

Analyse de capacité (niveaux de service)

HCM Signalized Intersection Capacity Analysis

2: Route 132 & Rue Jean-Rioux

Timing Plan: AM

06/01/2011



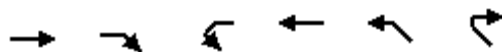
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	145	29	20	160	15	41	81	30	12	44	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.98		1.00	0.99			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1504	2894		1641	3134			1659			1572	
Flt Permitted	0.95	1.00		0.95	1.00			0.88			0.95	
Satd. Flow (perm)	1504	2894		1641	3134			1476			1503	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%
Adj. Flow (vph)	24	167	33	23	184	17	47	93	35	14	51	28
RTOR Reduction (vph)	0	19	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	24	181	0	23	201	0	0	155	0	0	93	0
Heavy Vehicles (%)	20%	22%	20%	10%	15%	0%	24%	4%	7%	8%	16%	17%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	0.9	13.5		0.9	13.5			5.3			5.3	
Effective Green, g (s)	0.9	13.5		0.9	13.5			5.3			5.3	
Actuated g/C Ratio	0.03	0.43		0.03	0.43			0.17			0.17	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	43	1232		47	1335			247			251	
v/s Ratio Prot	c0.02	0.06		0.01	c0.06							
v/s Ratio Perm								c0.11			0.06	
v/c Ratio	0.56	0.15		0.49	0.15			0.63			0.37	
Uniform Delay, d1	15.2	5.6		15.2	5.6			12.3			11.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	14.8	0.1		7.8	0.1			4.9			0.9	
Delay (s)	30.0	5.6		23.0	5.6			17.2			12.6	
Level of Service	C	A		C	A			B			B	
Approach Delay (s)		8.2			7.4			17.2			12.6	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	31.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
2: Route 293 & 2e Rang O

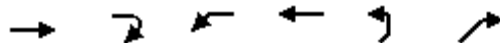
Timing Plan: AM
06/01/2011



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	102	8	0	197	9	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	112	9	0	216	10	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			121		333	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			121		333	116
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		99	100
cM capacity (veh/h)			1467		666	936
Direction, Lane #	EB 1	WB 1	NW 1			
Volume Total	121	216	10			
Volume Left	0	0	10			
Volume Right	9	0	0			
cSH	1700	1700	666			
Volume to Capacity	0.07	0.13	0.01			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s)	0.0	0.0	10.5			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.5			
Approach LOS			B			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			20.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Route 293 & 2e Rang O

Timing Plan: AM
06/01/2011



Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑			↑		↑
Volume (veh/h)	102	0	3	197	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	112	0	3	216	0	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			112		335	112
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			112		335	112
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %						
		100		100		100
cM capacity (veh/h)			1306		659	941
Direction, Lane #	EB 1	WB 1	NE 1			
Volume Total	112	220	1			
Volume Left	0	3	0			
Volume Right	0	0	1			
cSH	1700	1306	941			
Volume to Capacity	0.07	0.00	0.00			
Queue Length 95th (m)	0.0	0.1	0.0			
Control Delay (s)	0.0	0.1	8.8			
Lane LOS	A		A			
Approach Delay (s)	0.0	0.1	8.8			
Approach LOS	A					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			16.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Route 293 & 2e Rang E

Timing Plan: AM
06/01/2011



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↶		↷	
Volume (veh/h)	24	52	139	2	0	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	57	153	2	0	42
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	155				263	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	155				263	154
tC, single (s)	4.2				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	98				100	95
cM capacity (veh/h)	1390				712	857

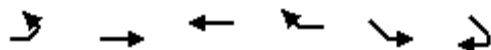
Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	83	155	42
Volume Left	26	0	0
Volume Right	0	2	42
cSH	1390	1700	857
Volume to Capacity	0.02	0.09	0.05
Queue Length 95th (m)	0.5	0.0	1.2
Control Delay (s)	2.5	0.0	9.4
Lane LOS	A		A
Approach Delay (s)	2.5	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization	24.9%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

2: Route 293 & 3e Rang E

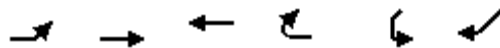
Timing Plan: AM
06/01/2011



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑	↗		↘	
Volume (veh/h)	0	58	115	4	3	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	64	126	4	3	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	131				192	128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	131				192	128
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				100	100
cM capacity (veh/h)	1455				801	922
Direction, Lane #	EB 1	WB 1	SE 1			
Volume Total	64	131	3			
Volume Left	0	0	3			
Volume Right	0	4	0			
cSH	1700	1700	801			
Volume to Capacity	0.04	0.08	0.00			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.0	0.0	9.5			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			16.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 3: Route 293 & 3e Rang E

