

Appendix E
Short-Term Traffic Analysis Intersection Capacity Analysis

Queues
6: Old Weston Rd & St Clair Ave W

Existing Traffic Conditions-STP OP
Weekday AM Peak Hour

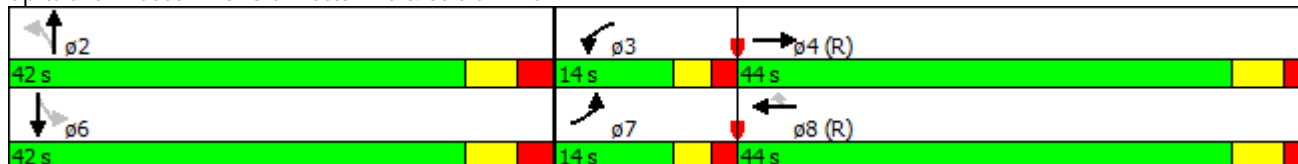


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↗		↕		↕
Volume (vph)	49	616	52	502	54	59	491	98	304
Lane Group Flow (vph)	51	969	54	518	56	0	731	0	500
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	44.0	14.0	44.0	44.0	42.0	42.0	42.0	42.0
Total Split (%)	14.0%	44.0%	14.0%	44.0%	44.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.38	0.73	0.49	0.67	0.11		0.76		0.78
Control Delay	52.8	21.6	75.3	26.9	0.9		32.7		37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	52.8	21.6	75.3	26.9	0.9		32.7		37.3
Queue Length 50th (m)	10.7	59.2	12.0	102.1	0.0		64.6		44.9
Queue Length 95th (m)	m10.7	m43.6	m22.8	144.8	m0.8		88.3		#69.6
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	152	1331	122	777	493		961		637
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.34	0.73	0.44	0.67	0.11		0.76		0.78

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 23 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

Existing Traffic Conditions-STP OP
Weekday AM Peak Hour



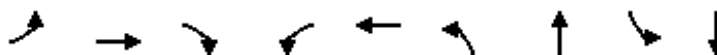
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	616	324	52	502	54	59	491	159	98	304	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.96		1.00	1.00	0.73		0.99			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	
Frt	1.00	0.95		1.00	1.00	0.85		0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1527	3015		1221	1842	1036		3095			2900	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84			0.59	
Satd. Flow (perm)	1527	3015		1221	1842	1036		2597			1723	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	51	635	334	54	518	56	61	506	164	101	313	86
RTOR Reduction (vph)	0	66	0	0	0	33	0	27	0	0	17	0
Lane Group Flow (vph)	51	903	0	54	518	23	0	704	0	0	483	0
Confl. Peds. (#/hr)	176		60	60		176	145		35	35		145
Confl. Bikes (#/hr)			8			3			8			6
Heavy Vehicles (%)	7%	5%	5%	38%	2%	6%	15%	8%	0%	15%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	18	0	7	15
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	6.8	40.0		7.0	40.2	40.2		35.0			35.0	
Effective Green, g (s)	7.8	41.0		8.0	41.2	41.2		36.0			36.0	
Actuated g/C Ratio	0.08	0.41		0.08	0.41	0.41		0.36			0.36	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	119	1236		97	758	426		934			620	
v/s Ratio Prot	0.03	c0.30		c0.04	0.28							
v/s Ratio Perm						0.02		0.27			c0.28	
v/c Ratio	0.43	0.73		0.56	0.68	0.05		0.75			0.78	
Uniform Delay, d1	44.0	24.8		44.3	24.1	17.7		28.1			28.5	
Progression Factor	1.21	0.95		1.44	0.92	0.46		1.00			1.00	
Incremental Delay, d2	0.2	0.4		5.8	4.3	0.2		5.6			9.3	
Delay (s)	53.6	23.9		69.6	26.4	8.3		33.7			37.8	
Level of Service	D	C		E	C	A		C			D	
Approach Delay (s)		25.4			28.5			33.7			37.8	
Approach LOS		C			C			C			D	

Intersection Summary

HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
10: Keele St/Weston Rd & St Clair Ave W

Existing Traffic Conditions-STP OP
Weekday AM Peak Hour

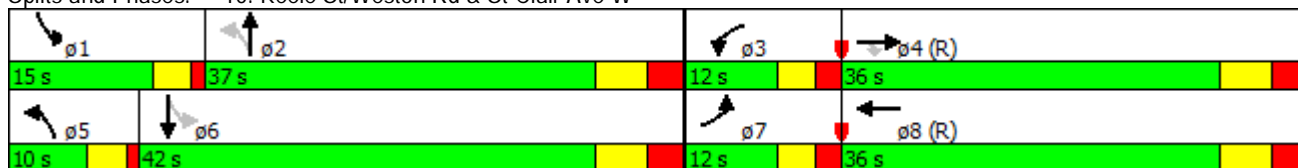


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↑	↗	↖	↕	↖	↕	↖	↕
Volume (vph)	53	546	58	21	468	54	634	367	892
Lane Group Flow (vph)	59	607	64	23	696	60	791	408	1057
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	6.0	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	12.0	36.0	36.0	12.0	36.0	10.0	37.0	15.0	42.0
Total Split (%)	12.0%	36.0%	36.0%	12.0%	36.0%	10.0%	37.0%	15.0%	42.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	None	Max
v/c Ratio	0.48	0.90	0.13	0.19	0.65	0.35	0.79	1.36	0.86
Control Delay	46.4	57.0	6.3	37.3	35.9	23.8	44.1	200.9	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	57.0	6.3	37.3	35.9	23.8	44.1	200.9	27.4
Queue Length 50th (m)	11.9	131.8	1.3	4.9	71.4	8.7	91.0	-81.9	106.0
Queue Length 95th (m)	25.6	#217.0	8.2	m7.5	89.1	18.5	111.1	#142.7	#147.5
Internal Link Dist (m)		287.2			365.7		277.9		432.6
Turn Bay Length (m)	27.0			37.0		55.0		80.0	
Base Capacity (vph)	127	678	499	129	1077	172	1006	299	1233
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.90	0.13	0.18	0.65	0.35	0.79	1.36	0.86

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
10: Keele St/Weston Rd & St Clair Ave W

Existing Traffic Conditions-STP OP
Weekday AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	546	58	21	468	158	54	634	78	367	892	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.69	1.00	0.99		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		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1589	1824	1029	1618	3227		1439	3212		1610	3233	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.14	1.00		0.18	1.00	
Satd. Flow (perm)	1589	1824	1029	1618	3227		210	3212		297	3233	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	607	64	23	520	176	60	704	87	408	991	66
RTOR Reduction (vph)	0	0	43	0	33	0	0	10	0	0	5	0
Lane Group Flow (vph)	59	607	21	23	663	0	60	781	0	408	1052	0
Confl. Peds. (#/hr)	29		263	263		29	31		115	115		31
Confl. Bikes (#/hr)			5			1			3			5
Heavy Vehicles (%)	6%	3%	7%	1%	2%	2%	17%	4%	4%	4%	5%	25%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	13	27	0	13	27
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	5.6	32.4	32.4	2.8	29.6		35.6	30.8		45.8	37.0	
Effective Green, g (s)	6.6	33.4	33.4	3.8	30.6		37.6	31.8		46.8	38.0	
Actuated g/C Ratio	0.07	0.33	0.33	0.04	0.31		0.38	0.32		0.47	0.38	
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	104	609	343	61	987		150	1021		296	1228	
v/s Ratio Prot	c0.04	c0.33		0.01	0.21		0.02	0.24		c0.17	0.33	
v/s Ratio Perm			0.02				0.13			c0.48		
v/c Ratio	0.57	1.00	0.06	0.38	0.67		0.40	0.77		1.38	0.86	
Uniform Delay, d1	45.3	33.2	22.6	46.9	30.3		21.7	30.7		20.4	28.5	
Progression Factor	0.77	1.34	1.00	0.80	1.20		1.30	1.23		0.67	0.67	
Incremental Delay, d2	6.6	34.9	0.3	3.0	2.8		1.6	5.0		188.3	7.1	
Delay (s)	41.5	79.4	23.0	40.4	39.3		29.9	42.7		202.0	26.1	
Level of Service	D	E	C	D	D		C	D		F	C	
Approach Delay (s)		71.4			39.3			41.8			75.1	
Approach LOS		E			D			D			E	

