	8.0	0.0			
Delay (s)		49.1	5.4	39.9	41.3	10.2	48.7	36.6			
Level of Service		D	A	D	D	B	D	D			
Approach Delay (s)			7.7	36.4			45.9			0.0	
Approach LOS			A	D			D			A	

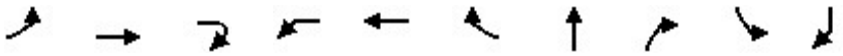
Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	970	840	40	770
Future Volume (Veh/h)	0	0	970	840	40	770
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	970	840	40	770
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			1052			
pX, platoon unblocked						
vC, conflicting volume	1820	970			970	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1820	970			970	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			94	
cM capacity (veh/h)	81	310			715	

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	970	840	40	770
Volume Left	0	0	40	0
Volume Right	0	840	0	0
cSH	1700	1700	715	1700
Volume to Capacity	0.57	0.49	0.06	0.45
Queue Length 95th (ft)	0	0	4	0
Control Delay (s)	0.0	0.0	10.3	0.0
Lane LOS			B	
Approach Delay (s)	0.0		0.5	
Approach LOS				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBT	NBR	SBL	SBR
Lane Configurations										
Traffic Volume (vph)	145	115	165	195	0	120	650	180	55	890
Future Volume (vph)	145	115	165	195	0	120	650	180	55	890
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	14	12	16	11	12	12	11	12	11	12
Total Lost time (s)		5.0	4.0	5.0	5.0		5.0		5.0	4.0
Lane Util. Factor		1.00	1.00	0.95	0.95		0.91		1.00	0.88
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00		1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00		1.00	1.00
Frt		1.00	0.85	1.00	0.88		0.97		1.00	1.00
Flt Protected		0.97	1.00	0.95	0.99		1.00		0.95	1.00
Satd. Flow (prot)		1686	1649	1527	1449		4424		1591	3011
Flt Permitted		0.97	1.00	0.95	0.94		1.00		0.95	1.00
Satd. Flow (perm)		1686	1649	1527	1373		4424		1591	3011
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	115	165	195	0	120	650	180	55	890
RTOR Reduction (vph)	0	0	0	0	75	0	42	0	0	0
Lane Group Flow (vph)	0	260	165	164	76	0	788	0	55	890
Confl. Peds. (#/hr)			1							1
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%
Turn Type	Split	NA	Free	Prot	NA		NA		Prot	Perm
Protected Phases	4!	4		3	8!		2		1	
Permitted Phases			Free							6
Actuated Green, G (s)		20.6	100.0	16.8	42.4		34.9		7.7	47.6
Effective Green, g (s)		20.6	100.0	16.8	42.4		34.9		7.7	48.6
Actuated g/C Ratio		0.21	1.00	0.17	0.42		0.35		0.08	0.49
Clearance Time (s)		5.0		5.0	5.0		5.0		5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)		347	1649	256	594		1543		122	1463
v/s Ratio Prot		c0.15		c0.11	0.02		0.18		0.03	
v/s Ratio Perm			0.10		0.03					c0.30
v/c Ratio		0.75	0.10	0.64	0.13		0.51		0.45	0.61
Uniform Delay, d1		37.3	0.0	38.8	17.5		25.8		44.1	18.8
Progression Factor		1.00	1.00	1.00	1.00		0.96		1.00	1.00
Incremental Delay, d2		8.6	0.1	5.4	0.1		0.9		2.6	1.9
Delay (s)		45.9	0.1	44.2	17.6		25.7		46.8	20.6
Level of Service		D	A	D	B		C		D	C
Approach Delay (s)		28.1			31.4		25.7			
Approach LOS		C			C		C			

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBR	EBR2	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations									
Traffic Volume (vph)	255	100	415	1345	575	0	0	0	0
Future Volume (vph)	255	100	415	1345	575	0	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	12	12	11	11	12	12	12	12
Total Lost time (s)	5.0		5.0	5.0	5.0				
Lane Util. Factor	1.00		0.95	0.86	0.86				
Frt	0.95		0.85	1.00	1.00				
Flt Protected	0.97		1.00	0.95	0.97				
Satd. Flow (prot)	1467		1385	1368	4208				
Flt Permitted	0.97		1.00	0.95	0.97				
Satd. Flow (perm)	1467		1385	1368	4208				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	255	100	415	1345	575	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	401	0	369	672	1248	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	0%	0%	0%	0%
Turn Type	Prot		custom	Split	NA				
Protected Phases	4		2 4	2	2				
Permitted Phases									
Actuated Green, G (s)	25.0		86.4	56.4	56.4				
Effective Green, g (s)	25.0		86.4	56.4	56.4				
Actuated g/C Ratio	0.25		0.86	0.56	0.56				
Clearance Time (s)	5.0			5.0	5.0				
Vehicle Extension (s)	3.0			3.0	3.0				
Lane Grp Cap (vph)	366		1196	771	2373				
v/s Ratio Prot	c0.27		0.27	c0.49	0.30				
v/s Ratio Perm									
v/c Ratio	1.10		0.31	0.87	0.53				
Uniform Delay, d1	37.5		1.3	18.7	13.5				
Progression Factor	1.00		1.00	1.00	1.00				
Incremental Delay, d2	75.3		0.1	12.9	0.8				
Delay (s)	112.8		1.4	31.6	14.4				
Level of Service	F		A	C	B				
Approach Delay (s)	59.4				20.4	0.0		0.0	
Approach LOS	E				C	A		A	

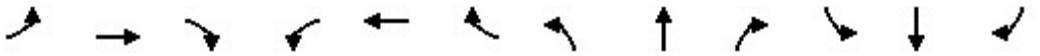
Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	395	0	0	415	0
Future Volume (Veh/h)	0	395	0	0	415	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	395	0	0	415	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				411	273	
pX, platoon unblocked						
vC, conflicting volume	415	415	415			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	415	415	415			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	38	100			
cM capacity (veh/h)	594	637	1155			

Direction, Lane #	EB 1	SB 1
Volume Total	395	415
Volume Left	0	0
Volume Right	395	0
cSH	637	1700
Volume to Capacity	0.62	0.24
Queue Length 95th (ft)	107	0
Control Delay (s)	19.4	0.0
Lane LOS	C	
Approach Delay (s)	19.4	0.0
Approach LOS	C	

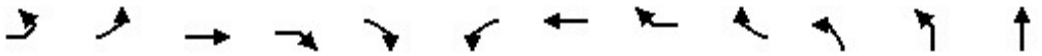
Intersection Summary			
Average Delay	9.5		
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	200	70	185	320	50	80	325	165	40	550	260
Future Volume (vph)	190	200	70	185	320	50	80	325	165	40	550	260
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.96		1.00	0.98			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)	1583	1591		1566	1612			1620			1709	1419
Flt Permitted	0.25	1.00		0.46	1.00			0.55			0.94	1.00
Satd. Flow (perm)	413	1591		758	1612			896			1612	1419
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	200	70	185	320	50	80	325	165	40	550	260
RTOR Reduction (vph)	0	12	0	0	6	0	0	12	0	0	0	146
Lane Group Flow (vph)	190	258	0	185	364	0	0	558	0	0	590	114
Confl. Peds. (#/hr)	3		3	3		3	4		8	8		4
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	38.0	25.6		35.4	24.3			40.5			40.5	40.5
Effective Green, g (s)	38.0	25.6		35.4	24.3			40.5			40.5	40.5
Actuated g/C Ratio	0.41	0.28		0.38	0.26			0.44			0.44	0.44
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	327	441		388	424			393			708	623
v/s Ratio Prot	c0.08	0.16		0.06	c0.23							
v/s Ratio Perm	0.16			0.13				c0.62			0.37	0.08
v/c Ratio	0.58	0.58		0.48	0.86			1.42			0.83	0.18
Uniform Delay, d1	19.4	28.7		20.0	32.3			25.9			22.9	15.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.7	1.3		0.3	15.2			203.6			8.0	0.1
Delay (s)	21.1	30.0		20.4	47.5			229.4			30.8	15.8
Level of Service	C	C		C	D			F			C	B
Approach Delay (s)		26.3			38.5			229.4			26.2	
Approach LOS		C			D			F			C	

Intersection Summary			
HCM 2000 Control Delay	76.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL2	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT
Lane Configurations												
Traffic Volume (vph)	5	140	360	35	195	255	560	55	165	190	110	570
Future Volume (vph)	5	140	360	35	195	255	560	55	165	190	110	570
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0	5.0			5.0	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	0.95			1.00	0.91		0.91	0.91	0.95	0.95
Frpb, ped/bikes		1.00	0.99			1.00	1.00		0.97	1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00
Frt		1.00	0.94			1.00	0.98		0.85	1.00	1.00	0.96
Flt Protected		0.95	1.00			0.95	1.00		1.00	0.95	0.95	1.00
Satd. Flow (prot)		1646	3072			1630	3055		1287	1498	1564	3130
Flt Permitted		0.95	1.00			0.95	1.00		1.00	0.95	0.95	1.00
Satd. Flow (perm)		1646	3072			1630	3055		1287	1498	1564	3130
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	140	360	35	195	255	560	55	165	190	110	570
RTOR Reduction (vph)	0	0	49	0	0	0	2	0	108	0	0	0
Lane Group Flow (vph)	0	145	541	0	0	255	630	0	40	150	150	775
Confl. Peds. (#/hr)				6	1			7	12			
Confl. Bikes (#/hr)				1	1							
Heavy Vehicles (%)	1%	1%	1%	1%	1%	2%	2%	2%	2%	1%	1%	1%
Turn Type	Prot	Prot	NA			Prot	NA		Perm	Prot	Prot	NA
Protected Phases	3	3	8			7	4			1	1	6
Permitted Phases									4			
Actuated Green, G (s)		15.4	27.4			20.0	32.0		32.0	17.2	17.2	41.6
Effective Green, g (s)		15.4	27.4			20.0	32.0		32.0	17.2	17.2	41.6
Actuated g/C Ratio		0.12	0.21			0.15	0.25		0.25	0.13	0.13	0.32
Clearance Time (s)		5.0	5.0			5.0	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.0	2.0			2.0	2.0		2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		194	647			250	752		316	198	206	1001
v/s Ratio Prot		0.09	0.18			c0.16	c0.21			0.10	0.10	c0.25
v/s Ratio Perm									0.03			
v/c Ratio		0.75	0.84			1.02	0.84		0.13	0.76	0.73	0.77
Uniform Delay, d1		55.4	49.2			55.0	46.5		38.1	54.4	54.2	40.0
Progression Factor		1.00	1.00			0.83	1.02		2.21	1.00	1.00	1.00
Incremental Delay, d2		14.5	8.8			58.9	7.0		0.1	13.6	10.4	5.8
Delay (s)		69.9	58.0			104.5	54.5		84.2	68.0	64.5	45.8
Level of Service		E	E			F	D		F	E	E	D
Approach Delay (s)			60.3				71.1					51.5
Approach LOS			E				E					D

Intersection Summary			
HCM 2000 Control Delay	61.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	SER2	NWR2
Lane Configurations									
Traffic Volume (vph)	195	10	405	65	775	90	10	0	0
Future Volume (vph)	195	10	405	65	775	90	10	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.0	5.0	5.0				
Lane Util. Factor			0.91	0.95	0.95				
Frpb, ped/bikes			1.00	1.00	0.99				
Flpb, ped/bikes			1.00	1.00	1.00				
Frt			1.00	1.00	0.98				
Flt Protected			0.95	0.95	1.00				
Satd. Flow (prot)			1498	1564	3218				
Flt Permitted			0.95	0.95	1.00				
Satd. Flow (perm)			1498	1564	3218				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	195	10	405	65	775	90	10	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	235	235	875	0	0	0	0
Confl. Peds. (#/hr)	4	6				7	7	7	6
Confl. Bikes (#/hr)									
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	10%	0%
Turn Type			Prot	Prot	NA			Perm	Perm
Protected Phases			5	5	2				
Permitted Phases								4	8
Actuated Green, G (s)			21.0	21.0	45.4				
Effective Green, g (s)			21.0	21.0	45.4				
Actuated g/C Ratio			0.16	0.16	0.35				
Clearance Time (s)			5.0	5.0	5.0				
Vehicle Extension (s)			2.0	2.0	2.0				
Lane Grp Cap (vph)			241	252	1123				
v/s Ratio Prot			c0.16	0.15	c0.27				
v/s Ratio Perm									
v/c Ratio			0.98	0.93	0.78				
Uniform Delay, d1			54.2	53.8	37.8				
Progression Factor			1.00	1.00	1.00				
Incremental Delay, d2			50.4	38.2	5.4				
Delay (s)			104.6	92.0	43.2				
Level of Service			F	F	D				
Approach Delay (s)					62.4				
Approach LOS					E				

Intersection Summary

LANE SUMMARY

Site: 50 [50-SW 160th St @ SR 509 SB Ramps (Site Folder: 2037 NA)]

SW 160th St @ SR 509 SB Ramps, 2037 No Action
Site Category: 2037 No Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: SW 160th Street (WB)													
Lane 1[d]	575	1.0	1416	0.406	100	4.6	LOS A	0.0	0.0	Full	750	0.0	0.0
Approach	575	1.0		0.406		4.6	LOS A	0.0	0.0				
North: SR 509 SB Off Ramp													
Lane 1[d]	230	1.0	1195	0.192	100	11.9	LOS B	1.1	27.8	Full	1600	0.0	0.0
Lane 2	665	1.0	1658	0.401	100	3.9	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	895	1.0		0.401		6.0	LOS A	1.1	27.8				
West: SW 160th Street (EB)													
Lane 1[d]	705	1.0	1377	0.512	100	5.5	LOS A	4.1	103.6	Full	350	0.0	0.0
Lane 2	405	1.0	1658	0.244	100	3.8	LOS A	0.0	0.0	Full	350	0.0	0.0
Approach	1110	1.0		0.512		4.9	LOS A	4.1	103.6				
Intersection	2580	1.0		0.512		5.2	LOS A	4.1	103.6				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

East: SW 160th Street (WB)

Mov. From E To Exit:	L2 S	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	40	535	575	1.0	1416	0.406	100	NA	NA
Approach	40	535	575	1.0		0.406			

North: SR 509 SB Off Ramp

Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	230	-	230	1.0	1195	0.192	100	NA	NA
Lane 2	-	665	665	1.0	1658	0.401	100	NA	NA
Approach	230	665	895	1.0		0.401			

LANE SUMMARY

Site: 51 [51-S 160th Street @ 5th Pl S (Site Folder: 2037 NA)]

51-S 160th St @ 5th Pl S, 2037 No Action
Site Category: 2037 No Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR 509 NB Ramps													
Lane 1[d]	425	1.0	1068	0.398	100	10.8	LOS B	2.4	61.6	Full	1600	0.0	0.0
Approach	425	1.0		0.398		10.8	LOS B	2.4	61.6				
East: SW 160th Street (WB)													
Lane 1[d]	240	1.0	1050	0.229	100	6.4	LOS A	1.3	33.3	Full	710	0.0	0.0
Approach	240	1.0		0.229		6.4	LOS A	1.3	33.3				
North: 5th Place S (SB)													
Lane 1[d]	21	0.0	938	0.022	100	7.7	LOS A	0.1	2.9	Full	1600	0.0	0.0
Approach	21	0.0		0.022		7.7	LOS A	0.1	2.9				
West: SW 160th Street (EB)													
Lane 1[d]	935	1.0	1385	0.675	100	4.5	LOS A	7.7	193.6	Full	750	0.0	0.0
Approach	935	1.0		0.675		4.5	LOS A	7.7	193.6				
Intersection	1621	1.0		0.675		6.5	LOS A	7.7	193.6				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

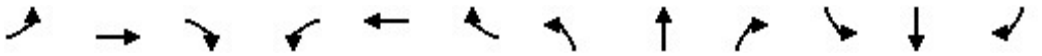
South: SR 509 NB Ramps

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	360	10	55	425	1.0	1068	0.398	100	NA	NA
Approach	360	10	55	425	1.0		0.398			

East: SW 160th Street (WB)

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	20	200	20	240	1.0	1050	0.229	100	NA	NA
Approach	20	200	20	240	1.0		0.229			

North: 5th Place S (SB)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	250	20	170	5	5	5	30	295	5	5	585	205
Future Volume (vph)	250	20	170	5	5	5	30	295	5	5	585	205
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.87		1.00	0.93		1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1599	1457		1330	1295		1613	1694		1601	1623	
Flt Permitted	0.75	1.00		0.62	1.00		0.20	1.00		0.57	1.00	
Satd. Flow (perm)	1264	1457		873	1295		336	1694		959	1623	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	250	20	170	5	5	5	30	295	5	5	585	205
RTOR Reduction (vph)	0	123	0	0	4	0	0	1	0	0	14	0
Lane Group Flow (vph)	250	67	0	5	6	0	30	299	0	5	776	0
Confl. Peds. (#/hr)							2		7	7		2
Heavy Vehicles (%)	4%	4%	4%	25%	25%	25%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4		35.7	35.7		35.7	35.7	
Effective Green, g (s)	17.4	17.4		17.4	17.4		35.7	35.7		35.7	35.7	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.57	0.57		0.57	0.57	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	348	401		240	357		190	958		542	918	
v/s Ratio Prot		0.05			0.00			0.18			c0.48	
v/s Ratio Perm	c0.20			0.01			0.09			0.01		
v/c Ratio	0.72	0.17		0.02	0.02		0.16	0.31		0.01	0.85	
Uniform Delay, d1	20.6	17.3		16.6	16.6		6.5	7.2		6.0	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.8	0.1		0.0	0.0		0.1	0.1		0.0	6.9	
Delay (s)	26.4	17.4		16.7	16.6		6.7	7.3		6.0	18.3	
Level of Service	C	B		B	B		A	A		A	B	
Approach Delay (s)		22.5			16.6			7.2			18.3	
Approach LOS		C			B			A			B	

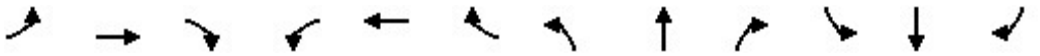
Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	63.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	375	155	230	230	370	190
Future Volume (vph)	375	155	230	230	370	190
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	375	155	230	230	370	190

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	375	155	460	370	190
Volume Left (vph)	375	0	0	370	0
Volume Right (vph)	0	155	230	0	0
Hadj (s)	0.76	-0.44	0.02	0.69	0.19
Departure Headway (s)	8.3	7.1	7.2	8.2	7.6
Degree Utilization, x	0.87	0.31	0.92	0.84	0.40
Capacity (veh/h)	424	497	491	434	461
Control Delay (s)	44.7	12.0	49.3	39.9	14.5
Approach Delay (s)	35.1		49.3	31.3	
Approach LOS	E		E	D	

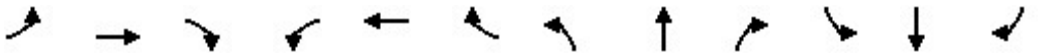
Intersection Summary			
Delay	38.0		
Level of Service	E		
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	445	15	40	515	250	15	20	45	0	0	0
Future Volume (Veh/h)	140	445	15	40	515	250	15	20	45	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	140	445	15	40	515	250	15	20	45	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					408							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	515			462			1330	1330	232	1152	1337	515
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	387			462			1307	1307	232	1107	1316	387
tC, single (s)	4.3			4.3			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			96			83	82	94	100	100	100
cM capacity (veh/h)	985			1046			87	113	760	104	116	546