Timing Plan: AM
 06/01/2011



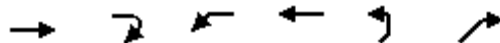
Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↕	↕			↕
Volume (veh/h)	6	58	115	0	0	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	64	126	0	0	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	126				203	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	126				203	126
tC, single (s)	4.3				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.4
p0 queue free %	100				100	99
cM capacity (veh/h)	1372				782	908

Direction, Lane #	EB 1	WB 1	SW 1
Volume Total	70	126	13
Volume Left	7	0	0
Volume Right	0	0	13
cSH	1372	1700	908
Volume to Capacity	0.00	0.07	0.01
Queue Length 95th (m)	0.1	0.0	0.4
Control Delay (s)	0.8	0.0	9.0
Lane LOS	A		A
Approach Delay (s)	0.8	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		16.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
6: Route 293 & 3e Rang O

Timing Plan: AM
06/01/2011



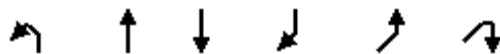
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑			↑		↑
Volume (veh/h)	64	0	3	123	0	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	0	3	135	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	70			212	70	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70			212	70	
tC, single (s)	4.1			6.4	6.7	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.8	
p0 queue free %	100			100	99	
cM capacity (veh/h)	1543			775	874	

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	70	138	4
Volume Left	0	3	0
Volume Right	0	0	4
cSH	1700	1543	874
Volume to Capacity	0.04	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.1
Control Delay (s)	0.0	0.2	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.2	9.1
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	13.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: Route 293 & 3e Rang O

Timing Plan: AM
06/01/2011



Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑	↔		↔	
Volume (veh/h)	0	123	64	2	8	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	135	70	2	9	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	72				206	71
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72				206	71
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				99	100
cM capacity (veh/h)	1528				787	997
Direction, Lane #	NB 1	SB 1	NE 1			
Volume Total	135	72	9			
Volume Left	0	0	9			
Volume Right	0	2	0			
cSH	1700	1700	787			
Volume to Capacity	0.08	0.04	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			16.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Route 296 & Route 293

Timing Plan: AM
07/01/2011



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	5	53	86	4	13	62
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	6	59	95	4	14	69
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	195	98			100	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	195	98			100	
tC, single (s)	6.4	6.3			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.4	
p0 queue free %	99	94			99	
cM capacity (veh/h)	790	942			1371	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	64	100	83
Volume Left	6	0	14
Volume Right	59	4	0
cSH	927	1700	1371
Volume to Capacity	0.07	0.06	0.01
Queue Length 95th (m)	1.8	0.0	0.3
Control Delay (s)	9.2	0.0	1.4
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	1.4
Approach LOS	A		

Intersection Summary			
Average Delay		2.9	
Intersection Capacity Utilization		21.0%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
2: Route 132 & Rue Jean-Rioux

Timing Plan: PM
06/01/2011



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Volume (vph)	32	211	33	52	209	15	27	64	29	13	85	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.98		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1752	3182		1805	3201			1754			1797	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			0.96	
Satd. Flow (perm)	1752	3182		1805	3201			1654			1742	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%
Adj. Flow (vph)	37	243	38	60	241	17	31	74	33	15	98	32
RTOR Reduction (vph)	0	17	0	0	0	0	0	26	0	0	0	0
Lane Group Flow (vph)	37	264	0	60	258	0	0	112	0	0	145	0
Heavy Vehicles (%)	3%	11%	12%	0%	12%	7%	4%	2%	7%	7%	2%	0%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.0	14.4		2.1	15.5			5.0			5.0	
Effective Green, g (s)	1.0	14.4		2.1	15.5			5.0			5.0	
Actuated g/C Ratio	0.03	0.43		0.06	0.46			0.15			0.15	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	52	1368		113	1481			247			260	
v/s Ratio Prot	0.02	c0.08		c0.03	0.08							
v/s Ratio Perm								0.07			c0.08	
v/c Ratio	0.71	0.19		0.53	0.17			0.45			0.56	
Uniform Delay, d1	16.1	5.9		15.2	5.3			13.0			13.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	36.8	0.1		4.7	0.1			1.3			2.6	
Delay (s)	53.0	6.0		19.9	5.3			14.3			15.8	
Level of Service	D	A		B	A			B			B	
Approach Delay (s)		11.5			8.1			14.3			15.8	
Approach LOS		B			A			B			B	

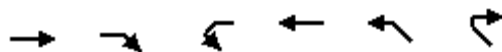
Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	33.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

2: Route 293 & 2e Rang O

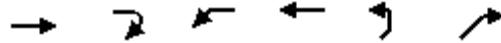
Timing Plan: PM
06/01/2011



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	175	11	0	127	11	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	192	12	0	139	12	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			204		338	198
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			204		338	198
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		98	100
cM capacity (veh/h)			1367		658	843
Direction, Lane #	EB 1	WB 1	NW 1			
Volume Total	204	139	12			
Volume Left	0	0	12			
Volume Right	12	0	0			
cSH	1700	1700	658			
Volume to Capacity	0.12	0.08	0.02			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s)	0.0	0.0	10.6			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.6			
Approach LOS			B			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization		20.0%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Route 293 & 2e Rang 0