Intersection Summary

HCM 2000 Control Delay	60.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

Existing Traffic Conditions
Weekday PM Peak Hour

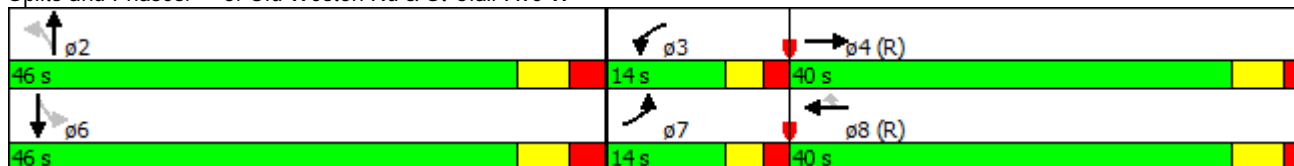


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↗		↕		↕
Volume (vph)	141	443	7	442	183	181	373	84	276
Lane Group Flow (vph)	145	815	7	456	189	0	577	0	458
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	40.0	14.0	40.0	40.0	46.0	46.0	46.0	46.0
Total Split (%)	14.0%	40.0%	14.0%	40.0%	40.0%	46.0%	46.0%	46.0%	46.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.92	0.56	0.06	0.71	0.42		0.64		0.51
Control Delay	67.4	11.4	49.4	27.4	9.6		28.3		23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	67.4	11.4	49.4	27.4	9.6		28.3		23.2
Queue Length 50th (m)	31.9	42.3	1.4	49.7	7.7		49.0		33.5
Queue Length 95th (m)	m32.3	m48.1	m2.4	93.4	m17.3		68.7		49.1
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	157	1451	168	644	452		896		902
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.92	0.56	0.04	0.71	0.42		0.64		0.51

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 69 (69%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

Existing Traffic Conditions
Weekday PM Peak Hour



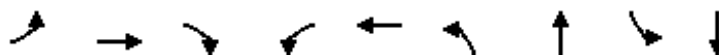
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	141	443	347	7	442	183	181	373	5	84	276	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.90		1.00	1.00	0.74		1.00			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.98			0.98	
Frt	1.00	0.93		1.00	1.00	0.85		1.00			0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.99	
Satd. Flow (prot)	1571	2868		1685	1842	1111		3323			3152	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.66			0.69	
Satd. Flow (perm)	1571	2868		1685	1842	1111		2240			2204	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	145	457	358	7	456	189	187	385	5	87	285	86
RTOR Reduction (vph)	0	125	0	0	0	64	0	1	0	0	20	0
Lane Group Flow (vph)	145	690	0	7	456	125	0	576	0	0	438	0
Confl. Peds. (#/hr)	163		149	149		163	62		307	307		62
Confl. Bikes (#/hr)			21			11			18			13
Heavy Vehicles (%)	4%	1%	1%	0%	2%	1%	3%	2%	0%	1%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	10	0	6	12
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	9.0	41.6		1.4	34.0	34.0		39.0			39.0	
Effective Green, g (s)	10.0	42.6		2.4	35.0	35.0		40.0			40.0	
Actuated g/C Ratio	0.10	0.43		0.02	0.35	0.35		0.40			0.40	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	157	1221		40	644	388		896			881	
v/s Ratio Prot	c0.09	0.24		0.00	c0.25							
v/s Ratio Perm						0.11		c0.26			0.20	
v/c Ratio	0.92	0.57		0.17	0.71	0.32		0.64			0.50	
Uniform Delay, d1	44.6	21.7		47.8	28.1	23.8		24.2			22.5	
Progression Factor	1.01	0.76		1.13	0.77	0.60		1.00			1.00	
Incremental Delay, d2	18.4	0.4		1.7	5.2	1.8		3.5			2.0	
Delay (s)	63.5	16.9		55.6	26.8	16.0		27.8			24.5	
Level of Service	E	B		E	C	B		C			C	
Approach Delay (s)		23.9			24.0			27.8			24.5	
Approach LOS		C			C			C			C	

Intersection Summary

HCM 2000 Control Delay	24.9	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)	15.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
10: Keele St/Weston Rd & St Clair Ave W

Existing Traffic Conditions
Weekday PM Peak Hour

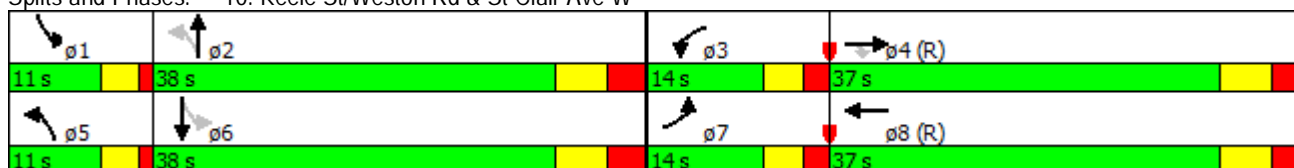


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	56	475	29	116	535	94	641	268	653
Lane Group Flow (vph)	60	505	31	123	628	100	882	285	706
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	6.0	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	14.0	37.0	37.0	14.0	37.0	11.0	38.0	11.0	38.0
Total Split (%)	14.0%	37.0%	37.0%	14.0%	37.0%	11.0%	38.0%	11.0%	38.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max	C-Max	Min	C-Max	None	Max	None	Max
v/c Ratio	0.40	0.88	0.08	0.77	0.59	0.34	0.88	1.30	0.60
Control Delay	50.6	50.6	0.4	88.0	23.5	24.6	46.5	183.4	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	50.6	0.4	88.0	23.5	24.6	46.5	183.4	20.1
Queue Length 50th (m)	11.6	97.1	0.0	0.0	43.8	11.4	70.9	-50.6	64.1
Queue Length 95th (m)	24.6	#156.1	0.0	m#46.0	54.2	m27.5	#118.7	#103.8	84.3
Internal Link Dist (m)		287.2			365.7		277.9		432.6
Turn Bay Length (m)	27.0			37.0		55.0		80.0	
Base Capacity (vph)	165	577	406	160	1069	299	1001	220	1181
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.88	0.08	0.77	0.59	0.33	0.88	1.30	0.60

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis

10: Keele St/Weston Rd & St Clair Ave W

Existing Traffic Conditions
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	475	29	116	535	55	94	641	188	268	653	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%				0%
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.68	1.00	1.00		1.00	0.92		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	1860	994	1602	3331		1678	3045		1673	3449	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.27	1.00		0.15	1.00	
Satd. Flow (perm)	1652	1860	994	1602	3331		476	3045		256	3449	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	60	505	31	123	569	59	100	682	200	285	695	11
RTOR Reduction (vph)	0	0	22	0	8	0	0	27	0	0	1	0
Lane Group Flow (vph)	60	505	9	123	620	0	100	855	0	285	705	0
Confl. Peds. (#/hr)	31		303	303		31	56		197	197		56
Confl. Bikes (#/hr)			7			3			2			11
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%	0%	3%	2%	0%	2%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	16	0	5	11
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	8.1	29.3	29.3	8.9	30.1		37.4	31.8		40.2	33.2	
Effective Green, g (s)	9.1	30.3	30.3	9.9	31.1		39.4	32.8		42.2	34.2	
Actuated g/C Ratio	0.09	0.30	0.30	0.10	0.31		0.39	0.33		0.42	0.34	
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	563	301	158	1035		266	998		221	1179	
v/s Ratio Prot	0.04	c0.27		c0.08	0.19		0.02	0.28		c0.10	0.20	
v/s Ratio Perm			0.01				0.12			c0.44		
v/c Ratio	0.40	0.90	0.03	0.78	0.60		0.38	0.86		1.29	0.60	
Uniform Delay, d1	42.9	33.4	24.5	44.0	29.2		20.1	31.4		23.8	27.2	
Progression Factor	1.00	1.00	1.00	1.46	0.76		1.40	1.21		1.22	0.64	
Incremental Delay, d2	1.7	19.6	0.2	16.6	2.0		0.7	7.6		157.4	2.0	
Delay (s)	44.6	52.9	24.7	80.9	24.1		28.8	45.5		186.4	19.5	
Level of Service	D	D	C	F	C		C	D		F	B	
Approach Delay (s)		50.6			33.4			43.8			67.5	
Approach LOS		D			C			D			E	

Intersection Summary

HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 1
Weekday AM Peak Hour

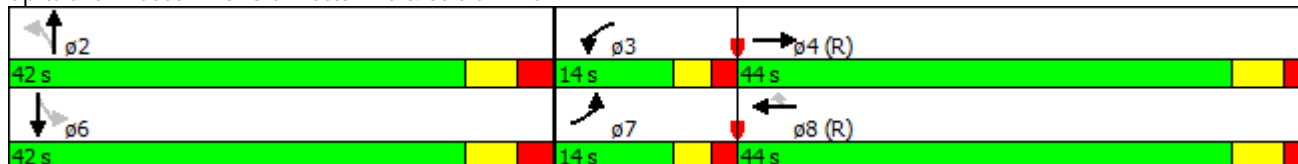


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↗		↕		↕
Volume (vph)	49	616	52	502	54	59	491	98	304
Lane Group Flow (vph)	51	969	54	518	56	0	731	0	500
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	44.0	14.0	44.0	44.0	42.0	42.0	42.0	42.0
Total Split (%)	14.0%	44.0%	14.0%	44.0%	44.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.38	0.73	0.49	0.67	0.11		0.76		0.78
Control Delay	53.4	23.1	75.3	26.9	0.9		32.7		37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	53.4	23.1	75.3	26.9	0.9		32.7		37.3
Queue Length 50th (m)	10.5	59.2	12.0	102.1	0.0		64.6		44.9
Queue Length 95th (m)	m10.9	m43.2	m22.8	144.8	m0.8		88.3		#69.6
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	152	1331	122	777	493		961		637
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.34	0.73	0.44	0.67	0.11		0.76		0.78

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 23 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 1
Weekday AM Peak Hour