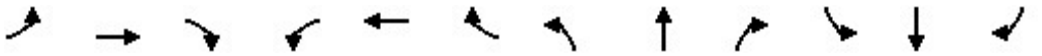
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	140	297	163	40	515	250	15	65
Volume Left	140	0	0	40	0	0	15	0
Volume Right	0	0	15	0	0	250	0	45
cSH	985	1700	1700	1046	1700	1700	87	274
Volume to Capacity	0.14	0.17	0.10	0.04	0.30	0.15	0.17	0.24
Queue Length 95th (ft)	12	0	0	3	0	0	15	23
Control Delay (s)	9.3	0.0	0.0	8.6	0.0	0.0	54.6	22.1
Lane LOS	A			A			F	C
Approach Delay (s)	2.2			0.4			28.2	
Approach LOS							D	

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	52.0%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	325	120	235	505	60	230	15	55	75	5	70
Future Volume (vph)	45	325	120	235	505	60	230	15	55	75	5	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.88			0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1539	2924		1583	3108		1658	1544			1346	
Flt Permitted	0.44	1.00		0.41	1.00		0.66	1.00			0.82	
Satd. Flow (perm)	713	2924		686	3108		1149	1544			1132	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	325	120	235	505	60	230	15	55	75	5	70
RTOR Reduction (vph)	0	36	0	0	7	0	0	40	0	0	38	0
Lane Group Flow (vph)	45	409	0	235	558	0	230	30	0	0	112	0
Confl. Peds. (#/hr)			7			2	3					3
Heavy Vehicles (%)	8%	8%	8%	5%	5%	5%	0%	0%	0%	18%	18%	18%
Bus Blockages (#/hr)	0	0	44	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	42.7	37.4		52.3	42.2		23.3	23.3			23.3	
Effective Green, g (s)	42.7	37.4		52.3	42.2		23.3	23.3			23.3	
Actuated g/C Ratio	0.50	0.44		0.61	0.49		0.27	0.27			0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Lane Grp Cap (vph)	405	1274		523	1528		312	419			307	
v/s Ratio Prot	0.01	0.14		c0.05	0.18			0.02				
v/s Ratio Perm	0.05			c0.22			c0.20				0.10	
v/c Ratio	0.11	0.32		0.45	0.37		0.74	0.07			0.37	
Uniform Delay, d1	11.2	15.9		8.1	13.5		28.5	23.2			25.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.3	0.7		1.3	0.7		10.5	0.2			1.5	
Delay (s)	11.4	16.5		9.4	14.2		39.0	23.4			26.8	
Level of Service	B	B		A	B		D	C			C	
Approach Delay (s)		16.1			12.8			35.4			26.8	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	85.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	390	5	30	575	100	20	0	15	130	0	205
Future Volume (Veh/h)	60	390	5	30	575	100	20	0	15	130	0	205
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	60	390	5	30	575	100	20	0	15	130	0	205
Pedestrians		1			2						6	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		502			393							
pX, platoon unblocked	0.85						0.85	0.85		0.85	0.85	0.85
vC, conflicting volume	581			395			1148	1154	200	973	1156	582
vC1, stage 1 conf vol							512	512		641	641	
vC2, stage 2 conf vol							636	641		332	515	
vCu, unblocked vol	416			395			1086	1091	200	879	1094	418
tC, single (s)	4.2			4.2			7.7	6.7	7.1	7.5	6.5	6.9
tC, 2 stage (s)							6.7	5.7		6.5	5.5	
tF (s)	2.2			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	94			97			89	100	98	66	100	59
cM capacity (veh/h)	955			1125			177	318	780	380	356	497

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	60	260	135	30	575	100	35	130	205
Volume Left	60	0	0	30	0	0	20	130	0
Volume Right	0	0	5	0	0	100	15	0	205
cSH	955	1700	1700	1125	1700	1700	264	380	497
Volume to Capacity	0.06	0.15	0.08	0.03	0.34	0.06	0.13	0.34	0.41
Queue Length 95th (ft)	5	0	0	2	0	0	11	37	50
Control Delay (s)	9.0	0.0	0.0	8.3	0.0	0.0	20.7	19.3	17.2
Lane LOS	A			A			C	C	C
Approach Delay (s)	1.2			0.4			20.7	18.0	
Approach LOS							C	C	

Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	60.1%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	135	275	125	110	300	310	30	175	1005	105	55	385
Future Volume (vph)	135	275	125	110	300	310	30	175	1005	105	55	385
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	12.0	12.0	7.0	12.0	12.0		5.0	10.0			5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.97	0.91			0.97
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99		1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	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	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00			0.95
Satd. Flow (prot)	1614	1699	1414	1599	1683	1411		3072	4472			3131
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00			0.95
Satd. Flow (perm)	1614	1699	1414	1599	1683	1411		3072	4472			3131
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	135	275	125	110	300	310	30	175	1005	105	55	385
RTOR Reduction (vph)	0	0	97	0	0	168	0	0	8	0	0	0
Lane Group Flow (vph)	135	275	28	110	300	142	0	205	1102	0	0	440
Confl. Peds. (#/hr)			8			1				11		
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	5%	5%	5%	5%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4			8						
Actuated Green, G (s)	13.2	30.9	30.9	10.7	28.4	28.4		14.1	42.0			22.4
Effective Green, g (s)	13.2	30.9	30.9	10.7	28.4	28.4		14.1	42.0			22.4
Actuated g/C Ratio	0.09	0.22	0.22	0.08	0.20	0.20		0.10	0.30			0.16
Clearance Time (s)	7.0	12.0	12.0	7.0	12.0	12.0		5.0	10.0			5.0
Vehicle Extension (s)	4.0	4.0	4.0	3.0	2.0	2.0		2.5	3.0			3.0
Lane Grp Cap (vph)	152	374	312	122	341	286		309	1341			500
v/s Ratio Prot	c0.08	0.16		0.07	c0.18			0.07	c0.25			c0.14
v/s Ratio Perm			0.02			0.10						
v/c Ratio	0.89	0.74	0.09	0.90	0.88	0.50		0.66	0.82			0.88
Uniform Delay, d1	62.7	50.7	43.4	64.1	54.1	49.5		60.7	45.5			57.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2	42.4	7.8	0.2	52.2	21.2	0.5		4.8	5.8			16.4
Delay (s)	105.1	58.5	43.5	116.3	75.4	49.9		65.4	51.3			73.9
Level of Service	F	E	D	F	E	D		E	D			E
Approach Delay (s)		66.8			70.7				53.5			
Approach LOS		E			E				D			

Intersection Summary			
HCM 2000 Control Delay	56.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	34.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	940	230
Future Volume (vph)	940	230
Ideal Flow (vphpl)	1750	1750
Total Lost time (s)	10.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	1.00	
Satd. Flow (prot)	4485	
Flt Permitted	1.00	
Satd. Flow (perm)	4485	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	940	230
RTOR Reduction (vph)	27	0
Lane Group Flow (vph)	1143	0
Confl. Peds. (#/hr)		3
Heavy Vehicles (%)	3%	3%
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	50.3	
Effective Green, g (s)	50.3	
Actuated g/C Ratio	0.36	
Clearance Time (s)	10.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	1611	
v/s Ratio Prot	0.25	
v/s Ratio Perm		
v/c Ratio	0.71	
Uniform Delay, d1	38.6	
Progression Factor	1.00	
Incremental Delay, d2	2.7	
Delay (s)	41.2	
Level of Service	D	
Approach Delay (s)	50.2	
Approach LOS	D	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	20	20	235	540	40
Future Volume (Veh/h)	40	20	20	235	540	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	20	20	235	540	40
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				842		
pX, platoon unblocked						
vC, conflicting volume	836	561	581			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	836	561	581			
tC, single (s)	6.7	6.5	4.3			
tC, 2 stage (s)						
tF (s)	3.8	3.6	2.4			
p0 queue free %	86	96	98			
cM capacity (veh/h)	296	477	914			

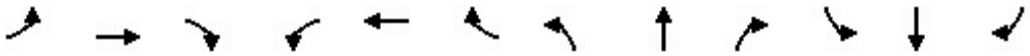
Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	60	20	235	580
Volume Left	40	20	0	0
Volume Right	20	0	0	40
cSH	338	914	1700	1700
Volume to Capacity	0.18	0.02	0.14	0.34
Queue Length 95th (ft)	16	2	0	0
Control Delay (s)	17.9	9.0	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	17.9	0.7		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	325	640	325	235
Future Volume (vph)	0	0	325	640	325	235
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.0	4.0	5.0	5.0
Lane Util. Factor			1.00	1.00	1.00	1.00
Frpb, ped/bikes			1.00	1.00	1.00	1.00
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	0.85	1.00	1.00
Flt Protected			1.00	1.00	0.95	1.00
Satd. Flow (prot)			1509	1282	1433	1509
Flt Permitted			1.00	1.00	0.51	1.00
Satd. Flow (perm)			1509	1282	772	1509
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	325	640	325	235
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	325	640	325	235
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	0%	0%	16%	16%	16%	16%
Turn Type			NA	Free	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases				Free	6	
Actuated Green, G (s)			49.0	66.0	61.0	66.0
Effective Green, g (s)			49.0	66.0	61.0	66.0
Actuated g/C Ratio			0.74	1.00	0.92	1.00
Clearance Time (s)			5.0		5.0	5.0
Vehicle Extension (s)			3.0		3.0	3.0
Lane Grp Cap (vph)			1120	1282	783	1509
v/s Ratio Prot			0.22		0.04	0.16
v/s Ratio Perm				c0.50	0.34	
v/c Ratio			0.29	0.50	0.42	0.16
Uniform Delay, d1			2.8	0.0	0.6	0.0
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.1	1.4	0.4	0.2
Delay (s)			2.9	1.4	0.9	0.2
Level of Service			A	A	A	A
Approach Delay (s)	0.0		1.9			0.6
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	1.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

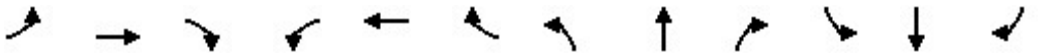
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	20	0	10	10	940	5	15	0	190	35	10
Future Volume (vph)	10	20	0	10	10	940	5	15	0	190	35	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	20	0	10	10	940	5	15	0	190	35	10

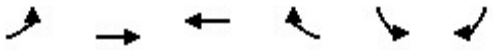
Direction, Lane #	EB 1	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total (vph)	30	20	470	470	20	235
Volume Left (vph)	10	10	0	0	5	190
Volume Right (vph)	0	0	470	470	0	10
Hadj (s)	0.19	0.37	-0.33	-0.33	0.95	0.36
Departure Headway (s)	4.7	4.9	3.2	3.2	5.2	4.4
Degree Utilization, x	0.04	0.03	0.42	0.42	0.03	0.29
Capacity (veh/h)	711	683	1115	1115	667	806
Control Delay (s)	7.9	8.1	8.5	8.5	8.4	9.2
Approach Delay (s)	7.9	8.5			8.4	9.2
Approach LOS	A	A			A	A

Intersection Summary				
Delay	8.6			
Level of Service	A			
Intersection Capacity Utilization	52.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	200	10	120	620	0	275	0	10	345	0	65
Future Volume (vph)	0	200	10	120	620	0	275	0	10	345	0	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.5		5.5	5.5		5.0		5.0	5.5		5.5
Lane Util. Factor		1.00		1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes		1.00		1.00	1.00		1.00		1.00	1.00		1.00
Flpb, ped/bikes		1.00		1.00	1.00		1.00		1.00	1.00		1.00
Frt		0.99		1.00	1.00		1.00		0.85	1.00		0.85
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)		1579		1328	2660		1646		1473	1614		1444
Flt Permitted		1.00		0.57	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)		1579		801	2660		1646		1473	1614		1444
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	200	10	120	620	0	275	0	10	345	0	65
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	8	0	0	48
Lane Group Flow (vph)	0	208	0	120	620	0	275	0	2	345	0	17
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	10%	10%	10%	25%	25%	25%	1%	1%	1%	3%	3%	3%
Turn Type		NA		Perm	NA		Perm		Perm	Prot		Perm
Protected Phases		2			6					4		
Permitted Phases				6			8		8			4
Actuated Green, G (s)		26.0		26.0	26.0		20.1		20.1	22.3		22.3
Effective Green, g (s)		26.0		26.0	26.0		20.1		20.1	22.3		22.3
Actuated g/C Ratio		0.31		0.31	0.31		0.24		0.24	0.26		0.26
Clearance Time (s)		5.5		5.5	5.5		5.0		5.0	5.5		5.5
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)		486		246	819		391		350	426		381
v/s Ratio Prot		0.13			c0.23					c0.21		
v/s Ratio Perm				0.15			c0.17		0.00			0.01
v/c Ratio		0.43		0.49	0.76		0.70		0.01	0.81		0.05
Uniform Delay, d1		23.3		23.8	26.3		29.4		24.5	29.1		23.1
Progression Factor		1.00		1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2		0.6		1.5	4.0		5.7		0.0	10.9		0.0
Delay (s)		23.9		25.3	30.4		35.1		24.5	39.9		23.2
Level of Service		C		C	C		D		C	D		C
Approach Delay (s)		23.9			29.6			34.7			37.3	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	84.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	540	720	25	10	20
Future Volume (Veh/h)	15	540	720	25	10	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	540	720	25	10	20
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (ft)		281	222			
pX, platoon unblocked						
vC, conflicting volume	746				1034	374
vC1, stage 1 conf vol					734	
vC2, stage 2 conf vol					300	
vCu, unblocked vol	746				1034	374
tC, single (s)	4.2				7.4	7.5
tC, 2 stage (s)					6.4	
tF (s)	2.2				3.8	3.6
p0 queue free %	98				97	96
cM capacity (veh/h)	844				341	550

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	15	270	270	480	265	10	20
Volume Left	15	0	0	0	0	10	0
Volume Right	0	0	0	0	25	0	20
cSH	844	1700	1700	1700	1700	341	550
Volume to Capacity	0.02	0.16	0.16	0.28	0.16	0.03	0.04
Queue Length 95th (ft)	1	0	0	0	0	2	3
Control Delay (s)	9.3	0.0	0.0	0.0	0.0	15.9	11.8
Lane LOS	A					C	B
Approach Delay (s)	0.3			0.0		13.2	
Approach LOS						B	

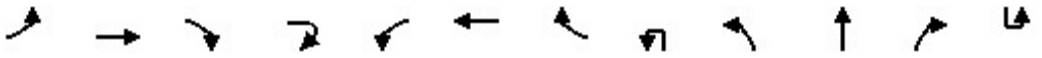
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	550	0	0	495	250	400
Future Volume (vph)	550	0	0	495	250	400
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.95			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3197			1423	1421	1271
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3197			1423	1421	1271
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	550	0	0	495	250	400
RTOR Reduction (vph)	0	0	0	0	0	167
Lane Group Flow (vph)	550	0	0	495	250	233
Heavy Vehicles (%)	4%	4%	23%	23%	17%	17%
Turn Type	NA			NA	Prot	Perm
Protected Phases	1			6!	2!	
Permitted Phases						2
Actuated Green, G (s)	12.8			35.4	12.6	12.6
Effective Green, g (s)	12.8			35.4	12.6	12.6
Actuated g/C Ratio	0.36			1.00	0.36	0.36
Clearance Time (s)	5.0			5.0	5.0	5.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1155			1423	505	452
v/s Ratio Prot	0.17			c0.35	0.18	
v/s Ratio Perm						c0.18
v/c Ratio	0.48			0.35	0.50	0.51
Uniform Delay, d1	8.7			0.0	8.9	9.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.3			0.1	0.8	1.0
Delay (s)	9.0			0.1	9.7	10.0
Level of Service	A			A	A	A
Approach Delay (s)	9.0			0.1	9.9	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	35.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	EBL	EBT	EBR	EBR2	WBL2	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	130	185	0	635	15	155	230	15	210	690	30	30
Future Volume (vph)	130	185	0	635	15	155	230	15	210	690	30	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	12	11	12	8	12	12	12	13	12	12	12
Total Lost time (s)	11.5	11.5	11.5			12.0	12.0		5.0	10.0		
Lane Util. Factor	1.00	1.00	1.00			1.00	1.00		1.00	0.95		
Frpb, ped/bikes	1.00	1.00	0.94			1.00	0.98		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00			1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85			1.00	0.85		1.00	0.99		
Flt Protected	0.95	1.00	1.00			1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1502	1636	1268			1644	1381		1576	3021		
Flt Permitted	0.95	1.00	1.00			1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1502	1636	1268			1644	1381		1576	3021		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	130	185	0	635	15	155	230	15	210	690	30	30
RTOR Reduction (vph)	0	0	541	0	0	0	197	0	0	2	0	0
Lane Group Flow (vph)	130	185	94	0	0	170	33	0	225	718	0	0
Confl. Peds. (#/hr)			7	7			3				22	
Heavy Vehicles (%)	7%	7%	7%	7%	6%	6%	6%	9%	9%	9%	9%	4%
Turn Type	Split	NA	Perm		Split	NA	Perm	Prot	Prot	NA		Prot
Protected Phases	4	4			3	3		5	5	2		1
Permitted Phases			4				3					
Actuated Green, G (s)	22.3	22.3	22.3			21.2	21.2		25.9	42.0		
Effective Green, g (s)	22.3	22.3	22.3			21.2	21.2		25.9	42.0		
Actuated g/C Ratio	0.15	0.15	0.15			0.14	0.14		0.17	0.28		
Clearance Time (s)	11.5	11.5	11.5			12.0	12.0		5.0	10.0		
Vehicle Extension (s)	2.0	2.0	2.0			2.5	2.5		3.0	3.0		
Lane Grp Cap (vph)	223	243	188			232	195		272	845		
v/s Ratio Prot	0.09	c0.11				c0.10			0.14	c0.24		
v/s Ratio Perm			0.07				0.02					
v/c Ratio	0.58	0.76	0.50			0.73	0.17		0.83	0.85		
Uniform Delay, d1	59.5	61.3	58.7			61.7	56.6		59.9	51.0		
Progression Factor	1.00	1.00	1.00			1.00	1.00		1.34	0.54		
Incremental Delay, d2	2.5	11.9	0.8			10.7	0.3		16.9	9.6		
Delay (s)	62.0	73.2	59.5			72.4	56.9		97.1	36.9		
Level of Service	E	E	E			E	E		F	D		
Approach Delay (s)		62.5				63.5				51.3		
Approach LOS		E				E				D		

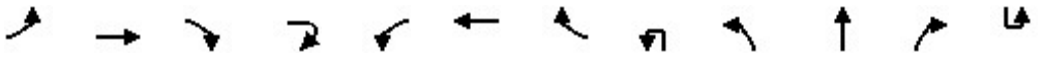
Intersection Summary			
HCM 2000 Control Delay	58.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	38.5
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	195	710	120	130
Future Volume (vph)	195	710	120	130
Ideal Flow (vphpl)	1750	1750	1750	1750
Lane Width	11	11	12	14
Total Lost time (s)	5.0	10.0	10.0	
Lane Util. Factor	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	
Satd. Flow (prot)	1545	3091	1378	
Flt Permitted	0.95	1.00	1.00	
Satd. Flow (perm)	1545	3091	1378	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	195	710	120	130
RTOR Reduction (vph)	0	0	133	0
Lane Group Flow (vph)	225	710	117	0
Confl. Peds. (#/hr)				5
Heavy Vehicles (%)	4%	4%	4%	4%
Turn Type	Prot	NA	Perm	
Protected Phases	1	6		
Permitted Phases			6	
Actuated Green, G (s)	26.0	42.1	42.1	
Effective Green, g (s)	26.0	42.1	42.1	
Actuated g/C Ratio	0.17	0.28	0.28	
Clearance Time (s)	5.0	10.0	10.0	
Vehicle Extension (s)	2.0	3.0	3.0	
Lane Grp Cap (vph)	267	867	386	
v/s Ratio Prot	c0.15	0.23		
v/s Ratio Perm			0.08	
v/c Ratio	0.84	0.82	0.30	
Uniform Delay, d1	60.0	50.4	42.4	
Progression Factor	1.00	1.00	1.00	
Incremental Delay, d2	20.0	8.5	2.0	
Delay (s)	80.1	58.9	44.4	
Level of Service	F	E	D	
Approach Delay (s)		59.9		
Approach LOS		E		