Timing Plan: PM
06/01/2011



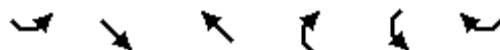
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑			↑		↑
Volume (veh/h)	175	0	2	127	0	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	192	0	2	139	0	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			192		336	192
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			192		336	192
tC, single (s)			4.6		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.7		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1140		658	855

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	192	142	2
Volume Left	0	2	0
Volume Right	0	0	2
cSH	1700	1140	855
Volume to Capacity	0.11	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.1	9.2
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	9.2
Approach LOS			A

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		19.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
7: Route 293 & 2e Rang E

Timing Plan: PM
06/01/2011



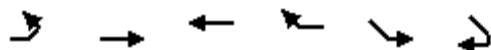
Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↔		↔	
Volume (veh/h)	34	144	99	2	1	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	158	109	2	1	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	111				343	110
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	111				343	110
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	97				100	97
cM capacity (veh/h)	1473				641	928

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	195	111	29
Volume Left	37	0	1
Volume Right	0	2	27
cSH	1473	1700	912
Volume to Capacity	0.03	0.07	0.03
Queue Length 95th (m)	0.6	0.0	0.8
Control Delay (s)	1.6	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	1.6	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay		1.7	
Intersection Capacity Utilization		26.2%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
2: Route 293 & 3e Rang E

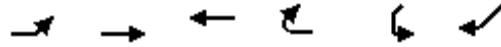
Timing Plan: PM
06/01/2011



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑	↔		↔	
Volume (veh/h)	0	127	97	5	2	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	139	106	5	2	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	112				249	109
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112				249	109
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				100	100
cM capacity (veh/h)	1490				744	944
Direction, Lane #						
	EB 1	WB 1	SE 1			
Volume Total	139	112	2			
Volume Left	0	0	2			
Volume Right	0	5	0			
cSH	1700	1700	744			
Volume to Capacity	0.08	0.07	0.00			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.0	0.0	9.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			16.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 3: Route 293 & 3e Rang E

Timing Plan: PM
 06/01/2011



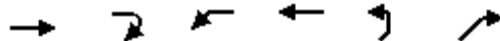
Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↕	↑			↗
Volume (veh/h)	9	127	97	0	0	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	139	106	0	0	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	106				266	106
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	106				266	106
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				100	99
cM capacity (veh/h)	1497				719	953

Direction, Lane #	EB 1	WB 1	SW 1
Volume Total	149	106	8
Volume Left	10	0	0
Volume Right	0	0	8
cSH	1497	1700	953
Volume to Capacity	0.01	0.06	0.01
Queue Length 95th (m)	0.2	0.0	0.2
Control Delay (s)	0.5	0.0	8.8
Lane LOS	A		A
Approach Delay (s)	0.5	0.0	8.8
Approach LOS			A

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		17.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
6: Route 293 & 3e Rang O

Timing Plan: PM
06/01/2011



Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑			↑		↑
Volume (veh/h)	126	0	4	86	0	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	138	0	4	94	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			138		242	138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			138		242	138
tC, single (s)			4.1		6.4	6.5
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.5
p0 queue free %			100		100	99
cM capacity (veh/h)			1458		745	852

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	138	99	4
Volume Left	0	4	0
Volume Right	0	0	4
cSH	1700	1458	852
Volume to Capacity	0.08	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.1
Control Delay (s)	0.0	0.4	9.2
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.2
Approach LOS			A

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization	16.7%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
7: Route 293 & 3e Rang O

Timing Plan: PM
06/01/2011



Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑	↑		↑	
Volume (veh/h)	0	86	126	5	3	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	94	138	5	3	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	144				235	141
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	144				235	141
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				100	100
cM capacity (veh/h)	1439				757	907

Direction, Lane #	NB 1	SB 1	NE 1
Volume Total	94	144	3
Volume Left	0	0	3
Volume Right	0	5	0
cSH	1700	1700	757
Volume to Capacity	0.06	0.08	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	9.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.8
Approach LOS			A

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		17.0%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: Route 296 & Route 293

Timing Plan: PM
 07/01/2011



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	5	23	47	10	45	87
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	6	26	52	11	50	96
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	254	58			63	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	254	58			63	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.2	
p0 queue free %	99	97			97	
cM capacity (veh/h)	715	978			1552	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	31	63	146
Volume Left	6	0	50
Volume Right	26	11	0
cSH	918	1700	1552
Volume to Capacity	0.03	0.04	0.03
Queue Length 95th (m)	0.8	0.0	0.8
Control Delay (s)	9.1	0.0	2.7
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	2.7
Approach LOS	A		

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization	23.9%		ICU Level of Service A
Analysis Period (min)		15	