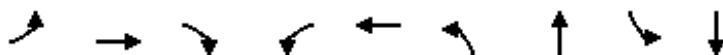
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	616	324	52	502	54	59	491	159	98	304	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.96		1.00	1.00	0.73		0.99			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	
Frt	1.00	0.95		1.00	1.00	0.85		0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1527	3015		1221	1842	1036		3095			2900	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84			0.59	
Satd. Flow (perm)	1527	3015		1221	1842	1036		2597			1723	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	51	635	334	54	518	56	61	506	164	101	313	86
RTOR Reduction (vph)	0	66	0	0	0	33	0	27	0	0	17	0
Lane Group Flow (vph)	51	903	0	54	518	23	0	704	0	0	483	0
Confl. Peds. (#/hr)	176		60	60		176	145		35	35		145
Confl. Bikes (#/hr)			8			3			8			6
Heavy Vehicles (%)	7%	5%	5%	38%	2%	6%	15%	8%	0%	15%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	18	0	7	15
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	6.8	40.0		7.0	40.2	40.2		35.0			35.0	
Effective Green, g (s)	7.8	41.0		8.0	41.2	41.2		36.0			36.0	
Actuated g/C Ratio	0.08	0.41		0.08	0.41	0.41		0.36			0.36	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	119	1236		97	758	426		934			620	
v/s Ratio Prot	0.03	c0.30		c0.04	0.28							
v/s Ratio Perm						0.02		0.27			c0.28	
v/c Ratio	0.43	0.73		0.56	0.68	0.05		0.75			0.78	
Uniform Delay, d1	44.0	24.8		44.3	24.1	17.7		28.1			28.5	
Progression Factor	1.23	1.01		1.44	0.92	0.46		1.00			1.00	
Incremental Delay, d2	0.2	0.4		5.8	4.3	0.2		5.6			9.3	
Delay (s)	54.2	25.5		69.6	26.4	8.3		33.7			37.8	
Level of Service	D	C		E	C	A		C			D	
Approach Delay (s)		26.9			28.5			33.7			37.8	
Approach LOS		C			C			C			D	

Intersection Summary

HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 1
Weekday AM Peak Hour

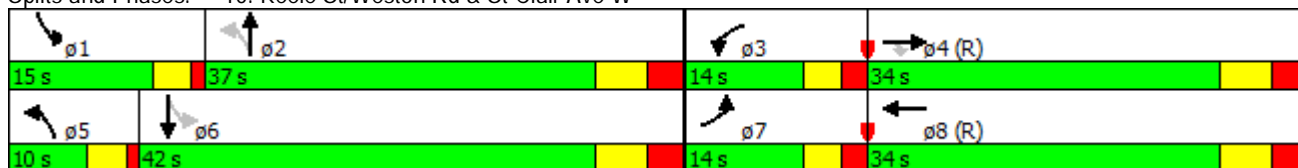


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↘	↕
Volume (vph)	53	546	58	21	468	54	634	367	892
Lane Group Flow (vph)	59	607	64	23	696	60	791	408	1057
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	6.0	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	14.0	34.0	34.0	14.0	34.0	10.0	37.0	15.0	42.0
Total Split (%)	14.0%	34.0%	34.0%	14.0%	34.0%	10.0%	37.0%	15.0%	42.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	None	Max
v/c Ratio	0.41	0.91	0.14	0.18	0.71	0.35	0.78	1.36	0.86
Control Delay	40.6	57.9	6.4	35.5	37.8	22.7	42.1	197.8	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	57.9	6.4	35.5	37.8	22.7	42.1	197.8	27.4
Queue Length 50th (m)	11.7	131.8	1.3	0.0	72.8	8.5	91.0	-81.1	106.0
Queue Length 95th (m)	25.0	#225.1	8.3	m7.2	91.6	18.0	111.1	#141.8	#147.5
Internal Link Dist (m)		287.2			365.7		277.9		432.6
Turn Bay Length (m)	27.0			37.0		55.0		80.0	
Base Capacity (vph)	158	668	473	161	978	172	1015	301	1233
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.91	0.14	0.14	0.71	0.35	0.78	1.36	0.86

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis

10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 1
Weekday AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	546	58	21	468	158	54	634	78	367	892	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.69	1.00	0.99		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	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1589	1824	971	1618	3046		1439	3242		1614	3233	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.14	1.00		0.18	1.00	
Satd. Flow (perm)	1589	1824	971	1618	3046		210	3242		297	3233	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	607	64	23	520	176	60	704	87	408	991	66
RTOR Reduction (vph)	0	0	43	0	33	0	0	10	0	0	5	0
Lane Group Flow (vph)	59	607	21	23	663	0	60	781	0	408	1052	0
Confl. Peds. (#/hr)	29		263	263		29	31		115	115		31
Confl. Bikes (#/hr)			5			1			3			5
Heavy Vehicles (%)	6%	3%	7%	1%	2%	2%	17%	4%	4%	4%	5%	25%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	13	27	0	13	27
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	6.9	31.9	31.9	3.3	28.3		35.6	30.8		45.8	37.0	
Effective Green, g (s)	7.9	32.9	32.9	4.3	29.3		37.6	31.8		46.8	38.0	
Actuated g/C Ratio	0.08	0.33	0.33	0.04	0.29		0.38	0.32		0.47	0.38	
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	125	600	319	69	892		150	1030		297	1228	
v/s Ratio Prot	c0.04	c0.33		0.01	0.22		0.02	0.24		c0.16	0.33	
v/s Ratio Perm			0.02				0.13			c0.48		
v/c Ratio	0.47	1.01	0.07	0.33	0.74		0.40	0.76		1.37	0.86	
Uniform Delay, d1	44.1	33.5	23.0	46.5	32.0		21.7	30.7		20.4	28.5	
Progression Factor	0.76	1.29	1.00	0.78	1.15		1.23	1.17		0.77	0.67	
Incremental Delay, d2	2.7	38.9	0.4	2.2	4.3		1.6	4.8		186.3	7.1	
Delay (s)	36.1	82.1	23.4	38.6	41.2		28.3	40.8		201.9	26.1	
Level of Service	D	F	C	D	D		C	D		F	C	
Approach Delay (s)		73.2			41.1			39.9			75.0	
Approach LOS		E			D			D			E	

Intersection Summary

HCM 2000 Control Delay	60.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues

6: Old Weston Rd & St Clair Ave W

02/04/2015

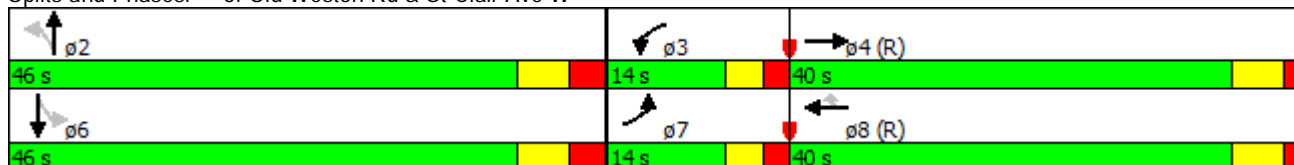


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↗		↕		↕
Volume (vph)	130	494	114	386	194	249	323	49	444
Lane Group Flow (vph)	134	852	118	398	200	0	641	0	552
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	40.0	14.0	40.0	40.0	46.0	46.0	46.0	46.0
Total Split (%)	14.0%	40.0%	14.0%	40.0%	40.0%	46.0%	46.0%	46.0%	46.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.85	0.75	0.72	0.62	0.44		0.96dl		0.50
Control Delay	50.3	21.3	70.1	28.2	13.4		35.8		24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	50.3	21.3	70.1	28.2	13.4		35.8		24.1
Queue Length 50th (m)	28.8	52.4	25.9	46.0	11.3		58.9		42.8
Queue Length 95th (m)	m28.1	m50.1	m36.8	m77.0	m19.5		#86.2		59.2
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	157	1137	168	644	452		792		1096
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.85	0.75	0.70	0.62	0.44		0.81		0.50

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 69 (69%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis

6: Old Weston Rd & St Clair Ave W

02/04/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	494	333	114	386	194	249	323	49	49	444	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.90		1.00	1.00	0.74		0.97			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.98			0.99	
Frt	1.00	0.94		1.00	1.00	0.85		0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			1.00	
Satd. Flow (prot)	1571	2911		1685	1842	1111		3201			3326	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.60			0.82	
Satd. Flow (perm)	1571	2911		1685	1842	1111		1967			2726	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	134	509	343	118	398	200	257	333	51	51	458	43
RTOR Reduction (vph)	0	112	0	0	0	64	0	7	0	0	6	0
Lane Group Flow (vph)	134	740	0	118	398	136	0	634	0	0	546	0
Confl. Peds. (#/hr)	163		149	149		163	62		307	307		62
Confl. Bikes (#/hr)			21			11			18			13
Heavy Vehicles (%)	4%	1%	1%	0%	2%	1%	3%	2%	0%	1%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	10	0	6	12
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	9.0	34.2		8.8	34.0	34.0		39.0			39.0	
Effective Green, g (s)	10.0	35.2		9.8	35.0	35.0		40.0			40.0	
Actuated g/C Ratio	0.10	0.35		0.10	0.35	0.35		0.40			0.40	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	157	1024		165	644	388		786			1090	
v/s Ratio Prot	c0.09	c0.25		0.07	0.22							
v/s Ratio Perm						0.12		c0.32			0.20	
v/c Ratio	0.85	0.72		0.72	0.62	0.35		0.96dl			0.50	
Uniform Delay, d1	44.3	28.2		43.7	27.0	24.1		26.6			22.5	
Progression Factor	0.97	0.92		1.18	0.91	0.86		1.00			1.00	
Incremental Delay, d2	4.3	0.4		10.1	3.2	1.8		8.7			1.6	
Delay (s)	47.0	26.2		61.8	27.6	22.6		35.3			24.2	
Level of Service	D	C		E	C	C		D			C	
Approach Delay (s)		29.0			31.8			35.3			24.2	
Approach LOS		C			C			D			C	