Intersection Summary

Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR	NEL	NER
Lane Configurations												
Traffic Volume (vph)	220	0	245	0	660	180	10	255	1155	190	0	0
Future Volume (vph)	220	0	245	0	660	180	10	255	1155	190	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	10.5		5.0		10.0	10.0		5.0	5.0	5.0		
Lane Util. Factor	0.97		1.00		0.95	1.00		1.00	0.95	1.00		
Frpb, ped/bikes	1.00		0.82		1.00	0.77		1.00	1.00	1.00		
Flpb, ped/bikes	1.00		1.00		1.00	1.00		0.98	1.00	1.00		
Frt	1.00		0.85		1.00	0.85		1.00	1.00	0.85		
Flt Protected	0.95		1.00		1.00	1.00		0.95	1.00	1.00		
Satd. Flow (prot)	3072		1155		2995	1035		1583	3228	1444		
Flt Permitted	0.95		1.00		1.00	1.00		0.34	1.00	1.00		
Satd. Flow (perm)	3072		1155		2995	1035		566	3228	1444		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	0	245	0	660	180	10	255	1155	190	0	0
RTOR Reduction (vph)	0	0	233	0	0	76	0	0	0	64	0	0
Lane Group Flow (vph)	220	0	12	0	660	104	0	265	1155	126	0	0
Confl. Peds. (#/hr)			29			76		76				
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	5%	5%	5%	11%	11%	11%	3%	3%	3%	3%	0%	0%
Turn Type	Prot		Perm		NA	Perm	pm+pt	pm+pt	NA	Perm		
Protected Phases	8				2		1	1	6			
Permitted Phases			4			2	6	6		6		
Actuated Green, G (s)	34.9		7.4		74.8	74.8		99.6	99.6	99.6		
Effective Green, g (s)	34.9		7.4		74.8	74.8		99.6	99.6	99.6		
Actuated g/C Ratio	0.23		0.05		0.50	0.50		0.66	0.66	0.66		
Clearance Time (s)	10.5		5.0		10.0	10.0		5.0	5.0	5.0		
Vehicle Extension (s)	3.0		3.0		3.0	3.0		2.0	3.0	3.0		
Lane Grp Cap (vph)	714		56		1493	516		476	2143	958		
v/s Ratio Prot	c0.07				0.22			0.05	c0.36			
v/s Ratio Perm			c0.01			0.10		c0.31		0.09		
v/c Ratio	0.31		0.22		0.44	0.20		0.56	0.54	0.13		
Uniform Delay, d1	47.6		68.5		24.2	21.0		11.1	13.2	9.3		
Progression Factor	1.00		1.00		0.31	0.17		1.48	1.64	4.31		
Incremental Delay, d2	0.2		1.9		0.9	0.8		0.8	0.9	0.3		
Delay (s)	47.8		70.4		8.4	4.4		17.1	22.6	40.2		
Level of Service	D		E		A	A		B	C	D		
Approach Delay (s)		59.7			7.5				23.8		0.0	
Approach LOS		E			A				C		A	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



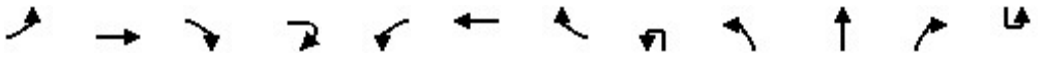
Movement	EBL	EBT	EBR	EBR2	WBL2	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	125	15	0	690	30	10	15	20	210	725	15	5
Future Volume (vph)	125	15	0	690	30	10	15	20	210	725	15	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	12.0	12.0	12.0		12.0	12.0			5.0	10.0	10.0	
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00			0.97	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.93		1.00	0.98			1.00	1.00	0.84	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt	1.00	1.00	0.85		1.00	0.91			1.00	1.00	0.85	
Flt Protected	0.95	0.96	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)	1316	1333	1147		1662	1564			2906	2995	1120	
Flt Permitted	0.95	0.96	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)	1316	1333	1147		1662	1564			2906	2995	1120	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	15	0	690	30	10	15	20	210	725	15	5
RTOR Reduction (vph)	0	0	463	0	0	15	0	0	0	0	9	0
Lane Group Flow (vph)	70	70	227	0	30	10	0	0	230	725	6	0
Confl. Peds. (#/hr)	17		57		57		17		21		51	
Heavy Vehicles (%)	20%	20%	20%	20%	0%	0%	0%	11%	11%	11%	11%	4%
Turn Type	Split	NA	Perm		Split	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	3	3			4	4		5	5	2		1
Permitted Phases			3								2	
Actuated Green, G (s)	40.0	40.0	40.0		4.8	4.8			12.0	63.5	63.5	
Effective Green, g (s)	40.0	40.0	40.0		4.8	4.8			12.0	63.5	63.5	
Actuated g/C Ratio	0.27	0.27	0.27		0.03	0.03			0.08	0.42	0.42	
Clearance Time (s)	12.0	12.0	12.0		12.0	12.0			5.0	10.0	10.0	
Vehicle Extension (s)	2.5	2.5	2.5		2.0	2.0			3.0	3.0	3.0	
Lane Grp Cap (vph)	350	355	305		53	50			232	1267	474	
v/s Ratio Prot	0.05	0.05			c0.02	0.01			c0.08	0.24		
v/s Ratio Perm			c0.20								0.01	
v/c Ratio	0.20	0.20	0.74		0.57	0.21			0.99	0.57	0.01	
Uniform Delay, d1	42.6	42.6	50.3		71.6	70.8			68.9	32.9	25.1	
Progression Factor	1.00	1.00	1.00		1.00	1.00			0.81	1.36	1.00	
Incremental Delay, d2	0.2	0.2	8.9		8.0	0.8			55.1	1.8	0.0	
Delay (s)	42.8	42.8	59.2		79.6	71.5			111.0	46.4	25.1	
Level of Service	D	D	E		E	E			F	D	C	
Approach Delay (s)		56.4				75.9				61.4		
Approach LOS		E				E				E		

Intersection Summary			
HCM 2000 Control Delay	66.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	39.0
Intersection Capacity Utilization	132.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	5	1195	195	75
Future Volume (vph)	5	1195	195	75
Ideal Flow (vphpl)	1750	1750	1750	1750
Total Lost time (s)	5.0	10.0	10.0	
Lane Util. Factor	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	
Satd. Flow (prot)	1599	3197	1375	
Flt Permitted	0.95	1.00	1.00	
Satd. Flow (perm)	1599	3197	1375	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	1195	195	75
RTOR Reduction (vph)	0	0	121	0
Lane Group Flow (vph)	10	1195	149	0
Confl. Peds. (#/hr)	51			21
Heavy Vehicles (%)	4%	4%	4%	4%
Turn Type	Prot	NA	Perm	
Protected Phases	1	6		
Permitted Phases			6	
Actuated Green, G (s)	2.7	54.2	54.2	
Effective Green, g (s)	2.7	54.2	54.2	
Actuated g/C Ratio	0.02	0.36	0.36	
Clearance Time (s)	5.0	10.0	10.0	
Vehicle Extension (s)	2.0	3.0	3.0	
Lane Grp Cap (vph)	28	1155	496	
v/s Ratio Prot	0.01	c0.37		
v/s Ratio Perm			0.11	
v/c Ratio	0.36	1.03	0.30	
Uniform Delay, d1	72.8	47.9	34.3	
Progression Factor	1.04	0.95	1.54	
Incremental Delay, d2	2.6	34.6	1.4	
Delay (s)	78.5	80.3	54.2	
Level of Service	E	F	D	
Approach Delay (s)		75.5		
Approach LOS		E		

Intersection Summary



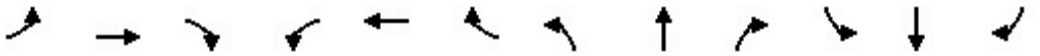
Movement	EBL	EBT	EBR	EBR2	WBL2	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	150	720	0	345	240	870	195	15	180	295	165	20
Future Volume (vph)	150	720	0	345	240	870	195	15	180	295	165	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	12.0	12.0		7.0	12.0	12.0		6.0	11.0	11.0	
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00		0.97	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.95		1.00	1.00	0.96		1.00	1.00	0.93	
Flpb, ped/bikes	1.00	1.00	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	
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1568	3137	1335		1583	3167	1357		3072	3167	1319	
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1568	3137	1335		1583	3167	1357		3072	3167	1319	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	720	0	345	240	870	195	15	180	295	165	20
RTOR Reduction (vph)	0	0	265	0	0	0	143	0	0	0	116	0
Lane Group Flow (vph)	150	720	81	0	240	870	52	0	195	295	50	0
Confl. Peds. (#/hr)	25		29		29		25		32		36	
Heavy Vehicles (%)	6%	6%	6%	6%	5%	5%	5%	5%	5%	5%	5%	7%
Turn Type	Prot	NA	Perm		Prot	NA	Perm	Prot	Prot	NA	Perm	Prot
Protected Phases	7	4			3	8		5	5	2		1
Permitted Phases			4				8				2	
Actuated Green, G (s)	14.0	35.0	35.0		19.0	40.0	40.0		9.0	45.0	45.0	
Effective Green, g (s)	14.0	35.0	35.0		19.0	40.0	40.0		9.0	45.0	45.0	
Actuated g/C Ratio	0.09	0.23	0.23		0.13	0.27	0.27		0.06	0.30	0.30	
Clearance Time (s)	7.0	12.0	12.0		7.0	12.0	12.0		6.0	11.0	11.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0		4.0	3.0	3.0	
Lane Grp Cap (vph)	146	731	311		200	844	361		184	950	395	
v/s Ratio Prot	c0.10	c0.23			0.15	c0.27			0.06	0.09		
v/s Ratio Perm			0.06				0.04				0.04	
v/c Ratio	1.03	0.98	0.26		1.20	1.03	0.14		1.06	0.31	0.13	
Uniform Delay, d1	68.0	57.2	46.9		65.5	55.0	41.9		70.5	40.5	38.2	
Progression Factor	0.62	0.48	1.00		1.00	1.00	1.00		0.83	1.18	1.00	
Incremental Delay, d2	59.0	19.5	0.2		128.0	39.1	0.2		82.3	0.8	0.6	
Delay (s)	101.3	46.8	47.1		193.5	94.1	42.1		140.7	48.6	38.8	
Level of Service	F	D	D		F	F	D		F	D	D	
Approach Delay (s)		53.6				104.6				73.6		
Approach LOS		D				F				E		

Intersection Summary			
HCM 2000 Control Delay	74.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	36.0
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	255	1160	195	240
Future Volume (vph)	255	1160	195	240
Ideal Flow (vphpl)	1750	1750	1750	1750
Total Lost time (s)	6.0	11.0	11.0	
Lane Util. Factor	0.97	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	
Flpb, ped/bikes	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	
Satd. Flow (prot)	3014	3107	1310	
Flt Permitted	0.95	1.00	1.00	
Satd. Flow (perm)	3014	3107	1310	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	255	1160	195	240
RTOR Reduction (vph)	0	0	163	0
Lane Group Flow (vph)	275	1160	272	0
Confl. Peds. (#/hr)	36			32
Heavy Vehicles (%)	7%	7%	7%	7%
Turn Type	Prot	NA	Perm	
Protected Phases	1	6		
Permitted Phases			6	
Actuated Green, G (s)	15.0	51.0	51.0	
Effective Green, g (s)	15.0	51.0	51.0	
Actuated g/C Ratio	0.10	0.34	0.34	
Clearance Time (s)	6.0	11.0	11.0	
Vehicle Extension (s)	4.0	3.0	3.0	
Lane Grp Cap (vph)	301	1056	445	
v/s Ratio Prot	c0.09	c0.37		
v/s Ratio Perm			0.21	
v/c Ratio	0.91	1.10	0.61	
Uniform Delay, d1	66.9	49.5	41.2	
Progression Factor	1.41	0.47	0.05	
Incremental Delay, d2	25.3	55.7	4.7	
Delay (s)	119.7	78.9	6.7	
Level of Service	F	E	A	
Approach Delay (s)		68.1		
Approach LOS		E		

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	960	405	315	935	55	110	15	145	60	60	15
Future Volume (vph)	20	960	405	315	935	55	110	15	145	60	60	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	11.0		6.0	11.0		6.5	11.5	11.5	6.5	11.5	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	4330		1554	3075		1498	1577	1299	1471	1491	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1583	4330		1554	3075		1498	1577	1299	1471	1491	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	960	405	315	935	55	110	15	145	60	60	15
RTOR Reduction (vph)	0	50	0	0	3	0	0	0	121	0	6	0
Lane Group Flow (vph)	20	1315	0	315	987	0	110	15	24	60	69	0
Confl. Peds. (#/hr)	5		1	1		5	15		10	10		15
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	11%	11%	11%	13%	13%	13%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)	5.3	45.0		34.6	74.3		12.3	24.6	24.6	10.8	23.1	
Effective Green, g (s)	5.3	45.0		34.6	74.3		12.3	24.6	24.6	10.8	23.1	
Actuated g/C Ratio	0.04	0.30		0.23	0.50		0.08	0.16	0.16	0.07	0.15	
Clearance Time (s)	6.0	11.0		6.0	11.0		6.5	11.5	11.5	6.5	11.5	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		2.0	2.0	2.0	3.0	2.0	
Lane Grp Cap (vph)	55	1299		358	1523		122	258	213	105	229	
v/s Ratio Prot	0.01	c0.30		c0.20	0.32		c0.07	0.01		c0.04	c0.05	
v/s Ratio Perm									0.02			
v/c Ratio	0.36	1.01		0.88	0.65		0.90	0.06	0.11	0.57	0.30	
Uniform Delay, d1	70.7	52.5		55.7	28.1		68.3	52.9	53.4	67.4	56.3	
Progression Factor	1.00	1.00		0.84	0.45		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	28.0		7.6	0.2		51.3	0.4	1.1	7.3	3.4	
Delay (s)	72.2	80.5		54.4	12.8		119.6	53.4	54.5	74.7	59.7	
Level of Service	E	F		D	B		F	D	D	E	E	
Approach Delay (s)		80.3			22.8			80.9			66.3	
Approach LOS		F			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	55.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	35.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

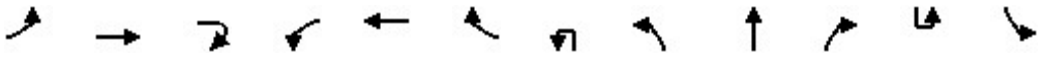
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	5	15	5	115	15	15	10	5	145	115	5	70
Future Volume (vph)	5	15	5	115	15	15	10	5	145	115	5	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	10.0	10.0		10.0	10.0			10.0	10.0			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.95			1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97			1.00	0.99			1.00
Flpb, ped/bikes	0.95	1.00		1.00	1.00			1.00	1.00			0.99
Frt	1.00	0.96		1.00	0.93			1.00	0.93			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1357	1435		1582	1497			1583	2915			1616
Flt Permitted	0.74	1.00		0.74	1.00			0.29	1.00			0.59
Satd. Flow (perm)	1053	1435		1240	1497			484	2915			1006
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	15	5	115	15	15	10	5	145	115	5	70
RTOR Reduction (vph)	0	4	0	0	13	0	0	0	70	0	0	0
Lane Group Flow (vph)	5	16	0	115	17	0	0	15	190	0	0	75
Confl. Peds. (#/hr)	77		1	1		77				9		9
Heavy Vehicles (%)	17%	17%	17%	5%	5%	5%	5%	5%	5%	5%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	Perm
Protected Phases		8			4				6			
Permitted Phases	8			4			6	6			2	2
Actuated Green, G (s)	7.3	7.3		7.3	7.3			17.7	17.7			22.7
Effective Green, g (s)	7.3	7.3		7.3	7.3			17.7	17.7			22.7
Actuated g/C Ratio	0.16	0.16		0.16	0.16			0.39	0.39			0.50
Clearance Time (s)	10.0	10.0		10.0	10.0			10.0	10.0			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	170	232		201	242			190	1146			507
v/s Ratio Prot		0.01			0.01				0.07			
v/s Ratio Perm	0.00			c0.09				0.03				0.07
v/c Ratio	0.03	0.07		0.57	0.07			0.08	0.17			0.15
Uniform Delay, d1	15.9	16.0		17.4	16.0			8.5	8.9			6.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	0.0	0.0		2.4	0.0			0.1	0.0			0.0
Delay (s)	15.9	16.0		19.8	16.0			8.6	8.9			6.0
Level of Service	B	B		B	B			A	A			A
Approach Delay (s)		16.0			19.1				8.9			
Approach LOS		B			B				A			

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	830	15
Future Volume (vph)	830	15
Ideal Flow (vphpl)	1750	1750
Total Lost time (s)	5.0	
Lane Util. Factor	0.95	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	3251	
Flt Permitted	1.00	
Satd. Flow (perm)	3251	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	830	15
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	844	0
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	2%	2%
Turn Type	NA	
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	22.7	
Effective Green, g (s)	22.7	
Actuated g/C Ratio	0.50	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1639	
v/s Ratio Prot	c0.26	
v/s Ratio Perm		
v/c Ratio	0.51	
Uniform Delay, d1	7.5	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	7.6	
Level of Service	A	
Approach Delay (s)	7.5	
Approach LOS	A	

Intersection Summary



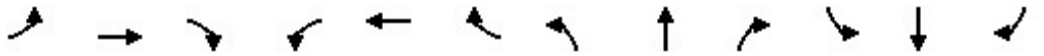
Movement	EBL	EBT	EBR2	WBL2	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	105	40	80	40	10	45	30	30	495	30	20	55
Future Volume (vph)	105	40	80	40	10	45	30	30	495	30	20	55
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	11.0	11.0			11.0	11.0		5.0	10.0			5.0
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	0.95			1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.99		1.00	0.99			1.00
Flpb, ped/bikes	1.00	1.00			0.99	1.00		1.00	1.00			0.99
Frt	1.00	0.90			1.00	0.85		1.00	0.99			1.00
Flt Protected	0.95	1.00			0.96	1.00		0.95	1.00			0.95
Satd. Flow (prot)	1566	1486			1591	1398		1610	3181			1590
Flt Permitted	0.72	1.00			0.69	1.00		0.20	1.00			0.43
Satd. Flow (perm)	1194	1486			1141	1398		337	3181			718
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	80	40	10	45	30	30	495	30	20	55
RTOR Reduction (vph)	0	101	0	0	0	38	0	0	2	0	0	0
Lane Group Flow (vph)	105	19	0	0	50	7	0	60	523	0	0	75
Confl. Peds. (#/hr)	1			8		1		31		24		24
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	pm+pt	NA		pm+pt	pm+pt
Protected Phases		8			4		1	1	6		5	5
Permitted Phases	8			4		4	6	6			2	2
Actuated Green, G (s)	23.5	23.5			23.5	23.5		97.6	92.6			94.9
Effective Green, g (s)	23.5	23.5			23.5	23.5		97.6	92.6			94.9
Actuated g/C Ratio	0.16	0.16			0.16	0.16		0.65	0.62			0.63
Clearance Time (s)	11.0	11.0			11.0	11.0		5.0	10.0			5.0
Vehicle Extension (s)	4.0	4.0			4.0	4.0		2.0	4.0			2.0
Lane Grp Cap (vph)	187	232			178	219		266	1963			500
v/s Ratio Prot		0.01						c0.01	0.16			0.01
v/s Ratio Perm	c0.09				0.04	0.01		0.14				0.09
v/c Ratio	0.56	0.08			0.28	0.03		0.23	0.27			0.15
Uniform Delay, d1	58.5	54.0			55.8	53.6		15.1	13.1			10.7
Progression Factor	1.00	1.00			1.00	1.00		0.53	0.63			0.42
Incremental Delay, d2	4.6	0.2			1.2	0.1		0.1	0.2			0.0
Delay (s)	63.1	54.2			57.0	53.7		8.2	8.6			4.5
Level of Service	E	D			E	D		A	A			A
Approach Delay (s)		58.4			55.4				8.5			
Approach LOS		E			E				A			