Intersection Summary

HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

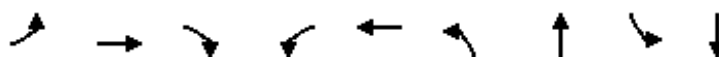
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Queues

10: Keele St/Weston Rd & St Clair Ave W

02/04/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↑	↗	↖	↕	↖	↕	↖	↕
Volume (vph)	99	498	36	50	470	96	665	374	601
Lane Group Flow (vph)	105	530	38	53	683	102	801	398	689
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	6.0	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	11.0	34.0	34.0	11.0	34.0	10.0	37.0	18.0	45.0
Total Split (%)	11.0%	34.0%	34.0%	11.0%	34.0%	10.0%	37.0%	18.0%	45.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max	C-Max	Min	C-Max	None	Max	None	Max
v/c Ratio	0.91	1.02	0.09	0.47	0.77	0.29	0.78	1.11	0.49
Control Delay	111.4	81.4	0.4	73.2	30.0	19.6	40.8	100.7	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.4	81.4	0.4	73.2	30.0	19.6	40.8	100.7	13.9
Queue Length 50th (m)	21.7	~111.4	0.0	0.0	63.3	9.8	59.2	~62.2	54.8
Queue Length 95th (m)	#54.3	#179.6	0.0	m0.0	m74.4	26.6	97.1	#122.6	45.9
Internal Link Dist (m)		287.2			365.7		277.9		432.6
Turn Bay Length (m)	27.0			37.0		55.0		80.0	
Base Capacity (vph)	115	520	411	112	886	348	1024	359	1395
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	1.02	0.09	0.47	0.77	0.29	0.78	1.11	0.49

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

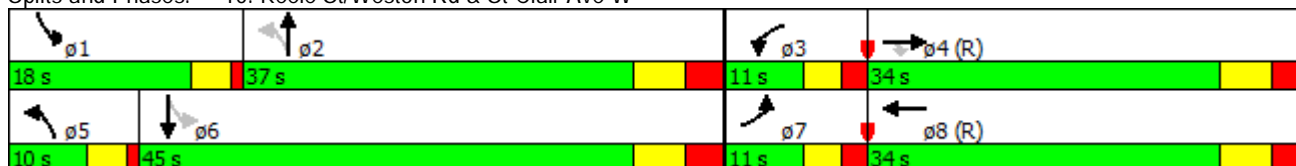
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis

10: Keele St/Weston Rd & St Clair Ave W

02/04/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	498	36	50	470	172	96	665	88	374	601	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.68	1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	1860	993	1602	3034		1672	3273		1675	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.39	1.00		0.17	1.00	
Satd. Flow (perm)	1652	1860	993	1602	3034		686	3273		300	3390	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	105	530	38	53	500	183	102	707	94	398	639	50
RTOR Reduction (vph)	0	0	28	0	38	0	0	10	0	0	5	0
Lane Group Flow (vph)	105	530	10	53	645	0	102	791	0	398	684	0
Confl. Peds. (#/hr)	31		303	303		31	56		197	197		56
Confl. Bikes (#/hr)			7			3			2			11
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%	0%	3%	2%	0%	2%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	16	0	5	11
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	6.0	26.2	26.2	6.0	26.2		35.6	30.8		48.8	40.0	
Effective Green, g (s)	7.0	27.2	27.2	7.0	27.2		37.6	31.8		49.8	41.0	
Actuated g/C Ratio	0.07	0.27	0.27	0.07	0.27		0.38	0.32		0.50	0.41	
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	115	505	270	112	825		315	1040		355	1389	
v/s Ratio Prot	c0.06	c0.28		0.03	0.21		0.02	0.24		c0.17	0.20	
v/s Ratio Perm			0.01				0.10			c0.39		
v/c Ratio	0.91	1.05	0.04	0.47	0.78		0.32	0.76		1.12	0.49	
Uniform Delay, d1	46.2	36.4	26.8	44.7	33.7		20.7	30.7		23.1	21.8	
Progression Factor	1.00	1.00	1.00	1.38	0.81		1.34	1.14		0.95	0.57	
Incremental Delay, d2	57.2	53.7	0.3	2.4	5.6		0.5	4.6		82.7	1.1	
Delay (s)	103.4	90.1	27.0	64.0	32.9		28.3	39.5		104.5	13.6	
Level of Service	F	F	C	E	C		C	D		F	B	
Approach Delay (s)		88.6			35.2			38.2			46.9	
Approach LOS		F			D			D			D	

Intersection Summary

HCM 2000 Control Delay	50.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 2
Weekday AM Peak Hour

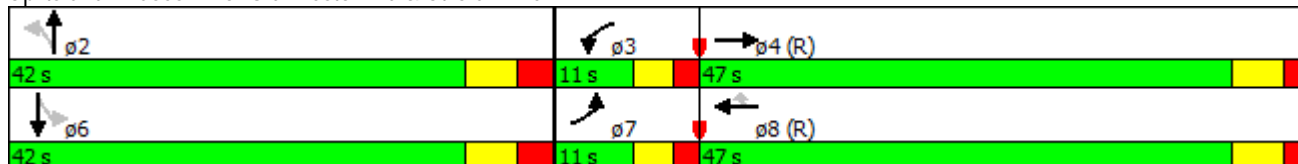


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	49	616	52	502	54	59	491	98	304
Lane Group Flow (vph)	51	969	54	518	56	0	731	0	500
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	11.0	47.0	11.0	47.0	47.0	42.0	42.0	42.0	42.0
Total Split (%)	11.0%	47.0%	11.0%	47.0%	47.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.49	0.69	0.64	0.64	0.11		0.76		0.78
Control Delay	55.8	21.1	92.1	23.9	0.9		32.7		37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	55.8	21.1	92.1	23.9	0.9		32.7		37.3
Queue Length 50th (m)	10.9	58.5	12.0	96.2	0.0		64.6		44.9
Queue Length 95th (m)	m11.0	m43.6	m#26.7	142.4	m0.8		88.3		#69.6
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	106	1398	85	814	512		961		637
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.48	0.69	0.64	0.64	0.11		0.76		0.78

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 23 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 2
Weekday AM Peak Hour

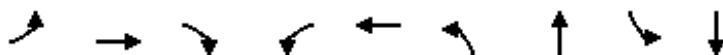


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	616	324	52	502	54	59	491	159	98	304	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.96		1.00	1.00	0.73		0.99			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	
Frt	1.00	0.95		1.00	1.00	0.85		0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1527	3016		1221	1842	1036		3095			2900	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84			0.59	
Satd. Flow (perm)	1527	3016		1221	1842	1036		2597			1723	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	51	635	334	54	518	56	61	506	164	101	313	86
RTOR Reduction (vph)	0	67	0	0	0	32	0	27	0	0	17	0
Lane Group Flow (vph)	51	902	0	54	518	24	0	704	0	0	483	0
Confl. Peds. (#/hr)	176		60	60		176	145		35	35		145
Confl. Bikes (#/hr)			8			3			8			6
Heavy Vehicles (%)	7%	5%	5%	38%	2%	6%	15%	8%	0%	15%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	18	0	7	15
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	4.8	42.2		4.8	42.2	42.2		35.0			35.0	
Effective Green, g (s)	5.8	43.2		5.8	43.2	43.2		36.0			36.0	
Actuated g/C Ratio	0.06	0.43		0.06	0.43	0.43		0.36			0.36	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	88	1302		70	795	447		934			620	
v/s Ratio Prot	0.03	c0.30		c0.04	0.28							
v/s Ratio Perm						0.02		0.27			c0.28	
v/c Ratio	0.58	0.69		0.77	0.65	0.05		0.75			0.78	
Uniform Delay, d1	45.9	23.0		46.4	22.5	16.5		28.1			28.5	
Progression Factor	1.19	1.02		1.43	0.89	0.52		1.00			1.00	
Incremental Delay, d2	0.8	0.3		35.3	3.6	0.2		5.6			9.3	
Delay (s)	55.7	23.7		101.7	23.6	8.7		33.7			37.8	
Level of Service	E	C		F	C	A		C			D	
Approach Delay (s)		25.3			29.0			33.7			37.8	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c	Critical Lane Group		

Queues
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 2
Weekday AM Peak Hour

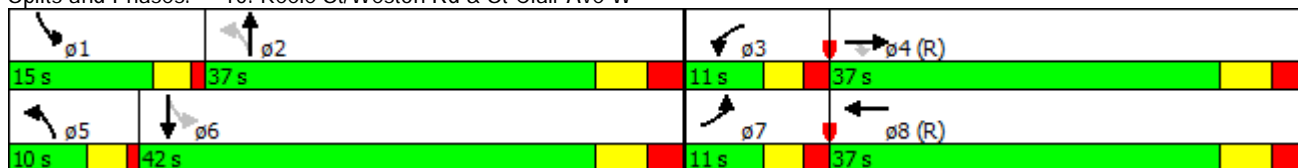


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	53	546	58	21	468	54	634	367	892
Lane Group Flow (vph)	59	607	64	23	696	60	791	408	1057
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	6.0	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	11.0	37.0	37.0	11.0	37.0	10.0	37.0	15.0	42.0
Total Split (%)	11.0%	37.0%	37.0%	11.0%	37.0%	10.0%	37.0%	15.0%	42.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	None	Max
v/c Ratio	0.53	0.88	0.13	0.20	0.67	0.35	0.79	1.36	0.86
Control Delay	52.2	56.1	6.4	39.1	35.8	24.3	44.9	200.6	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	56.1	6.4	39.1	35.8	24.3	44.9	200.6	27.4
Queue Length 50th (m)	12.1	131.8	1.3	4.8	70.5	8.9	91.0	-82.7	106.0
Queue Length 95th (m)	#28.9	#213.0	8.3	m8.0	89.2	18.8	111.1	#142.7	#147.5
Internal Link Dist (m)		287.2			365.7		277.9		432.6
Turn Bay Length (m)	27.0			37.0		55.0		80.0	
Base Capacity (vph)	111	686	480	113	1043	172	1006	299	1233
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.88	0.13	0.20	0.67	0.35	0.79	1.36	0.86

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis

10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 2
Weekday AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	546	58	21	468	158	54	634	78	367	892	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.69	1.00	0.99		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		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1589	1824	971	1618	3046		1439	3212		1610	3233	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.14	1.00		0.18	1.00	
Satd. Flow (perm)	1589	1824	971	1618	3046		210	3212		297	3233	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	607	64	23	520	176	60	704	87	408	991	66
RTOR Reduction (vph)	0	0	42	0	33	0	0	10	0	0	5	0
Lane Group Flow (vph)	59	607	22	23	663	0	60	781	0	408	1052	0
Confl. Peds. (#/hr)	29		263	263		29	31		115	115		31
Confl. Bikes (#/hr)			5			1			3			5
Heavy Vehicles (%)	6%	3%	7%	1%	2%	2%	17%	4%	4%	4%	5%	25%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	13	27	0	13	27
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	4.8	32.8	32.8	2.4	30.4		35.6	30.8		45.8	37.0	
Effective Green, g (s)	5.8	33.8	33.8	3.4	31.4		37.6	31.8		46.8	38.0	
Actuated g/C Ratio	0.06	0.34	0.34	0.03	0.31		0.38	0.32		0.47	0.38	
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	92	616	328	55	956		150	1021		296	1228	
v/s Ratio Prot	c0.04	c0.33		0.01	0.22		0.02	0.24		c0.17	0.33	
v/s Ratio Perm			0.02				0.13			c0.48		
v/c Ratio	0.64	0.99	0.07	0.42	0.69		0.40	0.77		1.38	0.86	
Uniform Delay, d1	46.1	32.9	22.4	47.3	30.1		21.7	30.7		20.4	28.5	
Progression Factor	0.77	1.37	1.00	0.81	1.20		1.34	1.25		0.63	0.67	
Incremental Delay, d2	13.7	32.1	0.4	4.0	3.3		1.6	5.0		188.3	7.1	
Delay (s)	49.4	77.0	22.8	42.3	39.3		30.7	43.5		201.2	26.1	
Level of Service	D	E	C	D	D		C	D		F	C	
Approach Delay (s)		70.0			39.3			42.6			74.9	
Approach LOS		E			D			D			E	

Intersection Summary

HCM 2000 Control Delay	59.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 2
Weekday PM Peak Hour

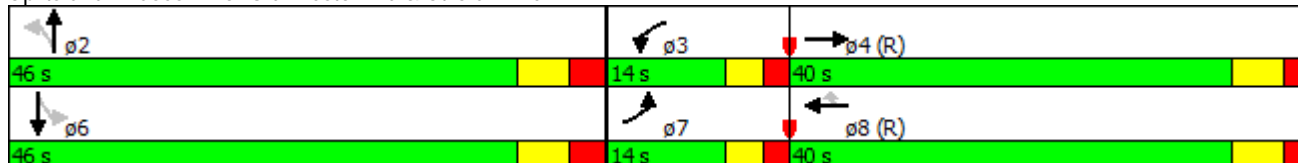


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖		↕		↕
Volume (vph)	130	494	114	386	194	249	323	49	444
Lane Group Flow (vph)	134	852	118	398	200	0	641	0	552
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	40.0	14.0	40.0	40.0	46.0	46.0	46.0	46.0
Total Split (%)	14.0%	40.0%	14.0%	40.0%	40.0%	46.0%	46.0%	46.0%	46.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.85	0.75	0.72	0.62	0.44		0.96dl		0.50
Control Delay	50.2	21.3	70.1	28.2	13.4		35.8		24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	50.2	21.3	70.1	28.2	13.4		35.8		24.1
Queue Length 50th (m)	28.8	52.4	25.9	46.0	11.3		58.9		42.8
Queue Length 95th (m)	m28.1	m49.7	m36.8	m77.0	m19.5		#86.2		59.2
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	157	1137	168	644	452		792		1096
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.85	0.75	0.70	0.62	0.44		0.81		0.50

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 69 (69%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 2
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	494	333	114	386	194	249	323	49	49	444	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.90		1.00	1.00	0.74		0.97			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.98			0.99	
Frt	1.00	0.94		1.00	1.00	0.85		0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			1.00	
Satd. Flow (prot)	1571	2911		1685	1842	1111		3201			3326	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.60			0.82	
Satd. Flow (perm)	1571	2911		1685	1842	1111		1967			2726	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	134	509	343	118	398	200	257	333	51	51	458	43
RTOR Reduction (vph)	0	112	0	0	0	64	0	7	0	0	6	0
Lane Group Flow (vph)	134	740	0	118	398	136	0	634	0	0	546	0
Confl. Peds. (#/hr)	163		149	149		163	62		307	307		62
Confl. Bikes (#/hr)			21			11			18			13
Heavy Vehicles (%)	4%	1%	1%	0%	2%	1%	3%	2%	0%	1%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	10	0	6	12
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	9.0	34.2		8.8	34.0	34.0		39.0			39.0	
Effective Green, g (s)	10.0	35.2		9.8	35.0	35.0		40.0			40.0	
Actuated g/C Ratio	0.10	0.35		0.10	0.35	0.35		0.40			0.40	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	157	1024		165	644	388		786			1090	
v/s Ratio Prot	c0.09	c0.25		0.07	0.22							
v/s Ratio Perm						0.12		c0.32			0.20	
v/c Ratio	0.85	0.72		0.72	0.62	0.35		0.96dl			0.50	
Uniform Delay, d1	44.3	28.2		43.7	27.0	24.1		26.6			22.5	
Progression Factor	0.96	0.92		1.18	0.91	0.86		1.00			1.00	
Incremental Delay, d2	4.3	0.4		10.1	3.2	1.8		8.7			1.6	
Delay (s)	47.0	26.2		61.8	27.6	22.6		35.3			24.2	
Level of Service	D	C		E	C	C		D			C	
Approach Delay (s)		29.0			31.8			35.3			24.2	
Approach LOS		C			C			D			C	

Intersection Summary

HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

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

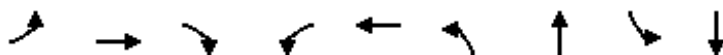
c Critical Lane Group

Queues

SHORT TERM OPTION 2

10: Keele St/Weston Rd & St Clair Ave W

Weekday PM Peak Hour

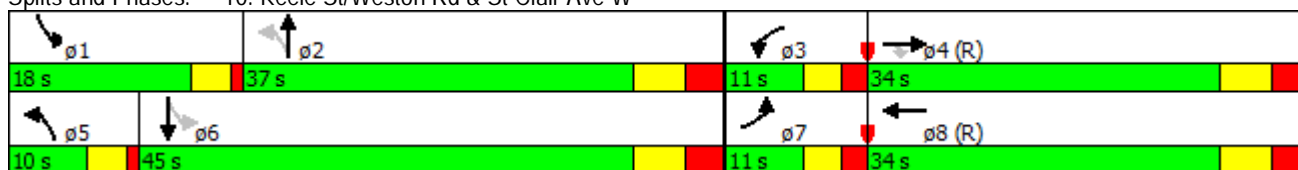


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↗↘	↖	↗↘	↖	↗↘
Volume (vph)	99	498	36	50	470	96	665	374	601
Lane Group Flow (vph)	105	530	38	53	683	102	801	398	689
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	6.0	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	11.0	34.0	34.0	11.0	34.0	10.0	37.0	18.0	45.0
Total Split (%)	11.0%	34.0%	34.0%	11.0%	34.0%	10.0%	37.0%	18.0%	45.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max	C-Max	Min	C-Max	None	Max	None	Max
v/c Ratio	0.91	1.02	0.09	0.47	0.77	0.29	0.80	1.12	0.49
Control Delay	111.4	81.4	0.4	73.2	30.0	19.6	41.4	105.6	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.4	81.4	0.4	73.2	30.0	19.6	41.4	105.6	13.9
Queue Length 50th (m)	21.7	~111.4	0.0	0.0	63.3	9.8	59.2	~63.6	54.8
Queue Length 95th (m)	#54.3	#179.6	0.0	m0.0	m74.4	26.6	97.1	#124.0	45.9
Internal Link Dist (m)		287.2			365.7		277.9		432.6
Turn Bay Length (m)	27.0			37.0		55.0		80.0	
Base Capacity (vph)	115	520	411	112	886	348	1007	355	1395
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	1.02	0.09	0.47	0.77	0.29	0.80	1.12	0.49