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR	SBR2
Lane Configurations			
Traffic Volume (vph)	1260	210	95
Future Volume (vph)	1260	210	95
Ideal Flow (vphpl)	1750	1750	1750
Total Lost time (s)	10.0	10.0	
Lane Util. Factor	0.95	1.00	
Frpb, ped/bikes	1.00	0.84	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.85	
Flt Protected	1.00	1.00	
Satd. Flow (prot)	3228	1210	
Flt Permitted	1.00	1.00	
Satd. Flow (perm)	3228	1210	
Peak-hour factor, PHF	1.00	1.00	1.00
Adj. Flow (vph)	1260	210	95
RTOR Reduction (vph)	0	48	0
Lane Group Flow (vph)	1260	257	0
Confl. Peds. (#/hr)			31
Heavy Vehicles (%)	3%	3%	3%
Turn Type	NA	Perm	
Protected Phases	2		
Permitted Phases		2	
Actuated Green, G (s)	94.9	94.9	
Effective Green, g (s)	94.9	94.9	
Actuated g/C Ratio	0.63	0.63	
Clearance Time (s)	10.0	10.0	
Vehicle Extension (s)	4.0	4.0	
Lane Grp Cap (vph)	2042	765	
v/s Ratio Prot	c0.39		
v/s Ratio Perm		0.21	
v/c Ratio	0.62	0.34	
Uniform Delay, d1	16.6	12.8	
Progression Factor	0.42	0.29	
Incremental Delay, d2	0.5	0.4	
Delay (s)	7.5	4.1	
Level of Service	A	A	
Approach Delay (s)	6.7		
Approach LOS	A		

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	85	230	445	240	55	270	200	190	15	335	55
Future Volume (vph)	10	85	230	445	240	55	270	200	190	15	335	55
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.98	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.98	
Flt Protected		0.99	1.00	0.95	0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1707	1458	1519	1574	1409	1630	2990		1645	3222	
Flt Permitted		0.99	1.00	0.95	0.98	1.00	0.33	1.00		0.52	1.00	
Satd. Flow (perm)		1707	1458	1519	1574	1409	558	2990		903	3222	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	85	230	445	240	55	270	200	190	15	335	55
RTOR Reduction (vph)	0	0	204	0	0	38	0	108	0	0	10	0
Lane Group Flow (vph)	0	95	26	338	347	17	270	282	0	15	380	0
Confl. Peds. (#/hr)	3					3			1	1		
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	1%	1%	1%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4	6			2		
Actuated Green, G (s)		11.0	11.0	30.0	30.0	30.0	42.6	36.3		22.7	21.4	
Effective Green, g (s)		11.0	11.0	30.0	30.0	30.0	42.6	36.3		22.7	21.4	
Actuated g/C Ratio		0.11	0.11	0.30	0.30	0.30	0.43	0.37		0.23	0.22	
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.5		3.5	3.5	
Lane Grp Cap (vph)		190	162	462	478	428	417	1100		217	699	
v/s Ratio Prot		c0.06		c0.22	0.22		c0.11	0.09		0.00	0.12	
v/s Ratio Perm			0.02			0.01	c0.17			0.01		
v/c Ratio		0.50	0.16	0.73	0.73	0.04	0.65	0.26		0.07	0.54	
Uniform Delay, d1		41.2	39.6	30.7	30.6	24.2	19.8	21.7		29.5	34.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.1	0.5	5.9	5.4	0.0	3.4	0.1		0.2	1.0	
Delay (s)		43.3	40.1	36.6	36.1	24.2	23.2	21.9		29.6	35.2	
Level of Service		D	D	D	D	C	C	C		C	D	
Approach Delay (s)		41.0			35.4			22.4			35.0	
Approach LOS		D			D			C			D	

Intersection Summary					
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.69				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	67.6%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

LANE SUMMARY

Site: 72 [72-Des Moines Memorial Dr @ SR 509 SB Ramps (Site Folder: 2037 NA)]

72-Des Moines Memorial Dr @ SR 509 SB Ramps, 2037 No Action
Site Category: 2037 No Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Des Moines Memorial Dr (WB)													
Lane 1[d]	645	9.0	1304	0.495	100	4.3	LOS A	4.4	119.0	Full	1000	0.0	0.0
Approach	645	9.0		0.495		4.3	LOS A	4.4	119.0				
North: SR 509 Ramps													
Lane 1	487	3.0	954	0.511	100	13.6	LOS B	3.9	99.1	Full	1600	0.0	0.0
Lane 2[d]	603	3.0	1181	0.511	100	12.5	LOS B	3.9	100.7	Full	1600	0.0	0.0
Lane 3	865	3.0	1181	0.733	100	10.8	LOS B	9.5	244.1	Short	500	0.0	NA
Approach	1955	3.0		0.733		12.0	LOS B	9.5	244.1				
West: Des Moines Memorial Dr (EB)													
Lane 1	409	4.0	614	0.666	100	11.7	LOS B	4.5	115.7	Full	1600	0.0	0.0
Lane 2[d]	506	4.0	760	0.666	100	10.2	LOS B	4.9	125.4	Full	1600	0.0	0.0
Approach	915	4.0		0.666		10.9	LOS B	4.9	125.4				
Intersection	3515	4.4		0.733		10.3	LOS B	9.5	244.1				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

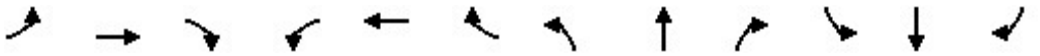
Approach Lane Flows (veh/h)

East: Des Moines Memorial Dr (WB)

Mov. From E To Exit:	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	470	175	645	9.0	1304	0.495	100	NA	NA
Approach	470	175	645	9.0		0.495			

North: SR 509 Ramps

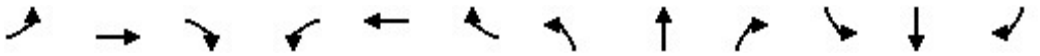
Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	487	-	487	3.0	954	0.511	100	NA	NA
Lane 2	603	-	603	3.0	1181	0.511	100	NA	NA
Lane 3	-	865	865	3.0	1181	0.733	100	0.0	2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	995	685	45	865	5	365	0	40	5	5	5
Future Volume (vph)	5	995	685	45	865	5	365	0	40	5	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.3	5.3	5.3	5.3	5.3		5.5	5.5			5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	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		1.00	0.85			0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1599	3197	1397	1599	3194		3072	1417			1644	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.63	
Satd. Flow (perm)	1599	3197	1397	1599	3194		3072	1417			1061	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	995	685	45	865	5	365	0	40	5	5	5
RTOR Reduction (vph)	0	0	150	0	0	0	0	34	0	0	5	0
Lane Group Flow (vph)	5	995	535	45	870	0	365	6	0	0	10	0
Confl. Peds. (#/hr)			1									
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	5%	5%	5%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Perm	NA	
Protected Phases	5	2		1	6		4	4			3	
Permitted Phases			2							3		
Actuated Green, G (s)	1.1	69.7	69.7	6.6	75.2		18.5	18.5			4.2	
Effective Green, g (s)	1.1	69.7	69.7	6.6	75.2		18.5	18.5			4.2	
Actuated g/C Ratio	0.01	0.58	0.58	0.05	0.62		0.15	0.15			0.03	
Clearance Time (s)	5.3	5.3	5.3	5.3	5.3		5.5	5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0	2.0	3.0		2.0	2.0			3.0	
Lane Grp Cap (vph)	14	1847	807	87	1991		471	217			36	
v/s Ratio Prot	0.00	0.31		c0.03	0.27		c0.12	0.00				
v/s Ratio Perm			c0.38								c0.01	
v/c Ratio	0.36	0.54	0.66	0.52	0.44		0.77	0.03			0.28	
Uniform Delay, d1	59.4	15.6	17.4	55.5	11.7		49.0	43.4			56.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	14.9	0.3	2.1	2.2	0.2		7.1	0.0			4.3	
Delay (s)	74.3	15.9	19.5	57.6	11.9		56.2	43.4			61.0	
Level of Service	E	B	B	E	B		E	D			E	
Approach Delay (s)		17.5			14.1			54.9			61.0	
Approach LOS		B			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	350	115	150	190	175	70	365	95	85	415	55
Future Volume (vph)	100	350	115	150	190	175	70	365	95	85	415	55
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	6.0		5.0	5.0		5.2	5.2	5.2	5.2	5.2	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.93		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1614	1627		1646	1591		1614	1699	1413	1629	1681	
Flt Permitted	0.36	1.00		0.15	1.00		0.23	1.00	1.00	0.35	1.00	
Satd. Flow (perm)	619	1627		259	1591		390	1699	1413	605	1681	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	350	115	150	190	175	70	365	95	85	415	55
RTOR Reduction (vph)	0	9	0	0	27	0	0	0	63	0	3	0
Lane Group Flow (vph)	100	456	0	150	338	0	70	365	32	85	467	0
Confl. Peds. (#/hr)	1		1	1		1	2		1	1		2
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	3%	3%	3%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	35.0	28.1		43.4	32.3		40.1	34.0	34.0	40.5	34.2	
Effective Green, g (s)	35.0	28.1		43.4	32.3		40.1	34.0	34.0	40.5	34.2	
Actuated g/C Ratio	0.35	0.28		0.43	0.32		0.40	0.34	0.34	0.40	0.34	
Clearance Time (s)	6.0	6.0		5.0	5.0		5.2	5.2	5.2	5.2	5.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	282	453		263	509		228	572	476	306	569	
v/s Ratio Prot	0.02	c0.28		c0.06	c0.21		c0.02	0.21		0.02	c0.28	
v/s Ratio Perm	0.10			0.18			0.10		0.02	0.09		
v/c Ratio	0.35	1.01		0.57	0.66		0.31	0.64	0.07	0.28	0.82	
Uniform Delay, d1	23.4	36.4		21.1	29.6		20.9	28.3	22.7	19.9	30.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	44.1		1.9	2.5		0.3	1.7	0.0	0.2	8.8	
Delay (s)	23.7	80.5		22.9	32.2		21.2	30.0	22.7	20.0	39.3	
Level of Service	C	F		C	C		C	C	C	C	D	
Approach Delay (s)		70.5			29.5			27.5			36.4	
Approach LOS		E			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.9	Sum of lost time (s)	21.4
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

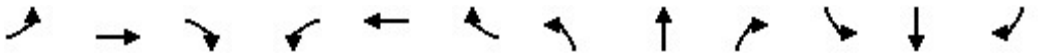
c Critical Lane Group

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	65	950	50	15	165	1305	135	40	30	20	40	15
Future Volume (vph)	65	950	50	15	165	1305	135	40	30	20	40	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.6	9.9			5.0	9.7			10.0			10.0
Lane Util. Factor	1.00	0.95			1.00	0.95			1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			0.99
Flpb, ped/bikes	1.00	1.00			1.00	1.00			1.00			1.00
Frt	1.00	0.99			1.00	0.99			0.97			0.94
Flt Protected	0.95	1.00			0.95	1.00			0.98			0.98
Satd. Flow (prot)	1599	3170			1599	3145			1620			1593
Flt Permitted	0.95	1.00			0.95	1.00			0.81			0.84
Satd. Flow (perm)	1599	3170			1599	3145			1337			1358
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	950	50	15	165	1305	135	40	30	20	40	15
RTOR Reduction (vph)	0	4	0	0	0	7	0	0	16	0	0	44
Lane Group Flow (vph)	65	996	0	0	180	1433	0	0	74	0	0	62
Confl. Peds. (#/hr)			1				1	3		4	4	
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	2%	2%	2%	0%	0%
Bus Blockages (#/hr)	0	0	48	0	0	0	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA
Protected Phases	1	6		5	5	2			8			8
Permitted Phases								8			8	
Actuated Green, G (s)	6.7	34.7			10.0	38.6			10.4			10.4
Effective Green, g (s)	6.7	34.7			10.0	38.6			10.4			10.4
Actuated g/C Ratio	0.08	0.43			0.12	0.48			0.13			0.13
Clearance Time (s)	4.6	9.9			5.0	9.7			10.0			10.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0			5.0			5.0
Lane Grp Cap (vph)	133	1374			199	1517			173			176
v/s Ratio Prot	0.04	0.31			c0.11	c0.46						
v/s Ratio Perm									c0.06			0.05
v/c Ratio	0.49	0.72			0.90	0.94			0.43			0.35
Uniform Delay, d1	35.0	18.7			34.5	19.7			32.1			31.7
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.0	3.4			37.5	13.2			3.6			2.5
Delay (s)	36.0	22.1			72.0	32.9			35.6			34.2
Level of Service	D	C			E	C			D			C
Approach Delay (s)		22.9				37.2			35.6			34.2
Approach LOS		C				D			D			C

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	24.9
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

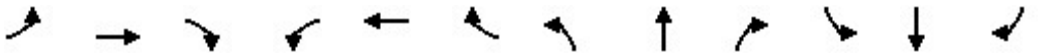
Movement	SBR
Lane Configurations	
Traffic Volume (vph)	50
Future Volume (vph)	50
Ideal Flow (vphpl)	1750
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	50
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Heavy Vehicles (%)	0%
Bus Blockages (#/hr)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



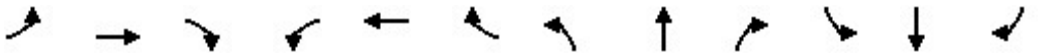
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	910	45	150	785	285	35	130	55	390	440	120
Future Volume (vph)	70	910	45	150	785	285	35	130	55	390	440	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.7	10.8		4.7	9.7	9.7	5.7	5.9		5.6	10.8	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1599	4561		1583	3167	1417	1646	1655		3162	1661	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1599	4561		1583	3167	1417	1646	1655		3162	1661	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	910	45	150	785	285	35	130	55	390	440	120
RTOR Reduction (vph)	0	5	0	0	0	165	0	15	0	0	9	0
Lane Group Flow (vph)	70	950	0	150	785	120	35	170	0	390	551	0
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	1%	1%	1%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						
Actuated Green, G (s)	6.6	26.6		15.0	35.1	35.1	3.2	17.0		29.4	38.2	
Effective Green, g (s)	6.6	26.6		15.0	35.1	35.1	3.2	17.0		29.4	38.2	
Actuated g/C Ratio	0.06	0.23		0.13	0.31	0.31	0.03	0.15		0.26	0.33	
Clearance Time (s)	5.7	10.8		4.7	9.7	9.7	5.7	5.9		5.6	10.8	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	91	1054		206	966	432	45	244		808	551	
v/s Ratio Prot	0.04	c0.21		c0.09	c0.25		0.02	c0.10		0.12	c0.33	
v/s Ratio Perm						0.08						
v/c Ratio	0.77	0.90		0.73	0.81	0.28	0.78	0.70		0.48	1.00	
Uniform Delay, d1	53.4	42.9		48.0	36.9	30.3	55.5	46.5		36.3	38.4	
Progression Factor	1.00	1.00		0.83	0.70	1.43	1.00	1.00		1.00	1.00	
Incremental Delay, d2	28.9	12.3		8.3	6.0	1.3	56.9	8.3		0.2	38.5	
Delay (s)	82.3	55.2		48.4	31.8	44.7	112.5	54.9		36.5	76.9	
Level of Service	F	E		D	C	D	F	D		D	E	
Approach Delay (s)		57.0			36.8			64.0			60.3	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



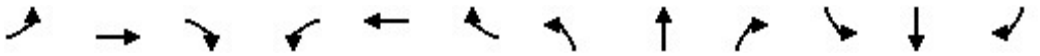
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	940	415	445	1135	0	0	0	0	590	10	85
Future Volume (vph)	0	940	415	445	1135	0	0	0	0	590	10	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.6	6.6	5.5	6.6					5.9	5.9	
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	
Frt		1.00	0.85	1.00	1.00					1.00	0.96	
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	
Satd. Flow (prot)		3197	1430	1599	3197					1398	1367	
Flt Permitted		1.00	1.00	0.11	1.00					0.95	0.97	
Satd. Flow (perm)		3197	1430	182	3197					1398	1367	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	940	415	445	1135	0	0	0	0	590	10	85
RTOR Reduction (vph)	0	0	263	0	0	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	940	152	445	1135	0	0	0	0	348	325	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	0%	0%	0%	13%	13%	13%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	
Protected Phases		2		1	6						8	
Permitted Phases			2	6						8		
Actuated Green, G (s)		31.4	31.4	67.2	67.2					35.3	35.3	
Effective Green, g (s)		31.4	31.4	67.2	67.2					35.3	35.3	
Actuated g/C Ratio		0.27	0.27	0.58	0.58					0.31	0.31	
Clearance Time (s)		6.6	6.6	5.5	6.6					5.9	5.9	
Vehicle Extension (s)		4.0	4.0	3.0	5.0					3.5	3.5	
Lane Grp Cap (vph)		872	390	479	1868					429	419	
v/s Ratio Prot		c0.29		c0.24	0.36							
v/s Ratio Perm			0.11	0.30						c0.25	0.24	
v/c Ratio		1.08	0.39	0.93	0.61					0.81	0.78	
Uniform Delay, d1		41.8	34.0	32.6	15.4					36.8	36.3	
Progression Factor		0.49	1.25	1.17	1.62					1.00	1.00	
Incremental Delay, d2		49.3	2.0	15.8	0.8					11.4	9.0	
Delay (s)		69.8	44.6	53.9	25.7					48.2	45.3	
Level of Service		E	D	D	C					D	D	
Approach Delay (s)		62.1			33.7			0.0			46.7	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	135.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	445	1085	0	0	1055	1065	525	0	195	0	0	0
Future Volume (vph)	445	1085	0	0	1055	1065	525	0	195	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.5	6.4			6.4	6.4	6.0	6.0				
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95				
Frt	1.00	1.00			1.00	0.85	1.00	0.92				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.98				
Satd. Flow (prot)	1554	3107			3197	1430	1449	1367				
Flt Permitted	0.14	1.00			1.00	1.00	0.95	0.98				
Satd. Flow (perm)	231	3107			3197	1430	1449	1367				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	445	1085	0	0	1055	1065	525	0	195	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	180	0	63	0	0	0	0
Lane Group Flow (vph)	445	1085	0	0	1055	885	373	284	0	0	0	0
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	9%	9%	9%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		4	4				
Permitted Phases	2					6						
Actuated Green, G (s)	73.6	73.6			51.6	51.6	29.0	29.0				
Effective Green, g (s)	73.6	73.6			51.6	51.6	29.0	29.0				
Actuated g/C Ratio	0.64	0.64			0.45	0.45	0.25	0.25				
Clearance Time (s)	5.5	6.4			6.4	6.4	6.0	6.0				
Vehicle Extension (s)	3.0	4.0			5.0	5.0	3.5	3.5				
Lane Grp Cap (vph)	337	1988			1434	641	365	344				
v/s Ratio Prot	c0.19	0.35			0.33		c0.26	0.21				
v/s Ratio Perm	c0.65					0.62						
v/c Ratio	1.32	0.55			0.74	1.38	1.02	0.83				
Uniform Delay, d1	27.3	11.5			26.1	31.7	43.0	40.6				
Progression Factor	2.06	0.93			1.00	1.00	1.00	1.00				
Incremental Delay, d2	152.5	0.4			3.4	180.8	52.8	15.2				
Delay (s)	208.7	11.0			29.5	212.5	95.8	55.9				
Level of Service	F	B			C	F	F	E				
Approach Delay (s)		68.5			121.4			76.6			0.0	
Approach LOS		E			F			E			A	

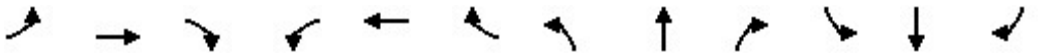
Intersection Summary			
HCM 2000 Control Delay	95.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	135.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	300	180	65	160	120	45	335	35	260	560	10
Future Volume (vph)	30	300	180	65	160	120	45	335	35	260	560	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1630	1602		1598	1683	1430	1614	1675		1630	1711	
Flt Permitted	0.62	1.00		0.19	1.00	1.00	0.16	1.00		0.33	1.00	
Satd. Flow (perm)	1071	1602		316	1683	1430	271	1675		568	1711	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	300	180	65	160	120	45	335	35	260	560	10
RTOR Reduction (vph)	0	18	0	0	0	67	0	3	0	0	1	0
Lane Group Flow (vph)	30	462	0	65	160	53	45	367	0	260	569	0
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Turn Type	D.P+P	NA		D.P+P	NA	pm+ov	D.P+P	NA		D.P+P	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	8			4		8	6			2		
Actuated Green, G (s)	40.3	34.0		40.3	36.3	46.9	45.0	34.4		45.0	39.5	
Effective Green, g (s)	40.3	34.0		40.3	36.3	46.9	45.0	34.4		45.0	39.5	
Actuated g/C Ratio	0.38	0.32		0.38	0.34	0.45	0.43	0.33		0.43	0.38	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	2.0		3.0	2.0	3.0	3.0	2.0		3.0	2.0	
Lane Grp Cap (vph)	431	517		197	580	704	185	547		349	641	
v/s Ratio Prot	0.00	c0.29		c0.02	0.10	0.01	0.01	0.22		c0.07	c0.33	
v/s Ratio Perm	0.02			0.11		0.03	0.09			0.24		
v/c Ratio	0.07	0.89		0.33	0.28	0.08	0.24	0.67		0.74	0.89	
Uniform Delay, d1	20.5	33.9		23.2	25.0	16.8	21.0	30.6		22.5	30.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	17.3		1.0	0.1	0.0	0.7	2.5		8.4	13.7	
Delay (s)	20.5	51.3		24.2	25.1	16.8	21.7	33.1		30.9	44.6	
Level of Service	C	D		C	C	B	C	C		C	D	
Approach Delay (s)		49.5			22.0			31.9			40.3	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	105.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

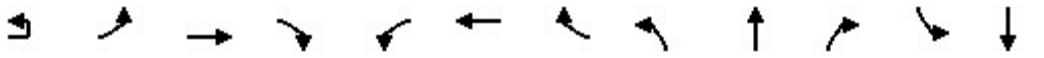
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	505	145	90	415	95	45	255	195	100	620	35
Future Volume (vph)	20	505	145	90	415	95	45	255	195	100	620	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	3171		1599	1683	1407	1646	3057		1568	3108	
Flt Permitted	0.44	1.00		0.26	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	766	3171		441	1683	1407	1646	3057		1568	3108	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	505	145	90	415	95	45	255	195	100	620	35
RTOR Reduction (vph)	0	20	0	0	0	61	0	110	0	0	3	0
Lane Group Flow (vph)	20	630	0	90	415	34	45	340	0	100	652	0
Confl. Peds. (#/hr)			3			4	2		3	3		2
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)	37.9	35.6		50.1	42.8	42.8	6.9	32.9		9.9	35.9	
Effective Green, g (s)	37.9	35.6		50.1	42.8	42.8	6.9	32.9		9.9	35.9	
Actuated g/C Ratio	0.32	0.30		0.42	0.36	0.36	0.06	0.28		0.08	0.30	
Clearance Time (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Vehicle Extension (s)	2.0	2.0		3.0	2.0	2.0	3.0	2.0		3.0	2.0	
Lane Grp Cap (vph)	263	957		280	610	510	96	853		131	946	
v/s Ratio Prot	0.00	0.20		c0.03	c0.25		0.03	0.11		c0.06	c0.21	
v/s Ratio Perm	0.02			0.11		0.02						
v/c Ratio	0.08	0.66		0.32	0.68	0.07	0.47	0.40		0.76	0.69	
Uniform Delay, d1	27.6	35.9		21.7	31.8	24.5	53.7	34.5		52.9	36.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.3		0.7	2.5	0.0	3.6	0.1		22.8	1.7	
Delay (s)	27.6	37.1		22.3	34.3	24.5	57.3	34.6		75.6	37.8	
Level of Service	C	D		C	C	C	E	C		E	D	
Approach Delay (s)		36.8			30.9			36.6			42.8	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	117.9	Sum of lost time (s)	30.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	5	50	670	55	35	450	200	30	10	40	215	45
Future Volume (vph)	5	50	670	55	35	450	200	30	10	40	215	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.94		1.00	0.98		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00		0.95	1.00		0.98	1.00
Frt		1.00	0.99		1.00	0.95		1.00	0.88		1.00	0.91
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)		1614	3141		1568	2809		1520	1447		1620	1521
Flt Permitted		0.37	1.00		0.34	1.00		0.65	1.00		0.72	1.00
Satd. Flow (perm)		635	3141		569	2809		1033	1447		1235	1521
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	50	670	55	35	450	200	30	10	40	215	45
RTOR Reduction (vph)	0	0	3	0	0	24	0	0	32	0	0	40
Lane Group Flow (vph)	0	55	722	0	35	626	0	30	18	0	215	65
Confl. Peds. (#/hr)				38			39	31		9	9	
Heavy Vehicles (%)	3%	3%	3%	3%	6%	6%	6%	4%	4%	4%	1%	1%
Turn Type	pm+pt	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA
Protected Phases	7	7	4		3	8			2			6
Permitted Phases	4	4			8			2			6	
Actuated Green, G (s)		96.3	91.2		95.3	90.7		29.2	29.2		29.2	29.2
Effective Green, g (s)		96.3	91.2		95.3	90.7		29.2	29.2		29.2	29.2
Actuated g/C Ratio		0.69	0.65		0.68	0.65		0.21	0.21		0.21	0.21
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		472	2046		420	1819		215	301		257	317
v/s Ratio Prot		c0.00	c0.23		0.00	0.22			0.01			0.04
v/s Ratio Perm		0.08			0.05			0.03			c0.17	
v/c Ratio		0.12	0.35		0.08	0.34		0.14	0.06		0.84	0.20
Uniform Delay, d1		7.3	11.0		7.5	11.2		45.2	44.4		53.1	45.8
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.0	0.5		0.0	0.5		0.1	0.0		19.6	0.1
Delay (s)		7.3	11.5		7.6	11.7		45.3	44.4		72.8	45.9
Level of Service		A	B		A	B		D	D		E	D
Approach Delay (s)			11.2			11.5			44.8			63.9
Approach LOS			B			B			D			E

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	60
Future Volume (vph)	60
Ideal Flow (vphpl)	1750
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	60
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	31
Heavy Vehicles (%)	1%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

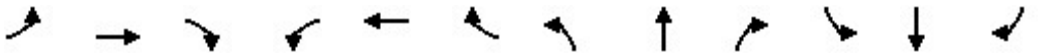
Movement	EBL	EBT	EBR2	WBL2	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	90	655	160	50	370	125	5	200	520	205	10	340
Future Volume (vph)	90	655	160	50	370	125	5	200	520	205	10	340
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	11.0		5.0	11.0			5.0	10.0	10.0		5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00	1.00	0.95		1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00		1.00
Frt	1.00	0.97		1.00	0.96			1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00	1.00		0.95
Satd. Flow (prot)	1646	3195		1599	3035			1614	3228	1374		1614
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00	1.00		0.95
Satd. Flow (perm)	1646	3195		1599	3035			1614	3228	1374		1614
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	655	160	50	370	125	5	200	520	205	10	340
RTOR Reduction (vph)	0	153	0	0	22	0	0	0	0	104	0	0
Lane Group Flow (vph)	90	662	0	50	473	0	0	205	520	101	0	350
Confl. Peds. (#/hr)						31				20		
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases										2		
Actuated Green, G (s)	9.0	37.6		7.7	35.3			21.0	36.8	36.8		36.9
Effective Green, g (s)	9.0	37.6		7.7	35.3			21.0	36.8	36.8		36.9
Actuated g/C Ratio	0.06	0.25		0.05	0.24			0.14	0.25	0.25		0.25
Clearance Time (s)	6.0	11.0		5.0	11.0			5.0	10.0	10.0		5.0
Vehicle Extension (s)	2.0	2.0		3.0	2.0			2.0	3.0	3.0		3.0
Lane Grp Cap (vph)	98	800		82	714			225	791	337		397
v/s Ratio Prot	c0.05	c0.21		0.03	0.16			c0.13	0.16			0.22
v/s Ratio Perm										0.07		
v/c Ratio	0.92	0.83		0.61	0.66			0.91	0.66	0.30		0.88
Uniform Delay, d1	70.1	53.1		69.7	51.9			63.6	50.9	46.1		54.4
Progression Factor	1.00	1.00		1.00	1.00			0.90	0.91	1.11		0.82
Incremental Delay, d2	63.5	6.7		12.2	1.8			35.5	4.2	2.2		18.5
Delay (s)	133.6	59.9		81.9	53.7			93.0	50.3	53.4		63.0
Level of Service	F	E		F	D			F	D	D		E
Approach Delay (s)		67.2			56.3				60.4			
Approach LOS		E			E				E			

Intersection Summary			
HCM 2000 Control Delay	54.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR	SBR2
Lane Configurations			
Traffic Volume (vph)	1110	185	115
Future Volume (vph)	1110	185	115
Ideal Flow (vphpl)	1750	1750	1750
Total Lost time (s)	10.0	10.0	
Lane Util. Factor	0.95	1.00	
Frpb, ped/bikes	1.00	0.95	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.85	
Flt Protected	1.00	1.00	
Satd. Flow (prot)	3228	1366	
Flt Permitted	1.00	1.00	
Satd. Flow (perm)	3228	1366	
Peak-hour factor, PHF	1.00	1.00	1.00
Adj. Flow (vph)	1110	185	115
RTOR Reduction (vph)	0	114	0
Lane Group Flow (vph)	1110	186	0
Confl. Peds. (#/hr)			23
Heavy Vehicles (%)	3%	3%	3%
Turn Type	NA	Perm	
Protected Phases	6		
Permitted Phases		6	
Actuated Green, G (s)	52.7	52.7	
Effective Green, g (s)	52.7	52.7	
Actuated g/C Ratio	0.35	0.35	
Clearance Time (s)	10.0	10.0	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	1134	479	
v/s Ratio Prot	c0.34		
v/s Ratio Perm		0.14	
v/c Ratio	0.98	0.39	
Uniform Delay, d1	48.1	36.6	
Progression Factor	0.56	0.22	
Incremental Delay, d2	20.9	2.2	
Delay (s)	47.9	10.2	
Level of Service	D	B	
Approach Delay (s)	44.5		
Approach LOS	D		

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	320	825	285	185	30	200	155	40	215	115	105
Future Volume (vph)	140	320	825	285	185	30	200	155	40	215	115	105
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.5	5.9	5.5	5.5	5.9		5.5	5.9	5.5	5.5	5.9	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1630	1716	1458	1599	1642		1630	1716	1458	1646	1609	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1630	1716	1458	1599	1642		1630	1716	1458	1646	1609	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	140	320	825	285	185	30	200	155	40	215	115	105
RTOR Reduction (vph)	0	0	218	0	4	0	0	0	26	0	27	0
Lane Group Flow (vph)	140	320	607	285	211	0	200	155	14	215	193	0
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	15.7	38.1	55.6	23.6	46.0		17.5	18.1	41.7	20.1	20.7	
Effective Green, g (s)	15.7	38.1	55.6	23.6	46.0		17.5	18.1	41.7	20.1	20.7	
Actuated g/C Ratio	0.13	0.31	0.45	0.19	0.37		0.14	0.15	0.34	0.16	0.17	
Clearance Time (s)	5.5	5.9	5.5	5.5	5.9		5.5	5.9	5.5	5.5	5.9	
Vehicle Extension (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
Lane Grp Cap (vph)	208	532	660	307	615		232	253	495	269	271	
v/s Ratio Prot	0.09	0.19	c0.13	c0.18	0.13		0.12	0.09	0.01	0.13	c0.12	
v/s Ratio Perm			0.29						0.00			
v/c Ratio	0.67	0.60	0.92	0.93	0.34		0.86	0.61	0.03	0.80	0.71	
Uniform Delay, d1	51.1	35.9	31.4	48.7	27.5		51.4	49.0	27.0	49.4	48.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.6	2.0	18.1	33.2	0.4		26.9	4.6	0.0	15.6	8.9	
Delay (s)	59.7	37.9	49.6	81.9	27.9		78.3	53.6	27.0	64.9	57.1	
Level of Service	E	D	D	F	C		E	D	C	E	E	
Approach Delay (s)		47.8			58.7			63.4			61.0	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	54.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	122.7	Sum of lost time (s)	22.8
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	EBR2	WBL2	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	20	5	0	30	80	0	45	10	680	55	10	60
Future Volume (vph)	20	5	0	30	80	0	45	10	680	55	10	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%				0%			0%			
Total Lost time (s)		11.0	11.0		11.0	11.0		5.0	10.0			5.0
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	0.95			1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98		1.00	1.00			1.00
Flpb, ped/bikes		0.99	1.00		1.00	1.00		1.00	1.00			1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.99			1.00
Flt Protected		0.96	1.00		0.95	1.00		0.95	1.00			0.95
Satd. Flow (prot)		1512	1321		1606	1416		1614	3181			1646
Flt Permitted		0.74	1.00		0.74	1.00		0.95	1.00			0.95
Satd. Flow (perm)		1161	1321		1253	1416		1614	3181			1646
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	5	0	30	80	0	45	10	680	55	10	60
RTOR Reduction (vph)	0	0	27	0	0	40	0	0	3	0	0	0
Lane Group Flow (vph)	0	25	3	0	80	5	0	10	732	0	0	70
Confl. Peds. (#/hr)	5		3		3		5	6		6		6
Heavy Vehicles (%)	9%	9%	9%	9%	3%	3%	3%	3%	3%	3%	1%	1%
Turn Type	Perm	NA	Perm		Perm	NA		Prot	NA		Prot	Prot
Protected Phases		4				8		5	2		1	1
Permitted Phases	4		4		8							
Actuated Green, G (s)		17.0	17.0		17.0	17.0		3.1	96.7			10.3
Effective Green, g (s)		17.0	17.0		17.0	17.0		3.1	96.7			10.3
Actuated g/C Ratio		0.11	0.11		0.11	0.11		0.02	0.64			0.07
Clearance Time (s)		11.0	11.0		11.0	11.0		5.0	10.0			5.0
Vehicle Extension (s)		4.0	4.0		3.0	3.0		3.0	4.0			3.0
Lane Grp Cap (vph)		131	149		142	160		33	2050			113
v/s Ratio Prot						0.00		0.01	0.23			c0.04
v/s Ratio Perm		0.02	0.00		c0.06							
v/c Ratio		0.19	0.02		0.56	0.03		0.30	0.36			0.62
Uniform Delay, d1		60.3	59.1		63.0	59.2		72.4	12.3			67.9
Progression Factor		1.00	1.00		1.00	1.00		0.91	1.35			1.12
Incremental Delay, d2		1.0	0.1		5.0	0.1		5.0	0.5			6.6
Delay (s)		61.2	59.2		68.0	59.3		70.6	17.1			82.6
Level of Service		E	E		E	E		E	B			F
Approach Delay (s)		60.1				64.9			17.8			
Approach LOS		E				E			B			

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR	SBR2
Lane Configurations			
Traffic Volume (vph)	1210	200	15
Future Volume (vph)	1210	200	15
Ideal Flow (vphpl)	1750	1750	1750
Grade (%)	0%		
Total Lost time (s)	10.0	10.0	
Lane Util. Factor	0.95	1.00	
Frpb, ped/bikes	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.85	
Flt Protected	1.00	1.00	
Satd. Flow (prot)	3292	1409	
Flt Permitted	1.00	1.00	
Satd. Flow (perm)	3292	1409	
Peak-hour factor, PHF	1.00	1.00	1.00
Adj. Flow (vph)	1210	200	15
RTOR Reduction (vph)	0	29	0
Lane Group Flow (vph)	1210	186	0
Confl. Peds. (#/hr)			6
Heavy Vehicles (%)	1%	1%	1%
Turn Type	NA	Perm	
Protected Phases	6		
Permitted Phases		6	
Actuated Green, G (s)	103.9	103.9	
Effective Green, g (s)	103.9	103.9	
Actuated g/C Ratio	0.69	0.69	
Clearance Time (s)	10.0	10.0	
Vehicle Extension (s)	4.0	4.0	
Lane Grp Cap (vph)	2280	975	
v/s Ratio Prot	c0.37		
v/s Ratio Perm		0.13	
v/c Ratio	0.53	0.19	
Uniform Delay, d1	11.2	8.2	
Progression Factor	0.99	1.00	
Incremental Delay, d2	0.6	0.3	
Delay (s)	11.7	8.4	
Level of Service	B	A	
Approach Delay (s)	14.5		
Approach LOS	B		

Intersection Summary

Movement	EBL	EBT	EBR2	WBL2	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	85	5	35	10	10	40	35	10	555	5	70	20
Future Volume (vph)	85	5	35	10	10	40	35	10	555	5	70	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	11.0	11.0		11.0	11.0			5.0	10.0			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.95			1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00	1.00			1.00
Flpb, ped/bikes	0.99	1.00		0.97	1.00			1.00	1.00			1.00
Frt	1.00	0.87		1.00	0.88			1.00	1.00			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1589	1462		1585	1488			1599	3192			1630
Flt Permitted	0.72	1.00		0.73	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1212	1462		1220	1488			1599	3192			1630
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	5	35	10	10	40	35	10	555	5	70	20
RTOR Reduction (vph)	0	35	0	0	35	0	0	0	0	0	0	0
Lane Group Flow (vph)	85	5	0	10	15	0	0	45	560	0	0	90
Confl. Peds. (#/hr)	4			18		4		8		4		4
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	4%	2%	2%
Turn Type	Perm	NA		Perm	NA		Prot	Prot	NA		Prot	Prot
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8								
Actuated Green, G (s)	18.7	18.7		18.7	18.7			7.9	91.7			13.6
Effective Green, g (s)	18.7	18.7		18.7	18.7			7.9	91.7			13.6
Actuated g/C Ratio	0.12	0.12		0.12	0.12			0.05	0.61			0.09
Clearance Time (s)	11.0	11.0		11.0	11.0			5.0	10.0			5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	4.0			4.0
Lane Grp Cap (vph)	151	182		152	185			84	1951			147
v/s Ratio Prot		0.00			0.01			0.03	0.18			c0.06
v/s Ratio Perm	c0.07			0.01								
v/c Ratio	0.56	0.03		0.07	0.08			0.54	0.29			0.61
Uniform Delay, d1	61.8	57.7		57.9	58.1			69.3	13.7			65.7
Progression Factor	1.00	1.00		1.00	1.00			1.32	0.22			1.19
Incremental Delay, d2	4.7	0.1		0.2	0.2			5.9	0.3			7.7
Delay (s)	66.5	57.7		58.1	58.2			97.6	3.4			85.8
Level of Service	E	E		E	E			F	A			F
Approach Delay (s)		63.7			58.2				10.4			
Approach LOS		E			E				B			