Intersection Summary

- Cycle Length: 100
- Actuated Cycle Length: 100
- Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green
- Natural Cycle: 100
- Control Type: Actuated-Coordinated
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 2
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	498	36	50	470	172	96	665	88	374	601	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.68	1.00	0.99		1.00	0.96		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	1860	993	1602	3034		1672	3219		1669	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.39	1.00		0.17	1.00	
Satd. Flow (perm)	1652	1860	993	1602	3034		686	3219		298	3390	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	105	530	38	53	500	183	102	707	94	398	639	50
RTOR Reduction (vph)	0	0	28	0	38	0	0	10	0	0	5	0
Lane Group Flow (vph)	105	530	10	53	645	0	102	791	0	398	684	0
Confl. Peds. (#/hr)	31		303	303		31	56		197	197		56
Confl. Bikes (#/hr)			7			3			2			11
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%	0%	3%	2%	0%	2%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	16	0	5	11
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	6.0	26.2	26.2	6.0	26.2		35.6	30.8		48.8	40.0	
Effective Green, g (s)	7.0	27.2	27.2	7.0	27.2		37.6	31.8		49.8	41.0	
Actuated g/C Ratio	0.07	0.27	0.27	0.07	0.27		0.38	0.32		0.50	0.41	
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	115	505	270	112	825		315	1023		354	1389	
v/s Ratio Prot	c0.06	c0.28		0.03	0.21		0.02	0.25		c0.17	0.20	
v/s Ratio Perm			0.01				0.10			c0.39		
v/c Ratio	0.91	1.05	0.04	0.47	0.78		0.32	0.77		1.12	0.49	
Uniform Delay, d1	46.2	36.4	26.8	44.7	33.7		20.7	30.8		23.1	21.8	
Progression Factor	1.00	1.00	1.00	1.38	0.81		1.34	1.14		0.94	0.57	
Incremental Delay, d2	57.2	53.7	0.3	2.4	5.6		0.5	4.9		83.9	1.1	
Delay (s)	103.4	90.1	27.0	64.0	32.9		28.3	40.0		105.7	13.6	
Level of Service	F	F	C	E	C		C	D		F	B	
Approach Delay (s)		88.6			35.2			38.7			47.3	
Approach LOS		F			D			D			D	

Intersection Summary

HCM 2000 Control Delay	50.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 3A
Weekday AM Peak Hour

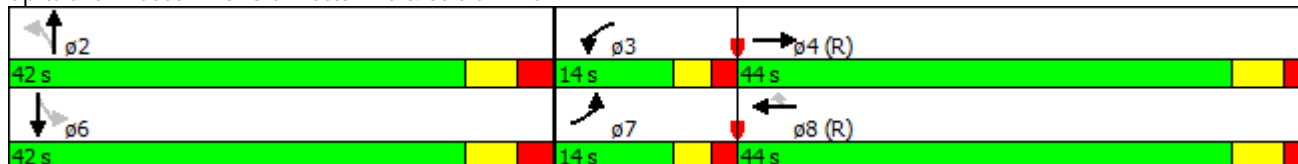


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↗		↕		↕
Volume (vph)	49	616	52	502	54	59	491	98	304
Lane Group Flow (vph)	51	969	54	518	56	0	731	0	500
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	44.0	14.0	44.0	44.0	42.0	42.0	42.0	42.0
Total Split (%)	14.0%	44.0%	14.0%	44.0%	44.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.38	0.73	0.49	0.67	0.11		0.76		0.78
Control Delay	59.3	24.5	75.3	26.9	0.9		32.7		37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	59.3	24.5	75.3	26.9	0.9		32.7		37.3
Queue Length 50th (m)	10.8	102.7	12.0	102.1	0.0		64.6		44.9
Queue Length 95th (m)	m14.5	m47.5	m22.8	144.8	m0.8		88.3		#69.6
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	152	1331	122	777	493		961		637
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.34	0.73	0.44	0.67	0.11		0.76		0.78

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 23 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 3A
Weekday AM Peak Hour



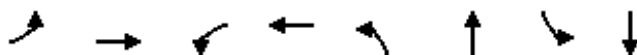
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	616	324	52	502	54	59	491	159	98	304	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.96		1.00	1.00	0.73		0.99			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	
Frt	1.00	0.95		1.00	1.00	0.85		0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1527	3015		1221	1842	1036		3095			2900	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84			0.59	
Satd. Flow (perm)	1527	3015		1221	1842	1036		2597			1723	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	51	635	334	54	518	56	61	506	164	101	313	86
RTOR Reduction (vph)	0	66	0	0	0	33	0	27	0	0	17	0
Lane Group Flow (vph)	51	903	0	54	518	23	0	704	0	0	483	0
Confl. Peds. (#/hr)	176		60	60		176	145		35	35		145
Confl. Bikes (#/hr)			8			3			8			6
Heavy Vehicles (%)	7%	5%	5%	38%	2%	6%	15%	8%	0%	15%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	18	0	7	15
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	6.8	40.0		7.0	40.2	40.2		35.0			35.0	
Effective Green, g (s)	7.8	41.0		8.0	41.2	41.2		36.0			36.0	
Actuated g/C Ratio	0.08	0.41		0.08	0.41	0.41		0.36			0.36	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	119	1236		97	758	426		934			620	
v/s Ratio Prot	0.03	c0.30		c0.04	0.28							
v/s Ratio Perm						0.02		0.27			c0.28	
v/c Ratio	0.43	0.73		0.56	0.68	0.05		0.75			0.78	
Uniform Delay, d1	44.0	24.8		44.3	24.1	17.7		28.1			28.5	
Progression Factor	1.27	1.00		1.44	0.92	0.46		1.00			1.00	
Incremental Delay, d2	1.4	2.2		5.8	4.3	0.2		5.6			9.3	
Delay (s)	57.5	27.0		69.6	26.4	8.3		33.7			37.8	
Level of Service	E	C		E	C	A		C			D	
Approach Delay (s)		28.5			28.5			33.7			37.8	
Approach LOS		C			C			C			D	

Intersection Summary

HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 3A
Weekday AM Peak Hour

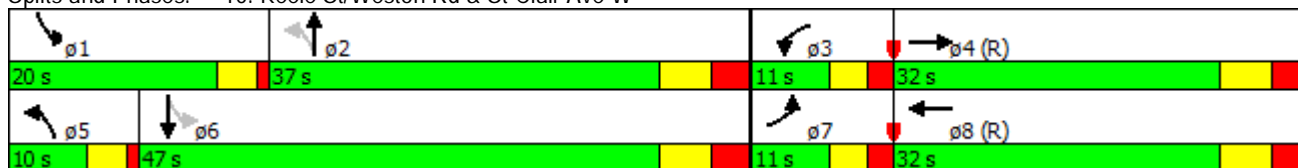


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Volume (vph)	53	546	21	468	54	634	367	892
Lane Group Flow (vph)	59	671	23	696	60	791	408	1057
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases					2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	6.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	11.0	32.0	11.0	32.0	10.0	37.0	20.0	47.0
Total Split (%)	11.0%	32.0%	11.0%	32.0%	10.0%	37.0%	20.0%	47.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	Max	None	Max
v/c Ratio	0.53	0.62	0.20	0.78	0.30	0.78	1.07	0.76
Control Delay	52.2	38.3	38.7	41.0	19.7	44.6	81.5	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	38.3	38.7	41.0	19.7	44.6	81.5	18.8
Queue Length 50th (m)	12.1	71.2	4.9	73.3	8.2	91.0	-63.9	96.8
Queue Length 95th (m)	#28.9	95.6	m7.7	#98.5	17.3	111.1	#123.8	124.4
Internal Link Dist (m)		287.2		365.7		277.9		432.6
Turn Bay Length (m)	27.0		37.0		55.0		80.0	
Base Capacity (vph)	111	1084	113	891	203	1015	382	1395
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.62	0.20	0.78	0.30	0.78	1.07	0.76