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

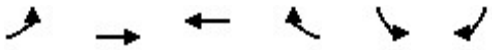
Movement	SBT	SBR	SBR2
Lane Configurations			
Traffic Volume (vph)	1140	190	65
Future Volume (vph)	1140	190	65
Ideal Flow (vphpl)	1750	1750	1750
Total Lost time (s)	10.0	10.0	
Lane Util. Factor	0.95	1.00	
Frpb, ped/bikes	1.00	0.95	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.85	
Flt Protected	1.00	1.00	
Satd. Flow (prot)	3260	1383	
Flt Permitted	1.00	1.00	
Satd. Flow (perm)	3260	1383	
Peak-hour factor, PHF	1.00	1.00	1.00
Adj. Flow (vph)	1140	190	65
RTOR Reduction (vph)	0	33	0
Lane Group Flow (vph)	1140	222	0
Confl. Peds. (#/hr)			8
Confl. Bikes (#/hr)			1
Heavy Vehicles (%)	2%	2%	2%
Turn Type	NA	Perm	
Protected Phases	6		
Permitted Phases		6	
Actuated Green, G (s)	97.4	97.4	
Effective Green, g (s)	97.4	97.4	
Actuated g/C Ratio	0.65	0.65	
Clearance Time (s)	10.0	10.0	
Vehicle Extension (s)	4.0	4.0	
Lane Grp Cap (vph)	2116	898	
v/s Ratio Prot	c0.35		
v/s Ratio Perm		0.16	
v/c Ratio	0.54	0.25	
Uniform Delay, d1	14.2	11.0	
Progression Factor	0.85	0.59	
Incremental Delay, d2	0.9	0.6	
Delay (s)	12.9	7.1	
Level of Service	B	A	
Approach Delay (s)	16.3		
Approach LOS	B		

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	245	65	370	150	815	410
Future Volume (vph)	245	65	370	150	815	410
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.5		5.0	5.0	5.0	5.5
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1580		1630	1716	1733	1452
Flt Permitted	0.96		0.08	1.00	1.00	1.00
Satd. Flow (perm)	1580		129	1716	1733	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	245	65	370	150	815	410
RTOR Reduction (vph)	8	0	0	0	0	51
Lane Group Flow (vph)	302	0	370	150	815	359
Confl. Peds. (#/hr)		2				1
Heavy Vehicles (%)	3%	3%	2%	2%	1%	1%
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Actuated Green, G (s)	26.9		78.2	78.2	48.1	75.0
Effective Green, g (s)	26.9		78.2	78.2	48.1	75.0
Actuated g/C Ratio	0.23		0.68	0.68	0.42	0.65
Clearance Time (s)	5.5		5.0	5.0	5.0	5.5
Vehicle Extension (s)	4.0		3.5	4.0	4.0	4.0
Lane Grp Cap (vph)	367		413	1160	721	942
v/s Ratio Prot	c0.19		c0.19	0.09	c0.47	0.09
v/s Ratio Perm			0.41			0.16
v/c Ratio	0.82		0.90	0.13	1.13	0.38
Uniform Delay, d1	42.1		35.7	6.6	33.8	9.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	14.3		21.6	0.1	75.5	0.4
Delay (s)	56.4		57.3	6.7	109.2	9.8
Level of Service	E		E	A	F	A
Approach Delay (s)	56.4			42.7	76.0	
Approach LOS	E			D	E	

Intersection Summary			
HCM 2000 Control Delay	64.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	115.6	Sum of lost time (s)	15.5
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		

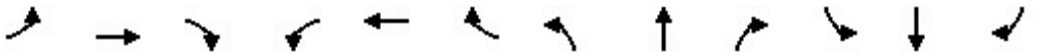
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	920	455	420	785	15
Future Volume (vph)	20	920	455	420	785	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.97	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Frt	1.00	1.00	1.00	0.85	1.00	
Flt Protected	0.95	1.00	1.00	1.00	0.95	
Satd. Flow (prot)	1646	3292	1699	1444	3144	
Flt Permitted	0.41	1.00	1.00	1.00	0.95	
Satd. Flow (perm)	714	3292	1699	1444	3144	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	920	455	420	785	15
RTOR Reduction (vph)	0	0	0	236	1	0
Lane Group Flow (vph)	20	920	455	184	799	0
Confl. Peds. (#/hr)					4	4
Heavy Vehicles (%)	1%	1%	3%	3%	2%	2%
Turn Type	Perm	NA	NA	Perm	Perm	
Protected Phases		6	2			
Permitted Phases	6			2	4	
Actuated Green, G (s)	24.0	24.0	24.0	24.0	18.5	
Effective Green, g (s)	24.0	24.0	24.0	24.0	18.5	
Actuated g/C Ratio	0.44	0.44	0.44	0.44	0.34	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)	312	1439	742	631	1059	
v/s Ratio Prot		c0.28	0.27			
v/s Ratio Perm	0.03			0.13	c0.25	
v/c Ratio	0.06	0.64	0.61	0.29	0.75	
Uniform Delay, d1	8.9	12.1	11.9	10.0	16.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.9	1.5	0.3	2.7	
Delay (s)	9.0	13.0	13.4	10.2	18.9	
Level of Service	A	B	B	B	B	
Approach Delay (s)		12.9	11.9		18.9	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	12.4
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	340	80	140	330	90	65	100	105	435	505	230
Future Volume (vph)	50	340	80	140	330	90	65	100	105	435	505	230
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.5	6.1		5.5	6.1		5.5	5.9		5.5	5.9	5.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.97		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1627	3145		1628	3140		1611	1551		1625	1716	1420
Flt Permitted	0.35	1.00		0.27	1.00		0.40	1.00		0.56	1.00	1.00
Satd. Flow (perm)	603	3145		469	3140		678	1551		953	1716	1420
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	340	80	140	330	90	65	100	105	435	505	230
RTOR Reduction (vph)	0	19	0	0	22	0	0	18	0	0	0	75
Lane Group Flow (vph)	50	401	0	140	398	0	65	187	0	435	505	155
Confl. Peds. (#/hr)	7		5	5		7	9		6	6		9
Confl. Bikes (#/hr)									1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	34.6	27.1		39.6	29.6		81.9	74.9		95.4	82.9	82.9
Effective Green, g (s)	34.6	27.1		39.6	29.6		81.9	74.9		95.4	82.9	82.9
Actuated g/C Ratio	0.23	0.18		0.26	0.20		0.55	0.50		0.64	0.55	0.55
Clearance Time (s)	5.5	6.1		5.5	6.1		5.5	5.9		5.5	5.9	5.9
Vehicle Extension (s)	3.5	4.0		3.5	4.0		3.5	4.0		3.5	4.0	4.0
Lane Grp Cap (vph)	190	568		201	619		413	774		673	948	784
v/s Ratio Prot	0.01	0.13		c0.05	0.13		0.01	0.12		c0.06	0.29	
v/s Ratio Perm	0.05			c0.14			0.08			c0.35		0.11
v/c Ratio	0.26	0.71		0.70	0.64		0.16	0.24		0.65	0.53	0.20
Uniform Delay, d1	46.0	57.7		45.6	55.3		16.7	21.4		15.6	21.3	16.9
Progression Factor	1.00	1.00		0.83	0.79		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.9	4.3		6.3	1.5		0.2	0.7		2.2	2.1	0.6
Delay (s)	46.9	62.0		44.0	45.4		16.9	22.1		17.9	23.4	17.4
Level of Service	D	E		D	D		B	C		B	C	B
Approach Delay (s)		60.4			45.0			20.9			20.2	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBU	EBL2	EBT	EBR	EBR2	WBL2	WBT	WBR	WBR2	NBU	NBL	NBT
Lane Configurations												
Traffic Volume (vph)	80	105	375	0	375	145	285	0	125	15	120	380
Future Volume (vph)	80	105	375	0	375	145	285	0	125	15	120	380
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	14	12	13	11	14	12	12	13	11
Total Lost time (s)		6.0	10.0	10.0		6.0	10.0	10.0			6.0	10.7
Lane Util. Factor		1.00	1.00	1.00		1.00	1.00	1.00			1.00	0.95
Frpb, ped/bikes		1.00	1.00	0.96		1.00	1.00	0.91			1.00	1.00
Flpb, ped/bikes		1.00	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
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00			0.95	1.00
Satd. Flow (prot)		1646	1675	1507		1684	1658	1412			1668	3121
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00			0.95	1.00
Satd. Flow (perm)		1646	1675	1507		1684	1658	1412			1668	3121
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	105	375	0	375	145	285	0	125	15	120	380
RTOR Reduction (vph)	0	0	0	288	0	0	0	96	0	0	0	0
Lane Group Flow (vph)	0	185	375	88	0	145	285	29	0	0	135	380
Confl. Peds. (#/hr)		33		23		23		33			28	
Confl. Bikes (#/hr)								1	1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Prot	Prot	NA	Perm		Prot	NA	Perm		Prot	Prot	NA
Protected Phases	7	7	4			3	8			5	5	2
Permitted Phases				4				8				
Actuated Green, G (s)		16.0	35.0	35.0		16.0	35.0	35.0			12.0	26.2
Effective Green, g (s)		16.0	35.0	35.0		16.0	35.0	35.0			12.0	26.2
Actuated g/C Ratio		0.11	0.23	0.23		0.11	0.23	0.23			0.08	0.17
Clearance Time (s)		6.0	10.0	10.0		6.0	10.0	10.0			6.0	10.7
Vehicle Extension (s)		3.5	4.0	4.0		3.5	4.0	4.0			3.5	4.0
Lane Grp Cap (vph)		175	390	351		179	386	329			133	545
v/s Ratio Prot		c0.11	c0.22			0.09	0.17				c0.08	0.12
v/s Ratio Perm				0.06				0.02				
v/c Ratio		1.06	0.96	0.25		0.81	0.74	0.09			1.02	0.70
Uniform Delay, d1		67.0	56.8	46.8		65.5	53.3	45.0			69.0	58.2
Progression Factor		0.94	1.38	1.00		1.00	1.00	1.00			0.78	0.82
Incremental Delay, d2		80.8	33.7	0.5		24.0	7.7	0.2			80.3	6.9
Delay (s)		143.5	112.0	47.3		89.5	60.9	45.2			134.2	54.7
Level of Service		F	F	D		F	E	D			F	D
Approach Delay (s)			92.3				64.8					107.4
Approach LOS			F				E					F

Intersection Summary			
HCM 2000 Control Delay	77.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	32.7
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBR	NBR2	SBU	SBL	SBT	SBR	SBR2
Lane Configurations							
Traffic Volume (vph)	30	120	35	170	1090	185	60
Future Volume (vph)	30	120	35	170	1090	185	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	13	12	12	12	12	14
Total Lost time (s)	10.7			6.0	10.7	10.7	
Lane Util. Factor	1.00			1.00	0.95	1.00	
Frpb, ped/bikes	0.91			1.00	1.00	0.95	
Flpb, ped/bikes	1.00			1.00	1.00	1.00	
Frt	0.85			1.00	1.00	0.85	
Flt Protected	1.00			0.95	1.00	1.00	
Satd. Flow (prot)	1316			1646	3292	1394	
Flt Permitted	1.00			0.95	1.00	1.00	
Satd. Flow (perm)	1316			1646	3292	1394	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	120	35	170	1090	185	60
RTOR Reduction (vph)	124	0	0	0	0	88	0
Lane Group Flow (vph)	26	0	0	205	1090	157	0
Confl. Peds. (#/hr)		28		28			28
Confl. Bikes (#/hr)							
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%	1%
Turn Type	Perm		Prot	Prot	NA	Perm	
Protected Phases			1	1	6		
Permitted Phases	2					6	
Actuated Green, G (s)	26.2			40.1	54.3	54.3	
Effective Green, g (s)	26.2			40.1	54.3	54.3	
Actuated g/C Ratio	0.17			0.27	0.36	0.36	
Clearance Time (s)	10.7			6.0	10.7	10.7	
Vehicle Extension (s)	4.0			3.5	4.0	4.0	
Lane Grp Cap (vph)	229			440	1191	504	
v/s Ratio Prot				0.12	c0.33		
v/s Ratio Perm	0.02					0.11	
v/c Ratio	0.11			0.47	0.92	0.31	
Uniform Delay, d1	52.1			46.0	45.7	34.4	
Progression Factor	4.13			1.16	1.08	1.69	
Incremental Delay, d2	1.0			0.9	11.6	1.5	
Delay (s)	216.5			54.0	61.0	59.8	
Level of Service	F			D	E	E	
Approach Delay (s)					59.9		
Approach LOS					E		

Intersection Summary

Movement	EBL2	EBT	EBR2	WBL2	WBT	WBR2	NBU	NBL	NBT	NBR	NBR2	SBU
Lane Configurations												
Traffic Volume (vph)	30	35	40	90	10	55	15	15	595	45	50	35
Future Volume (vph)	30	35	40	90	10	55	15	15	595	45	50	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	14	12	12	14	12	12	13	11	12	14	12
Total Lost time (s)		5.9			5.9			5.5	6.7	6.7		
Lane Util. Factor		1.00			1.00			1.00	0.95	1.00		
Frpb, ped/bikes		1.00			1.00			1.00	1.00	0.94		
Flpb, ped/bikes		1.00			1.00			1.00	1.00	1.00		
Frt		0.95			0.95			1.00	1.00	0.85		
Flt Protected		0.99			0.97			0.95	1.00	1.00		
Satd. Flow (prot)		1728			1677			1652	3091	1341		
Flt Permitted		0.85			0.45			0.95	1.00	1.00		
Satd. Flow (perm)		1495			783			1652	3091	1341		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	35	40	90	10	55	15	15	595	45	50	35
RTOR Reduction (vph)	0	93	0	0	142	0	0	0	0	40	0	0
Lane Group Flow (vph)	0	12	0	0	13	0	0	30	595	55	0	0
Confl. Peds. (#/hr)								4		11		
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	4%	4%	4%	4%	4%	2%
Turn Type	Perm	NA		Perm	NA		Prot	Prot	NA	Perm		Prot
Protected Phases		4			3		5	5	2			1
Permitted Phases	4			3						2		
Actuated Green, G (s)		16.9			12.5			5.2	87.5	87.5		
Effective Green, g (s)		16.9			12.5			5.2	87.5	87.5		
Actuated g/C Ratio		0.11			0.08			0.03	0.58	0.58		
Clearance Time (s)		5.9			5.9			5.5	6.7	6.7		
Vehicle Extension (s)		3.0			3.0			2.5	4.0	4.0		
Lane Grp Cap (vph)		168			65			57	1803	782		
v/s Ratio Prot								c0.02	0.19			
v/s Ratio Perm		c0.01			c0.02					0.04		
v/c Ratio		0.07			0.20			0.53	0.33	0.07		
Uniform Delay, d1		59.5			64.1			71.2	16.1	13.6		
Progression Factor		1.00			1.00			1.28	1.43	3.95		
Incremental Delay, d2		0.2			1.5			6.4	0.5	0.2		
Delay (s)		59.7			65.6			97.5	23.6	53.8		
Level of Service		E			E			F	C	D		
Approach Delay (s)		59.7			65.6				30.7			
Approach LOS		E			E				C			

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	40	1520	250	10
Future Volume (vph)	40	1520	250	10
Ideal Flow (vphpl)	1750	1750	1750	1750
Lane Width	12	11	12	14
Total Lost time (s)	5.5	6.7	6.7	
Lane Util. Factor	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	
Satd. Flow (prot)	1630	3151	1409	
Flt Permitted	0.95	1.00	1.00	
Satd. Flow (perm)	1630	3151	1409	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	1520	250	10
RTOR Reduction (vph)	0	0	44	0
Lane Group Flow (vph)	75	1520	216	0
Confl. Peds. (#/hr)	11		4	
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	
Protected Phases	1	6		
Permitted Phases			6	
Actuated Green, G (s)	9.1	91.4	91.4	
Effective Green, g (s)	9.1	91.4	91.4	
Actuated g/C Ratio	0.06	0.61	0.61	
Clearance Time (s)	5.5	6.7	6.7	
Vehicle Extension (s)	2.5	4.0	4.0	
Lane Grp Cap (vph)	98	1920	858	
v/s Ratio Prot	0.05	c0.48		
v/s Ratio Perm			0.15	
v/c Ratio	0.77	0.79	0.25	
Uniform Delay, d1	69.4	22.1	13.5	
Progression Factor	0.96	1.14	1.16	
Incremental Delay, d2	23.4	2.8	0.6	
Delay (s)	90.4	28.0	16.3	
Level of Service	F	C	B	
Approach Delay (s)		28.9		
Approach LOS		C		

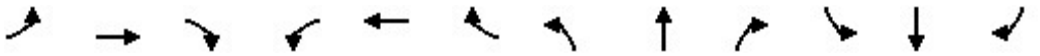
Intersection Summary

Movement	EBL2	EBT	EBR2	WBL2	WBT	WBR2	NBU	NBL	NBT	NBR	NBR2	SBU
Lane Configurations												
Traffic Volume (vph)	40	30	80	60	20	55	50	65	545	40	55	10
Future Volume (vph)	40	30	80	60	20	55	50	65	545	40	55	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	12	11	11	12	12	12	11	12	14	12
Total Lost time (s)	6.8	6.8		6.8	6.8			5.5	6.7	6.7		
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.95	1.00		
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	0.95		
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00		
Frt	1.00	0.89		1.00	0.89			1.00	1.00	0.85		
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00	1.00		
Satd. Flow (prot)	1576	1478		1591	1491			1614	3121	1366		
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00	1.00		
Satd. Flow (perm)	1576	1478		1591	1491			1614	3121	1366		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	30	80	60	20	55	50	65	545	40	55	10
RTOR Reduction (vph)	0	97	0	0	66	0	0	0	0	56	0	0
Lane Group Flow (vph)	40	13	0	60	9	0	0	115	545	39	0	0
Confl. Peds. (#/hr)								3		12		
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	3%	3%	1%
Turn Type	Prot	NA		Prot	NA		Prot	Prot	NA	Perm		Prot
Protected Phases	7	4		3	8		5	5	2			1
Permitted Phases										2		
Actuated Green, G (s)	7.7	17.6		8.1	18.0			13.8	61.2	61.2		
Effective Green, g (s)	7.7	17.6		8.1	18.0			13.8	61.2	61.2		
Actuated g/C Ratio	0.05	0.12		0.05	0.12			0.09	0.41	0.41		
Clearance Time (s)	6.8	6.8		6.8	6.8			5.5	6.7	6.7		
Vehicle Extension (s)	3.5	3.5		3.5	3.5			3.5	4.0	4.0		
Lane Grp Cap (vph)	80	173		85	178			148	1273	557		
v/s Ratio Prot	0.03	c0.01		c0.04	0.01			c0.07	0.17			
v/s Ratio Perm										0.03		
v/c Ratio	0.50	0.07		0.71	0.05			0.78	0.43	0.07		
Uniform Delay, d1	69.3	58.9		69.8	58.4			66.6	31.8	27.1		
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00		
Incremental Delay, d2	5.7	0.2		24.1	0.1			22.7	1.1	0.2		
Delay (s)	75.0	59.2		93.9	58.6			89.3	32.9	27.3		
Level of Service	E	E		F	E			F	C	C		
Approach Delay (s)		63.4			74.3				40.8			
Approach LOS		E			E				D			