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 3A
Weekday AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	546	58	21	468	158	54	634	78	367	892	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0		4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.97		1.00	0.99		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	
Frt	1.00	0.99		1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1589	3303		1618	3046		1438	3242		1614	3233	
Flt Permitted	0.95	1.00		0.95	1.00		0.20	1.00		0.18	1.00	
Satd. Flow (perm)	1589	3303		1618	3046		303	3242		297	3233	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	607	64	23	520	176	60	704	87	408	991	66
RTOR Reduction (vph)	0	8	0	0	33	0	0	10	0	0	5	0
Lane Group Flow (vph)	59	663	0	23	663	0	60	781	0	408	1052	0
Confl. Peds. (#/hr)	29		263	263		29	31		115	115		31
Confl. Bikes (#/hr)			5			1			3			5
Heavy Vehicles (%)	6%	3%	7%	1%	2%	2%	17%	4%	4%	4%	5%	25%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	13	27	0	13	27
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	4.8	27.8		2.4	25.4		35.6	30.8		50.8	42.0	
Effective Green, g (s)	5.8	28.8		3.4	26.4		37.6	31.8		51.8	43.0	
Actuated g/C Ratio	0.06	0.29		0.03	0.26		0.38	0.32		0.52	0.43	
Clearance Time (s)	5.0	7.0		5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	92	951		55	804		179	1030		377	1390	
v/s Ratio Prot	c0.04	0.20		0.01	c0.22		0.02	0.24		c0.18	0.33	
v/s Ratio Perm							0.11			c0.38		
v/c Ratio	0.64	0.70		0.42	0.82		0.34	0.76		1.08	0.76	
Uniform Delay, d1	46.1	31.7		47.3	34.6		20.7	30.7		23.5	24.1	
Progression Factor	0.77	1.21		0.80	1.11		1.31	1.25		0.68	0.61	
Incremental Delay, d2	13.7	4.0		3.9	7.4		1.0	4.8		67.8	3.5	
Delay (s)	49.4	42.5		41.9	45.9		28.2	43.2		83.7	18.3	
Level of Service	D	D		D	D		C	D		F	B	
Approach Delay (s)		43.1			45.8			42.1			36.5	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 3-A
Weekday PM Peak Hour

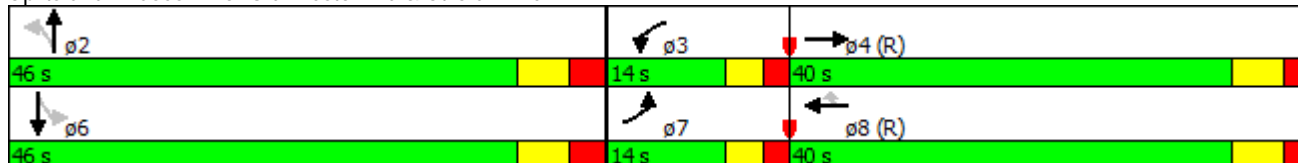


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↗		↕		↕
Volume (vph)	130	494	114	386	194	249	323	49	444
Lane Group Flow (vph)	134	852	118	398	200	0	641	0	552
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	40.0	14.0	40.0	40.0	46.0	46.0	46.0	46.0
Total Split (%)	14.0%	40.0%	14.0%	40.0%	40.0%	46.0%	46.0%	46.0%	46.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.85	0.75	0.72	0.62	0.44		0.96dl		0.50
Control Delay	71.6	25.8	70.1	28.2	13.4		35.8		24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	71.6	25.8	70.1	28.2	13.4		35.8		24.1
Queue Length 50th (m)	27.8	51.1	25.9	46.0	11.3		58.9		42.8
Queue Length 95th (m)	m#41.2	m69.1	m36.8	m77.0	m19.5		#86.2		59.2
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	157	1137	168	644	452		792		1096
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.85	0.75	0.70	0.62	0.44		0.81		0.50

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 69 (69%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 3-A
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	494	333	114	386	194	249	323	49	49	444	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.90		1.00	1.00	0.74		0.97			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.98			0.99	
Frt	1.00	0.94		1.00	1.00	0.85		0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			1.00	
Satd. Flow (prot)	1571	2911		1685	1842	1111		3201			3326	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.60			0.82	
Satd. Flow (perm)	1571	2911		1685	1842	1111		1967			2726	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	134	509	343	118	398	200	257	333	51	51	458	43
RTOR Reduction (vph)	0	112	0	0	0	64	0	7	0	0	6	0
Lane Group Flow (vph)	134	740	0	118	398	136	0	634	0	0	546	0
Confl. Peds. (#/hr)	163		149	149		163	62		307	307		62
Confl. Bikes (#/hr)			21			11			18			13
Heavy Vehicles (%)	4%	1%	1%	0%	2%	1%	3%	2%	0%	1%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	10	0	6	12
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	9.0	34.2		8.8	34.0	34.0		39.0			39.0	
Effective Green, g (s)	10.0	35.2		9.8	35.0	35.0		40.0			40.0	
Actuated g/C Ratio	0.10	0.35		0.10	0.35	0.35		0.40			0.40	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	157	1024		165	644	388		786			1090	
v/s Ratio Prot	c0.09	c0.25		0.07	0.22							
v/s Ratio Perm						0.12		c0.32			0.20	
v/c Ratio	0.85	0.72		0.72	0.62	0.35		0.96dl			0.50	
Uniform Delay, d1	44.3	28.2		43.7	27.0	24.1		26.6			22.5	
Progression Factor	0.95	1.01		1.18	0.91	0.86		1.00			1.00	
Incremental Delay, d2	22.0	2.6		10.1	3.2	1.8		8.7			1.6	
Delay (s)	64.3	31.2		61.8	27.6	22.6		35.3			24.2	
Level of Service	E	C		E	C	C		D			C	
Approach Delay (s)		35.7			31.8			35.3			24.2	
Approach LOS		D			C			D			C	

Intersection Summary

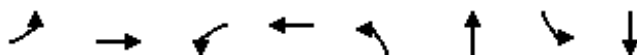
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

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

c Critical Lane Group

Queues
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 3-A
Weekday PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Volume (vph)	99	498	50	470	96	665	374	601
Lane Group Flow (vph)	105	568	53	683	102	801	398	689
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases					2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	6.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	11.0	32.0	11.0	32.0	10.0	37.0	20.0	47.0
Total Split (%)	11.0%	32.0%	11.0%	32.0%	10.0%	37.0%	20.0%	47.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max	Min	C-Max	None	Max	None	Max
v/c Ratio	0.91	0.64	0.47	0.83	0.29	0.78	1.01	0.47
Control Delay	111.4	36.2	73.2	32.7	18.5	40.8	69.7	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.4	36.2	73.2	32.7	18.5	40.8	69.7	12.2
Queue Length 50th (m)	21.7	53.4	0.0	64.1	9.4	59.2	-22.7	51.2
Queue Length 95th (m)	#54.3	72.1	m0.0	m#79.9	25.7	97.1	#115.1	30.5
Internal Link Dist (m)		287.2		365.7		277.9		432.6
Turn Bay Length (m)	27.0		37.0		55.0		80.0	
Base Capacity (vph)	115	894	112	826	348	1024	393	1463
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.64	0.47	0.83	0.29	0.78	1.01	0.47

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 3-A
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	498	36	50	470	172	96	665	88	374	601	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0		4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	3419		1602	3033		1672	3273		1675	3390	
Flt Permitted	0.95	1.00		0.95	1.00		0.39	1.00		0.17	1.00	
Satd. Flow (perm)	1652	3419		1602	3033		686	3273		300	3390	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	105	530	38	53	500	183	102	707	94	398	639	50
RTOR Reduction (vph)	0	5	0	0	38	0	0	10	0	0	6	0
Lane Group Flow (vph)	105	563	0	53	645	0	102	791	0	398	683	0
Confl. Peds. (#/hr)	31		303	303		31	56		197	197		56
Confl. Bikes (#/hr)			7			3			2			11
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%	0%	3%	2%	0%	2%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	16	0	5	11
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	6.0	24.2		6.0	24.2		35.6	30.8		50.8	42.0	
Effective Green, g (s)	7.0	25.2		7.0	25.2		37.6	31.8		51.8	43.0	
Actuated g/C Ratio	0.07	0.25		0.07	0.25		0.38	0.32		0.52	0.43	
Clearance Time (s)	5.0	7.0		5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	115	861		112	764		315	1040		389	1457	
v/s Ratio Prot	c0.06	0.16		0.03	c0.21		0.02	0.24		c0.17	0.20	
v/s Ratio Perm							0.10			c0.36		
v/c Ratio	0.91	0.65		0.47	0.84		0.32	0.76		1.02	0.47	
Uniform Delay, d1	46.2	33.5		44.7	35.5		20.7	30.7		24.0	20.3	
Progression Factor	1.00	1.00		1.38	0.77		1.33	1.14		0.95	0.54	
Incremental Delay, d2	57.2	3.8		2.4	8.6		0.5	4.6		49.6	1.0	
Delay (s)	103.4	37.3		64.0	36.0		28.2	39.5		72.5	12.0	
Level of Service	F	D		E	D		C	D		E	B	
Approach Delay (s)		47.6			38.0			38.2			34.1	
Approach LOS		D			D			D			C	