Intersection Summary			
HCM 2000 Control Delay	42.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.8
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	60	1590	265	55
Future Volume (vph)	60	1590	265	55
Ideal Flow (vphpl)	1750	1750	1750	1750
Lane Width	12	11	12	14
Total Lost time (s)	5.5	6.7	6.7	
Lane Util. Factor	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	
Satd. Flow (prot)	1646	3182	1431	
Flt Permitted	0.95	1.00	1.00	
Satd. Flow (perm)	1646	3182	1431	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	1590	265	55
RTOR Reduction (vph)	0	0	51	0
Lane Group Flow (vph)	70	1590	269	0
Confl. Peds. (#/hr)	12		3	
Heavy Vehicles (%)	1%	1%	1%	1%
Turn Type	Prot	NA	Perm	
Protected Phases	1	6		
Permitted Phases			6	
Actuated Green, G (s)	37.3	84.7	84.7	
Effective Green, g (s)	37.3	84.7	84.7	
Actuated g/C Ratio	0.25	0.56	0.56	
Clearance Time (s)	5.5	6.7	6.7	
Vehicle Extension (s)	3.5	4.0	4.0	
Lane Grp Cap (vph)	409	1796	808	
v/s Ratio Prot	0.04	c0.50		
v/s Ratio Perm			0.19	
v/c Ratio	0.17	0.89	0.33	
Uniform Delay, d1	44.2	28.4	17.5	
Progression Factor	1.33	1.18	1.82	
Incremental Delay, d2	0.2	5.5	0.9	
Delay (s)	59.1	38.9	32.7	
Level of Service	E	D	C	
Approach Delay (s)		38.6		
Approach LOS		D		

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	415	5	60	465	100	20	20	40	255	85	275
Future Volume (vph)	50	415	5	60	465	100	20	20	40	255	85	275
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		5.9	5.9			5.9		5.9	5.9	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97			0.93		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1643	1730		1630	1663			1578		1646	1502	
Flt Permitted	0.31	1.00		0.45	1.00			0.87		0.70	1.00	
Satd. Flow (perm)	545	1730		769	1663			1392		1222	1502	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	415	5	60	465	100	20	20	40	255	85	275
RTOR Reduction (vph)	0	1	0	0	9	0	0	27	0	0	108	0
Lane Group Flow (vph)	50	419	0	60	556	0	0	53	0	255	252	0
Confl. Peds. (#/hr)	4					4	7					7
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	28.8	28.8		28.8	28.8			20.2		20.2	20.2	
Effective Green, g (s)	28.8	28.8		28.8	28.8			20.2		20.2	20.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.33		0.33	0.33	
Clearance Time (s)	5.9	5.9		5.9	5.9			5.9		5.9	5.9	
Vehicle Extension (s)	3.5	3.5		3.5	3.5			3.0		3.5	3.5	
Lane Grp Cap (vph)	258	819		364	787			462		405	499	
v/s Ratio Prot		0.24			c0.33						0.17	
v/s Ratio Perm	0.09			0.08				0.04		c0.21		
v/c Ratio	0.19	0.51		0.16	0.71			0.12		0.63	0.50	
Uniform Delay, d1	9.3	11.1		9.1	12.7			14.1		17.1	16.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6		0.3	3.0			0.1		3.2	1.0	
Delay (s)	9.7	11.7		9.4	15.7			14.2		20.3	17.2	
Level of Service	A	B		A	B			B		C	B	
Approach Delay (s)		11.5			15.1			14.2			18.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	60.8	Sum of lost time (s)	11.8
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

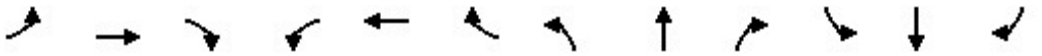
c Critical Lane Group

Movement	EBU	EBL2	EBT	EBR	EBR2	WBU	WBL2	WBT	WBR	WBR2	NBU	NBL
Lane Configurations												
Traffic Volume (vph)	5	45	605	0	170	5	860	490	0	150	60	110
Future Volume (vph)	5	45	605	0	170	5	860	490	0	150	60	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	14	12	12	12	12	13	12	12	12
Total Lost time (s)		6.0	6.0	6.0			6.0	6.0	6.0			6.5
Lane Util. Factor		1.00	0.95	1.00			0.97	0.95	1.00			0.97
Frpb, ped/bikes		1.00	1.00	0.97			1.00	1.00	0.98			1.00
Flpb, ped/bikes		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
Flt Protected		0.95	1.00	1.00			0.95	1.00	1.00			0.95
Satd. Flow (prot)		1646	3182	1530			3162	3260	1469			3162
Flt Permitted		0.95	1.00	1.00			0.95	1.00	1.00			0.95
Satd. Flow (perm)		1646	3182	1530			3162	3260	1469			3162
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	45	605	0	170	5	860	490	0	150	60	110
RTOR Reduction (vph)	0	0	0	130	0	0	0	0	85	0	0	0
Lane Group Flow (vph)	0	50	605	40	0	0	865	490	65	0	0	170
Confl. Peds. (#/hr)				13					10			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	Prot	NA	Perm		Prot	Prot	NA	Perm		Prot	Prot
Protected Phases	7	7	4			3	3	8			5	5
Permitted Phases				4					8			
Actuated Green, G (s)		9.4	44.7	44.7			46.8	82.1	82.1			12.8
Effective Green, g (s)		9.4	44.7	44.7			46.8	82.1	82.1			12.8
Actuated g/C Ratio		0.05	0.24	0.24			0.25	0.43	0.43			0.07
Clearance Time (s)		6.0	6.0	6.0			6.0	6.0	6.0			6.5
Vehicle Extension (s)		3.0	3.5	3.5			3.5	3.5	3.5			3.0
Lane Grp Cap (vph)		81	749	360			779	1409	635			213
v/s Ratio Prot		0.03	c0.19				c0.27	0.15				c0.05
v/s Ratio Perm				0.03					0.04			
v/c Ratio		0.62	0.81	0.11			1.11	0.35	0.10			0.80
Uniform Delay, d1		88.5	68.5	57.0			71.6	36.0	32.0			87.3
Progression Factor		1.00	1.00	1.00			1.00	1.00	1.00			1.00
Incremental Delay, d2		13.2	6.6	0.2			66.9	0.2	0.1			18.5
Delay (s)		101.7	75.1	57.2			138.5	36.2	32.1			105.8
Level of Service		F	E	E			F	D	C			F
Approach Delay (s)			73.0					94.6				
Approach LOS			E					F				

Intersection Summary			
HCM 2000 Control Delay	107.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	189.9	Sum of lost time (s)	25.3
Intersection Capacity Utilization	135.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBT	NBR	NBR2	SBU	SBL	SBT	SBR	SBR2
Lane Configurations								
Traffic Volume (vph)	315	20	890	20	575	1290	210	50
Future Volume (vph)	315	20	890	20	575	1290	210	50
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	12	13	12	11	11	12	14
Total Lost time (s)	6.8	6.8	6.8		6.5	6.8	6.8	
Lane Util. Factor	0.95	0.88	0.91		0.97	0.95	1.00	
Frpb, ped/bikes	1.00	0.96	0.96		1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.85	0.85		1.00	1.00	0.85	
Flt Protected	1.00	1.00	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3151	1231	1316		3087	3182	1426	
Flt Permitted	1.00	1.00	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	3151	1231	1316		3087	3182	1426	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	315	20	890	20	575	1290	210	50
RTOR Reduction (vph)	0	358	372	0	0	0	91	0
Lane Group Flow (vph)	315	98	82	0	595	1290	169	0
Confl. Peds. (#/hr)			21					15
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%
Turn Type	NA	Perm	Perm	Prot	Prot	NA	Perm	
Protected Phases	2			1	1	6		
Permitted Phases		2	2				6	
Actuated Green, G (s)	33.8	33.8	33.8		39.3	60.3	60.3	
Effective Green, g (s)	33.8	33.8	33.8		39.3	60.3	60.3	
Actuated g/C Ratio	0.18	0.18	0.18		0.21	0.32	0.32	
Clearance Time (s)	6.8	6.8	6.8		6.5	6.8	6.8	
Vehicle Extension (s)	4.0	4.0	4.0		3.5	4.0	4.0	
Lane Grp Cap (vph)	560	219	234		638	1010	452	
v/s Ratio Prot	0.10				0.19	c0.41		
v/s Ratio Perm		0.08	0.06				0.12	
v/c Ratio	0.56	0.45	0.35		0.93	1.28	0.37	
Uniform Delay, d1	71.3	69.7	68.5		74.0	64.8	50.2	
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.6	2.0	1.3		20.9	132.5	0.7	
Delay (s)	72.9	71.7	69.7		94.9	197.3	50.9	
Level of Service	E	E	E		F	F	D	
Approach Delay (s)	75.4					151.1		
Approach LOS	E					F		

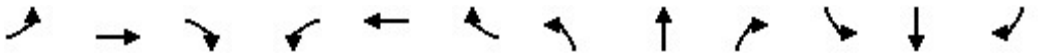
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1435	625	410	895	0	0	0	0	1095	305	625
Future Volume (vph)	0	1435	625	410	895	0	0	0	0	1095	305	625
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.9	5.9	5.5	5.9					5.9	5.9	5.9
Lane Util. Factor		0.95	1.00	0.97	0.95					0.91	0.91	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	0.96
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		3260	1432	3131	3228					1455	2967	2411
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		3260	1432	3131	3228					1455	2967	2411
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1435	625	410	895	0	0	0	0	1095	305	625
RTOR Reduction (vph)	0	0	142	0	0	0	0	0	0	0	0	152
Lane Group Flow (vph)	0	1435	483	410	895	0	0	0	0	547	853	473
Confl. Peds. (#/hr)	11		3			11	10					10
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	4%	4%	4%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		61.9	61.9	18.7	86.1					52.1	52.1	52.1
Effective Green, g (s)		61.9	61.9	18.7	86.1					52.1	52.1	52.1
Actuated g/C Ratio		0.41	0.41	0.12	0.57					0.35	0.35	0.35
Clearance Time (s)		5.9	5.9	5.5	5.9					5.9	5.9	5.9
Vehicle Extension (s)		4.0	4.0	3.5	4.0					4.0	4.0	4.0
Lane Grp Cap (vph)		1345	590	390	1852					505	1030	837
v/s Ratio Prot		c0.44		c0.13	0.28					c0.38	0.29	
v/s Ratio Perm			0.34									0.20
v/c Ratio		1.07	0.82	1.05	0.48					1.08	1.04dl	0.57
Uniform Delay, d1		44.0	39.1	65.7	18.8					49.0	44.8	39.7
Progression Factor		1.00	1.00	1.01	0.84					0.70	0.69	0.53
Incremental Delay, d2		44.5	12.1	56.0	0.8					61.7	5.1	0.9
Delay (s)		88.6	51.1	122.6	16.5					96.0	36.0	22.1
Level of Service		F	D	F	B					F	D	C
Approach Delay (s)		77.2			49.9			0.0			47.9	
Approach LOS		E			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	59.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2040	490	0	1140	520	165	365	105	0	0	0
Future Volume (vph)	0	2040	490	0	1140	520	165	365	105	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.2	6.2		6.2	6.2		5.9	5.5			
Lane Util. Factor		0.91	1.00		0.95	1.00		0.95	1.00			
Frpb, ped/bikes		1.00	0.97		1.00	0.99		1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00			
Frt		1.00	0.85		1.00	0.85		1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00		0.98	1.00			
Satd. Flow (prot)		4684	1415		3228	1426		3089	1403			
Flt Permitted		1.00	1.00		1.00	1.00		0.98	1.00			
Satd. Flow (perm)		4684	1415		3228	1426		3089	1403			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2040	490	0	1140	520	165	365	105	0	0	0
RTOR Reduction (vph)	0	0	96	0	0	106	0	0	83	0	0	0
Lane Group Flow (vph)	0	2040	394	0	1140	414	0	530	22	0	0	0
Confl. Peds. (#/hr)	1		3	3		1						7
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	6%	6%	6%	0%	0%	0%
Turn Type		NA	Perm		NA	Perm	Split	NA	custom			
Protected Phases		2			6		3	3	1			
Permitted Phases			2			6			3			
Actuated Green, G (s)		100.3	100.3		115.8	115.8		22.1	32.1			
Effective Green, g (s)		100.3	100.3		115.8	115.8		22.1	32.1			
Actuated g/C Ratio		0.67	0.67		0.77	0.77		0.15	0.21			
Clearance Time (s)		6.2	6.2		6.2	6.2		5.9	5.5			
Vehicle Extension (s)		4.0	4.0		4.0	4.0		4.0	4.5			
Lane Grp Cap (vph)		3132	946		2492	1100		455	300			
v/s Ratio Prot		c0.44			c0.35			c0.17	0.00			
v/s Ratio Perm			0.28			0.29			0.01			
v/c Ratio		0.65	0.42		0.46	0.38		1.16	0.07			
Uniform Delay, d1		14.6	11.4		6.0	5.5		63.9	47.1			
Progression Factor		0.41	0.20		1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.1	0.1		0.6	1.0		95.8	0.2			
Delay (s)		6.1	2.4		6.6	6.5		159.8	47.3			
Level of Service		A	A		A	A		F	D			
Approach Delay (s)		5.4			6.6			141.2			0.0	
Approach LOS		A			A			F			A	

Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	205	85	5	205	65	5
Future Volume (Veh/h)	205	85	5	205	65	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	205	85	5	205	65	5
Pedestrians	2				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	790					
pX, platoon unblocked						
vC, conflicting volume			291		466	248
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			291		466	248
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.4
p0 queue free %			100		88	99
cM capacity (veh/h)			1253		544	780

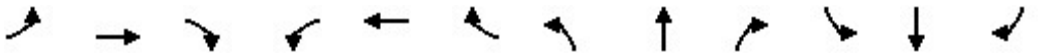
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	290	210	70
Volume Left	0	5	65
Volume Right	85	0	5
cSH	1700	1253	556
Volume to Capacity	0.17	0.00	0.13
Queue Length 95th (ft)	0	0	11
Control Delay (s)	0.0	0.2	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	12.4
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	20	445	35	35	430
Future Volume (Veh/h)	15	20	445	35	35	430
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	20	445	35	35	430
Pedestrians	3		1			3
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	966	468			483	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	966	468			483	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	97			97	
cM capacity (veh/h)	274	596			1072	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	35	480	35	430
Volume Left	15	0	35	0
Volume Right	20	35	0	0
cSH	397	1700	1072	1700
Volume to Capacity	0.09	0.28	0.03	0.25
Queue Length 95th (ft)	7	0	3	0
Control Delay (s)	15.0	0.0	8.5	0.0
Lane LOS	B		A	
Approach Delay (s)	15.0	0.0	0.6	
Approach LOS	B			

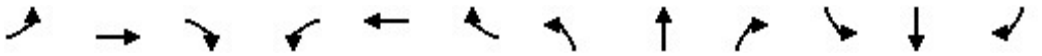
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	0	10	5	0	5	5	285	0	5	715	15
Future Volume (Veh/h)	30	0	10	5	0	5	5	285	0	5	715	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	0	10	5	0	5	5	285	0	5	715	15
Pedestrians					7							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1032	1034	722	1044	1042	292	730			292		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1032	1034	722	1044	1042	292	730			292		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	100	98	98	100	99	99			100		
cM capacity (veh/h)	205	227	423	200	228	748	874			1251		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	40	10	290	735
Volume Left	30	5	5	5
Volume Right	10	5	0	15
cSH	236	316	874	1251
Volume to Capacity	0.17	0.03	0.01	0.00
Queue Length 95th (ft)	15	2	0	0
Control Delay (s)	23.4	16.8	0.2	0.1
Lane LOS	C	C	A	A
Approach Delay (s)	23.4	16.8	0.2	0.1
Approach LOS	C	C		

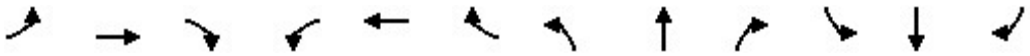
Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	55.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	90	5	90	155	145	0	615	85	180	825	700
Future Volume (vph)	115	90	5	90	155	145	0	615	85	180	825	700
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1662	1733		1630	1716	1458		1699	1444	1630	1716	1412
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	1662	1733		1630	1716	1458		1699	1444	325	1716	1412
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	115	90	5	90	155	145	0	615	85	180	825	700
RTOR Reduction (vph)	0	1	0	0	0	124	0	0	46	0	0	161
Lane Group Flow (vph)	115	94	0	90	155	21	0	615	39	180	825	539
Confl. Peds. (#/hr)			7									5
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm		NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases						8			2	6		6
Actuated Green, G (s)	17.1	22.5		15.0	20.4	20.4		63.8	63.8	83.8	83.8	83.8
Effective Green, g (s)	17.1	22.5		15.0	20.4	20.4		63.8	63.8	83.8	83.8	83.8
Actuated g/C Ratio	0.12	0.16		0.11	0.15	0.15		0.46	0.46	0.60	0.60	0.60
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0		5.0	5.0	3.5	5.0	5.0
Lane Grp Cap (vph)	204	279		175	251	213		778	661	326	1032	849
v/s Ratio Prot	c0.07	0.05		0.06	c0.09			0.36		0.06	c0.48	
v/s Ratio Perm						0.01			0.03	0.28		0.38
v/c Ratio	0.56	0.34		0.51	0.62	0.10		0.79	0.06	0.55	0.80	0.63
Uniform Delay, d1	57.6	51.8		58.7	55.8	51.5		32.1	21.0	19.7	21.3	17.9
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	1.0		3.4	5.1	0.3		6.3	0.1	2.2	5.1	2.2
Delay (s)	61.9	52.8		62.1	60.9	51.8		38.4	21.1	21.9	26.4	20.0
Level of Service	E	D		E	E	D		D	C	C	C	C
Approach Delay (s)		57.8			57.8			36.3			23.3	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	139.3	Sum of lost time (s)	24.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	105	55	35	130	20	190	40	10	35	370	60
Future Volume (vph)	5	105	55	35	130	20	190	40	10	35	370	60
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	105	55	35	130	20	190	40	10	35	370	60

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	165	185	240	465
Volume Left (vph)	5	35	190	35
Volume Right (vph)	55	20	10	60
Hadj (s)	-0.14	0.01	0.18	-0.01
Departure Headway (s)	6.2	6.3	6.0	5.5
Degree Utilization, x	0.28	0.32	0.40	0.70
Capacity (veh/h)	499	491	545	635
Control Delay (s)	11.6	12.3	13.0	20.4
Approach Delay (s)	11.6	12.3	13.0	20.4
Approach LOS	B	B	B	C

Intersection Summary				
Delay	15.9			
Level of Service	C			
Intersection Capacity Utilization	76.7%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	485	10	230	410	0	460
Future Volume (Veh/h)	485	10	230	410	0	460
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	485	10	230	410	0	460
Pedestrians	1		1			1
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			971			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	897	437			231	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	873	394			180	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	98			100	
cM capacity (veh/h)	308	628			1340	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	495	640	460
Volume Left	485	0	0
Volume Right	10	410	0
cSH	311	1700	1700
Volume to Capacity	1.59	0.38	0.27
Queue Length 95th (ft)	733	0	0
Control Delay (s)	310.8	0.0	0.0
Lane LOS	F		
Approach Delay (s)	310.8	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	96.5		
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	145	5	0	410	490	185
Future Volume (Veh/h)	145	5	0	410	490	185
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	145	5	0	410	490	185
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	992	582	675			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	992	582	675			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	47	99	100			
cM capacity (veh/h)	271	511	921			

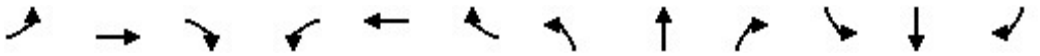
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	150	410	675
Volume Left	145	0	0
Volume Right	5	0	185
cSH	275	921	1700
Volume to Capacity	0.54	0.00	0.40
Queue Length 95th (ft)	75	0	0
Control Delay (s)	32.7	0.0	0.0
Lane LOS	D		
Approach Delay (s)	32.7	0.0	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	80	30	30	105	20	10
Future Volume (Veh/h)	80	30	30	105	20	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	80	30	30	105	20	10
Pedestrians	5			5	5	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1236		
pX, platoon unblocked						
vC, conflicting volume			115		270	105
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			115		270	105
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		97	99
cM capacity (veh/h)			1437		694	936

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	110	135	30
Volume Left	0	30	20
Volume Right	30	0	10
cSH	1700	1437	760
Volume to Capacity	0.06	0.02	0.04
Queue Length 95th (ft)	0	2	3
Control Delay (s)	0.0	1.8	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	1.8	9.9
Approach LOS			A

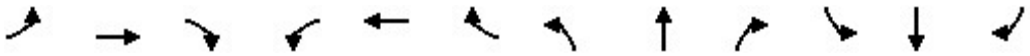
Intersection Summary			
Average Delay		2.0	
Intersection Capacity Utilization		26.0%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	70	20	85	110	5	30	5	85	5	5	5
Future Volume (Veh/h)	5	70	20	85	110	5	30	5	85	5	5	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	70	20	85	110	5	30	5	85	5	5	5
Pedestrians		2			5			3			4	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					726							
pX, platoon unblocked												
vC, conflicting volume	119			93			385	382	88	469	390	118
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	119			93			385	382	88	469	390	118
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			94	99	91	99	99	99
cM capacity (veh/h)	1464			1498			532	512	958	433	513	934

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	95	200	120	15
Volume Left	5	85	30	5
Volume Right	20	5	85	5
cSH	1464	1498	775	563
Volume to Capacity	0.00	0.06	0.15	0.03
Queue Length 95th (ft)	0	5	14	2
Control Delay (s)	0.4	3.5	10.5	11.6
Lane LOS	A	A	B	B
Approach Delay (s)	0.4	3.5	10.5	11.6
Approach LOS			B	B

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	35.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	430	220	60	375	5	220	55	90	10	10	10
Future Volume (Veh/h)	30	430	220	60	375	5	220	55	90	10	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	430	220	60	375	5	220	55	90	10	10	10
Pedestrians					5			6			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		703										
pX, platoon unblocked												
vC, conflicting volume	385			656			928	1111	336	900	1218	195
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	385			656			928	1111	336	900	1218	195
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			93			0	71	86	93	94	99
cM capacity (veh/h)	1158			916			196	190	660	146	164	816

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	245	435	248	192	365	30
Volume Left	30	0	60	0	220	10
Volume Right	0	220	0	5	90	10
cSH	1158	1700	916	1700	236	212
Volume to Capacity	0.03	0.26	0.07	0.11	1.55	0.14
Queue Length 95th (ft)	2	0	5	0	558	12
Control Delay (s)	1.2	0.0	2.7	0.0	305.0	24.8
Lane LOS	A		A		F	C
Approach Delay (s)	0.4		1.5		305.0	24.8
Approach LOS					F	C

Intersection Summary				
Average Delay	74.6			
Intersection Capacity Utilization	74.2%	ICU Level of Service		D
Analysis Period (min)	15			

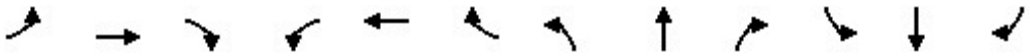
Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	40	60	15	20	55	85	20	35	20	190	165	45
Future Volume (vph)	40	60	15	20	55	85	20	35	20	190	165	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.0			5.0			5.0	5.0	5.0	
Lane Util. Factor			1.00			1.00			1.00	1.00	1.00	
Frpb, ped/bikes			1.00			0.99			1.00	1.00	0.96	
Flpb, ped/bikes			0.99			1.00			1.00	1.00	1.00	
Frt			0.98			0.96			1.00	1.00	0.85	
Flt Protected			0.96			0.99			0.95	1.00	1.00	
Satd. Flow (prot)			1625			1601			1612	1699	1381	
Flt Permitted			0.51			0.88			0.26	1.00	1.00	
Satd. Flow (perm)			864			1433			439	1699	1381	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	60	15	20	55	85	20	35	20	190	165	45
RTOR Reduction (vph)	0	0	4	0	0	6	0	0	0	0	67	0
Lane Group Flow (vph)	0	0	131	0	0	189	0	0	20	190	143	0
Confl. Peds. (#/hr)	7	5		5	5		7	5	6		5	2
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	2%	2%	3%	3%	3%	3%
Turn Type	Perm	Perm	NA		Perm	NA			pm+pt	NA	Perm	
Protected Phases			4			4			1	6		
Permitted Phases	4	4			4				6		6	
Actuated Green, G (s)			23.2			23.2			34.3	30.4	30.4	
Effective Green, g (s)			23.2			23.2			34.3	30.4	30.4	
Actuated g/C Ratio			0.18			0.18			0.26	0.23	0.23	
Clearance Time (s)			5.0			5.0			5.0	5.0	5.0	
Vehicle Extension (s)			3.0			3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)			154			255			151	397	323	
v/s Ratio Prot									0.00	0.11		
v/s Ratio Perm			c0.15			0.13			0.03		0.10	
v/c Ratio			0.85			0.74			0.13	0.48	0.44	
Uniform Delay, d1			51.7			50.5			36.6	42.9	42.5	
Progression Factor			1.00			1.00			1.00	1.00	1.00	
Incremental Delay, d2			33.1			11.1			0.4	0.9	1.0	
Delay (s)			84.7			61.6			37.0	43.8	43.5	
Level of Service			F			E			D	D	D	
Approach Delay (s)			84.7			61.6				43.3		
Approach LOS			F			E				D		

Intersection Summary			
HCM 2000 Control Delay	95.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	129.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	75	75	335	65	130	610	30	20
Future Volume (vph)	75	75	335	65	130	610	30	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0	5.0			5.0	5.0	
Lane Util. Factor		1.00	1.00			1.00	1.00	
Frpb, ped/bikes		1.00	0.99			1.00	1.00	
Flpb, ped/bikes		0.99	1.00			1.00	1.00	
Frt		1.00	0.98			1.00	0.85	
Flt Protected		0.95	1.00			0.95	1.00	
Satd. Flow (prot)		1606	1647			1646	1473	
Flt Permitted		0.43	1.00			0.95	1.00	
Satd. Flow (perm)		721	1647			1646	1473	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	75	335	65	130	610	30	20
RTOR Reduction (vph)	0	0	5	0	0	0	32	0
Lane Group Flow (vph)	0	150	395	0	0	740	18	0
Confl. Peds. (#/hr)	5	2		6				
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%	1%	1%
Turn Type	pm+pt	pm+pt	NA		Prot	Prot	Perm	
Protected Phases	5	5	2		8	8		
Permitted Phases	2	2					8	
Actuated Green, G (s)		45.5	36.6			46.2	46.2	
Effective Green, g (s)		45.5	36.6			46.2	46.2	
Actuated g/C Ratio		0.35	0.28			0.36	0.36	
Clearance Time (s)		5.0	5.0			5.0	5.0	
Vehicle Extension (s)		3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)		321	464			585	523	
v/s Ratio Prot		c0.04	c0.24			c0.45		
v/s Ratio Perm		0.13					0.01	
v/c Ratio		0.47	0.85			1.26	0.03	
Uniform Delay, d1		30.9	44.1			41.9	27.3	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		1.1	14.0			132.5	0.0	
Delay (s)		31.9	58.0			174.3	27.3	
Level of Service		C	E			F	C	
Approach Delay (s)			50.9			165.0		
Approach LOS			D			F		

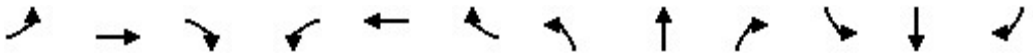
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	45	205	100	55	185	20	140	365	65	15	210	55
Future Volume (vph)	45	205	100	55	185	20	140	365	65	15	210	55
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	45	205	100	55	185	20	140	365	65	15	210	55

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	350	260	570	280
Volume Left (vph)	45	55	140	15
Volume Right (vph)	100	20	65	55
Hadj (s)	-0.11	0.05	0.00	-0.06
Departure Headway (s)	7.6	8.0	7.2	7.8
Degree Utilization, x	0.74	0.58	1.15	0.61
Capacity (veh/h)	452	417	500	435
Control Delay (s)	28.8	21.6	113.1	22.0
Approach Delay (s)	28.8	21.6	113.1	22.0
Approach LOS	D	C	F	C

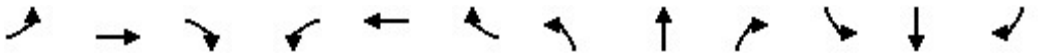
Intersection Summary				
Delay		59.1		
Level of Service		F		
Intersection Capacity Utilization		85.1%	ICU Level of Service	E
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	1105	45	70	310	15	5	20	95	15	15	10
Future Volume (vph)	30	1105	45	70	310	15	5	20	95	15	15	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.89			0.97	
Flt Protected		1.00			0.99			1.00			0.98	
Satd. Flow (prot)		3202			3117			1529			1590	
Flt Permitted		0.94			0.72			0.99			0.84	
Satd. Flow (perm)		3013			2258			1511			1368	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	1105	45	70	310	15	5	20	95	15	15	10
RTOR Reduction (vph)	0	2	0	0	2	0	0	46	0	0	8	0
Lane Group Flow (vph)	0	1178	0	0	393	0	0	74	0	0	32	0
Confl. Peds. (#/hr)	6		4	4		6	5					5
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	2%	2%	2%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		29.6			29.6			8.0			8.0	
Effective Green, g (s)		29.6			29.6			8.0			8.0	
Actuated g/C Ratio		0.62			0.62			0.17			0.17	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		1873			1404			253			229	
v/s Ratio Prot												
v/s Ratio Perm		c0.39			0.17			c0.05			0.02	
v/c Ratio		0.63			0.28			0.29			0.14	
Uniform Delay, d1		5.6			4.1			17.3			16.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			0.0			0.2			0.1	
Delay (s)		6.1			4.2			17.6			17.0	
Level of Service		A			A			B			B	
Approach Delay (s)		6.1			4.2			17.6			17.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	47.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	300	330	80	255	30	105	220	35	30	620	155
Future Volume (vph)	220	300	330	80	255	30	105	220	35	30	620	155
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.99		1.00	0.98		1.00	0.97	
Flt Protected		0.98	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1680	1458		1695		1614	1664		1630	1664	
Flt Permitted		0.98	1.00		0.99		0.07	1.00		0.51	1.00	
Satd. Flow (perm)		1680	1458		1695		114	1664		869	1664	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	300	330	80	255	30	105	220	35	30	620	155
RTOR Reduction (vph)	0	0	174	0	2	0	0	4	0	0	6	0
Lane Group Flow (vph)	0	520	156	0	363	0	105	251	0	30	769	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	2%	2%	2%
Turn Type	Split	NA	pm+ov	Split	NA		D.P+P	NA		D.P+P	NA	
Protected Phases	8	8	1	4	4		1	6		5	2	
Permitted Phases			8				2			6		
Actuated Green, G (s)		39.0	45.0		26.0		65.6	62.6		65.6	59.6	
Effective Green, g (s)		39.0	45.0		26.0		65.6	62.6		65.6	59.6	
Actuated g/C Ratio		0.27	0.31		0.18		0.45	0.43		0.45	0.41	
Clearance Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		4.0	5.0		4.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		446	447		300		112	710		404	676	
v/s Ratio Prot		c0.31	0.01		c0.21		c0.04	c0.15		0.00	c0.46	
v/s Ratio Perm			0.09				0.38			0.03		
v/c Ratio		1.17	0.35		1.21		0.94	0.35		0.07	1.14	
Uniform Delay, d1		53.8	39.4		60.3		35.2	28.3		23.1	43.5	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		96.6	1.0		120.8		66.6	0.6		0.2	79.2	
Delay (s)		150.4	40.4		181.1		101.8	29.0		23.3	122.7	
Level of Service		F	D		F		F	C		C	F	
Approach Delay (s)		107.7			181.1			50.2			119.0	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	114.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	146.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	117.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	135	610	140	0	1485
Future Volume (Veh/h)	0	135	610	140	0	1485
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	135	610	140	0	1485
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			587			739
pX, platoon unblocked	0.86	0.93			0.93	
vC, conflicting volume	1422	375			750	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	773	166			571	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	83			100	
cM capacity (veh/h)	288	787			924	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	135	407	343	742	742
Volume Left	0	0	0	0	0
Volume Right	135	0	140	0	0
cSH	787	1700	1700	1700	1700
Volume to Capacity	0.17	0.24	0.20	0.44	0.44
Queue Length 95th (ft)	15	0	0	0	0
Control Delay (s)	10.5	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.5	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

LANE SUMMARY

Site: 113 [113-Des Moines Memorial Dr @ SR 509 NB Ramps (Site Folder: 2037 NA)]

113-Des Moines Memorial Dr @ SR 509 NB Ramps, 2037 No Action
Site Category: 2037 No Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR 509 NB Off Ramp													
Lane 1[d]	281	4.0	577	0.487	100	16.2	LOS B	2.6	66.8	Full	1600	0.0	0.0
Approach	281	4.0		0.487		16.2	LOS B	2.6	66.8				
East: Des Moines Memorial Dr (WB)													
Lane 1[d]	550	5.0	1092	0.504	100	8.2	LOS A	4.0	104.0	Full	1600	0.0	0.0
Lane 2	685	5.0	1595	0.430	100	4.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	1235	5.0		0.504		5.9	LOS A	4.0	104.0				
West: Des Moines Memorial Dr (EB)													
Lane 1	938	6.0	1413	0.664	100	7.1	LOS A	0.0	0.0	Full	1000	0.0	0.0
Lane 2[d]	1047	6.0	1577	0.664	100	4.5	LOS A	0.0	0.0	Full	1000	0.0	0.0
Approach	1985	6.0		0.664		5.7	LOS A	0.0	0.0				
Intersection	3501	5.5		0.664		6.6	LOS A	4.0	104.0				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: SR 509 NB Off Ramp

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	95	1	185	281	4.0	577	0.487	100	NA	NA
Approach	95	1	185	281	4.0		0.487			

East: Des Moines Memorial Dr (WB)

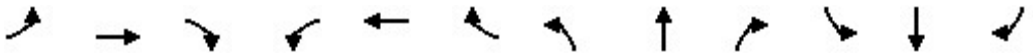
Mov. From E To Exit:	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	550	-	550	5.0	1092	0.504	100	NA	NA
Lane 2	-	685	685	5.0	1595	0.430	100	NA	NA
Approach	550	685	1235	5.0		0.504			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	180	10	235	650
Future Volume (vph)	0	0	180	10	235	650
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.0		5.0	5.0
Lane Util. Factor			0.95		1.00	0.95
Frt			0.99		1.00	1.00
Flt Protected			1.00		0.95	1.00
Satd. Flow (prot)			3234		1630	3260
Flt Permitted			1.00		0.63	1.00
Satd. Flow (perm)			3234		1085	3260
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	180	10	235	650
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	190	0	235	650
Turn Type			NA		Perm	NA
Protected Phases			2			6
Permitted Phases					6	
Actuated Green, G (s)			21.0		21.0	21.0
Effective Green, g (s)			21.0		21.0	21.0
Actuated g/C Ratio			1.00		1.00	1.00
Clearance Time (s)			5.0		5.0	5.0
Lane Grp Cap (vph)			3234		1085	3260
v/s Ratio Prot			0.06			0.20
v/s Ratio Perm					c0.22	
v/c Ratio			0.06		0.22	0.20
Uniform Delay, d1			0.0		0.0	0.0
Progression Factor			1.00		1.00	1.00
Incremental Delay, d2			0.0		0.3	0.1
Delay (s)			0.0		0.3	0.1
Level of Service			A		A	A
Approach Delay (s)	0.0		0.0			0.2
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	0.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	21.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	155	180	0	0	875
Future Volume (vph)	10	155	180	0	0	875
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1630	1458	3260			3260
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1630	1458	3260			3260
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	155	180	0	0	875
RTOR Reduction (vph)	0	96	0	0	0	0
Lane Group Flow (vph)	10	59	180	0	0	875
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	16.0	16.0	16.0			16.0
Effective Green, g (s)	16.0	16.0	16.0			16.0
Actuated g/C Ratio	0.38	0.38	0.38			0.38
Clearance Time (s)	5.0	5.0	5.0			5.0
Lane Grp Cap (vph)	620	555	1241			1241
v/s Ratio Prot	0.01		0.06			c0.27
v/s Ratio Perm		c0.04				
v/c Ratio	0.02	0.11	0.15			0.71
Uniform Delay, d1	8.1	8.4	8.5			11.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.0	0.4	0.2			3.4
Delay (s)	8.1	8.8	8.8			14.4
Level of Service	A	A	A			B
Approach Delay (s)	8.7		8.8			14.4
Approach LOS	A		A			B

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	765	0	0	545	500	0	520	365	0	0	0
Future Volume (vph)	0	765	0	0	545	500	0	520	365	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0	5.0		5.0				
Lane Util. Factor		0.95			0.95	1.00		0.95				
Frt		1.00			1.00	0.85		0.94				
Flt Protected		1.00			1.00	1.00		1.00				
Satd. Flow (prot)		3260			3260	1458		3058				
Flt Permitted		1.00			1.00	1.00		1.00				
Satd. Flow (perm)		3260			3260	1458		3058				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	765	0	0	545	500	0	520	365	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	97	0	84	0	0	0	0
Lane Group Flow (vph)	0	765	0	0	545	403	0	801	0	0	0	0
Turn Type		NA			NA	Perm		NA				
Protected Phases		4			8			2				
Permitted Phases						8						
Actuated Green, G (s)		79.0			79.0	79.0		61.0				
Effective Green, g (s)		79.0			79.0	79.0		61.0				
Actuated g/C Ratio		0.53			0.53	0.53		0.41				
Clearance Time (s)		5.0			5.0	5.0		5.0				
Lane Grp Cap (vph)		1716			1716	767		1243				
v/s Ratio Prot		0.23			0.17			c0.26				
v/s Ratio Perm						c0.28						
v/c Ratio		0.45			0.32	0.53		0.64				
Uniform Delay, d1		22.0			20.2	23.2		35.8				
Progression Factor		1.04			1.00	1.00		0.50				
Incremental Delay, d2		0.6			0.5	2.6		1.7				
Delay (s)		23.4			20.7	25.8		19.5				
Level of Service		C			C	C		B				
Approach Delay (s)		23.4			23.1			19.5			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	106.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	545	0	0	0	765	1480
Future Volume (vph)	545	0	0	0	765	1480
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0				5.0	5.0
Lane Util. Factor	0.97				1.00	0.91
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3162				1630	4684
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3162				1630	4684
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	545	0	0	0	765	1480
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	545	0	0	0	765	1480
Turn Type	Prot				Prot	NA
Protected Phases	3				1	6
Permitted Phases						
Actuated Green, G (s)	39.0				101.0	101.0
Effective Green, g (s)	39.0				101.0	101.0
Actuated g/C Ratio	0.26				0.67	0.67
Clearance Time (s)	5.0				5.0	5.0
Lane Grp Cap (vph)	822				1097	3153
v/s Ratio Prot	c0.17				c0.47	0.32
v/s Ratio Perm						
v/c Ratio	0.66				0.70	0.47
Uniform Delay, d1	49.6				15.1	11.7
Progression Factor	0.81				1.00	1.00
Incremental Delay, d2	4.0				3.7	0.5
Delay (s)	44.4				18.8	12.2
Level of Service	D				B	B
Approach Delay (s)	44.4		0.0			14.4
Approach LOS	D		A			B

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	120.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			