Intersection Summary

HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

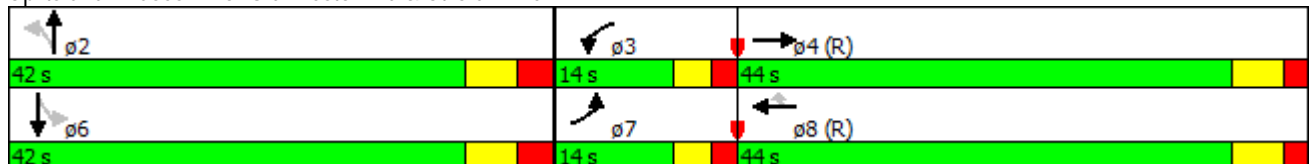


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↗		↕		↕
Volume (vph)	49	616	52	502	54	59	491	98	304
Lane Group Flow (vph)	51	969	54	518	56	0	731	0	500
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	44.0	14.0	44.0	44.0	42.0	42.0	42.0	42.0
Total Split (%)	14.0%	44.0%	14.0%	44.0%	44.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.38	0.73	0.49	0.67	0.11		0.76		0.78
Control Delay	60.4	25.1	75.3	26.9	0.9		32.7		37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	60.4	25.1	75.3	26.9	0.9		32.7		37.3
Queue Length 50th (m)	10.9	102.6	12.0	102.1	0.0		64.6		44.9
Queue Length 95th (m)	m16.2	m47.0	m22.8	144.8	m0.8		88.3		#69.6
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	152	1331	122	777	493		961		637
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.34	0.73	0.44	0.67	0.11		0.76		0.78

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 23 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

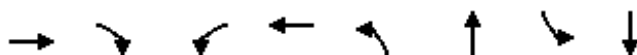
SHORT TERM OPTION 3B
02/04/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	616	324	52	502	54	59	491	159	98	304	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.96		1.00	1.00	0.73		0.99			0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	
Frt	1.00	0.95		1.00	1.00	0.85		0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1527	3015		1221	1842	1036		3095			2900	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84			0.59	
Satd. Flow (perm)	1527	3015		1221	1842	1036		2597			1723	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	51	635	334	54	518	56	61	506	164	101	313	86
RTOR Reduction (vph)	0	66	0	0	0	33	0	27	0	0	17	0
Lane Group Flow (vph)	51	903	0	54	518	23	0	704	0	0	483	0
Confl. Peds. (#/hr)	176		60	60		176	145		35	35		145
Confl. Bikes (#/hr)			8			3			8			6
Heavy Vehicles (%)	7%	5%	5%	38%	2%	6%	15%	8%	0%	15%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	18	0	7	15
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	6.8	40.0		7.0	40.2	40.2		35.0			35.0	
Effective Green, g (s)	7.8	41.0		8.0	41.2	41.2		36.0			36.0	
Actuated g/C Ratio	0.08	0.41		0.08	0.41	0.41		0.36			0.36	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	119	1236		97	758	426		934			620	
v/s Ratio Prot	0.03	c0.30		c0.04	0.28							
v/s Ratio Perm						0.02		0.27			c0.28	
v/c Ratio	0.43	0.73		0.56	0.68	0.05		0.75			0.78	
Uniform Delay, d1	44.0	24.8		44.3	24.1	17.7		28.1			28.5	
Progression Factor	1.29	1.01		1.44	0.92	0.46		1.00			1.00	
Incremental Delay, d2	1.6	2.5		5.8	4.3	0.2		5.6			9.3	
Delay (s)	58.4	27.7		69.6	26.4	8.3		33.7			37.8	
Level of Service	E	C		E	C	A		C			D	
Approach Delay (s)		29.2			28.5			33.7			37.8	
Approach LOS		C			C			C			D	

Intersection Summary

HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

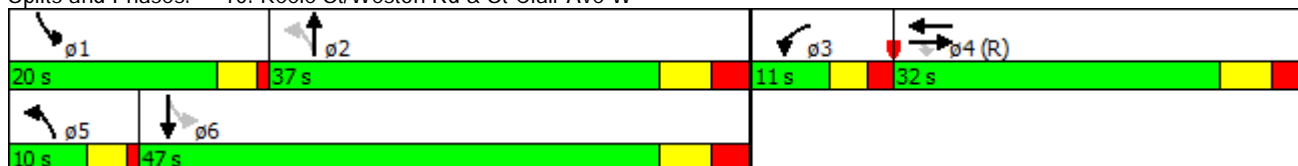


Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑↑	↑	↑↑
Volume (vph)	546	58	21	468	54	634	367	892
Lane Group Flow (vph)	607	64	23	696	60	791	408	1057
Turn Type	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	4		3	4	5	2	1	6
Permitted Phases		4			2		6	
Detector Phase	4	4	3	4	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	32.0	32.0	11.0	32.0	10.0	37.0	20.0	47.0
Total Split (%)	32.0%	32.0%	11.0%	32.0%	10.0%	37.0%	20.0%	47.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	None	Max	None	Max
v/c Ratio	0.54	0.15	0.20	0.64	0.30	0.78	1.07	0.76
Control Delay	36.9	6.6	38.7	33.6	19.7	44.6	80.7	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	6.6	38.7	33.6	19.7	44.6	80.7	18.0
Queue Length 50th (m)	64.2	1.4	4.9	64.7	8.2	91.0	~63.4	96.7
Queue Length 95th (m)	87.9	8.4	m7.7	92.0	17.3	111.1	#123.8	124.4
Internal Link Dist (m)	287.2			365.7		277.9		432.6
Turn Bay Length (m)			37.0		55.0		80.0	
Base Capacity (vph)	1130	441	113	1082	203	1015	382	1395
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.15	0.20	0.64	0.30	0.78	1.07	0.76

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 1 (1%), Referenced to phase 4:EBWB and 8:, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 3B
02/04/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑		↑	↑↑		↑	↑↑	
Volume (vph)	0	546	58	21	468	158	54	634	78	367	892	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)		6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.69	1.00	0.99		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	
Frt		1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3466	971	1618	3227		1438	3242		1614	3233	
Flt Permitted		1.00	1.00	0.95	1.00		0.20	1.00		0.18	1.00	
Satd. Flow (perm)		3466	971	1618	3227		303	3242		297	3233	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	607	64	23	520	176	60	704	87	408	991	66
RTOR Reduction (vph)	0	0	46	0	32	0	0	10	0	0	5	0
Lane Group Flow (vph)	0	607	18	23	664	0	60	781	0	408	1052	0
Confl. Peds. (#/hr)	29		263	263		29	31		115	115		31
Confl. Bikes (#/hr)			5			1			3			5
Heavy Vehicles (%)	6%	3%	7%	1%	2%	2%	17%	4%	4%	4%	5%	25%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	13	27	0	13	27
Turn Type		NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	4		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		27.8	27.8	2.4	27.8		35.6	30.8		50.8	42.0	
Effective Green, g (s)		28.8	28.8	3.4	28.8		37.6	31.8		51.8	43.0	
Actuated g/C Ratio		0.29	0.29	0.03	0.29		0.38	0.32		0.52	0.43	
Clearance Time (s)		7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		998	279	55	929		179	1030		377	1390	
v/s Ratio Prot		0.18		c0.01	c0.21		0.02	0.24		c0.18	0.33	
v/s Ratio Perm			0.02				0.11			c0.38		
v/c Ratio		0.61	0.07	0.42	0.71		0.34	0.76		1.08	0.76	
Uniform Delay, d1		30.7	25.8	47.3	31.9		20.7	30.7		23.5	24.1	
Progression Factor		1.21	1.00	0.80	1.11		1.31	1.25		0.64	0.58	
Incremental Delay, d2		2.7	0.4	3.9	3.6		1.0	4.8		67.6	3.5	
Delay (s)		39.9	26.3	41.9	39.0		28.2	43.2		82.7	17.4	
Level of Service		D	C	D	D		C	D		F	B	
Approach Delay (s)		38.6			39.1			42.1			35.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 3-B
Weekday PM Peak Hour

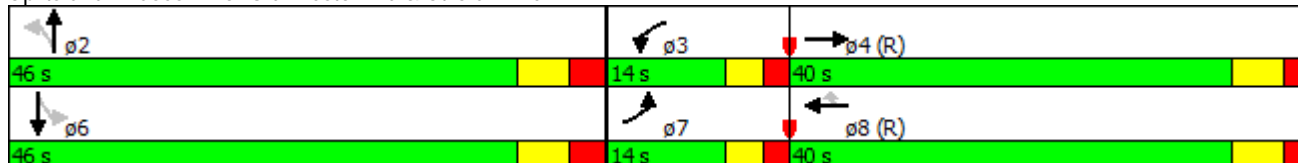


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↗		↕		↕
Volume (vph)	130	494	114	386	194	249	323	49	444
Lane Group Flow (vph)	134	852	118	398	200	0	641	0	552
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	3	8			2		6
Permitted Phases					8	2		6	
Detector Phase	7	4	3	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	40.0	14.0	40.0	40.0	46.0	46.0	46.0	46.0
Total Split (%)	14.0%	40.0%	14.0%	40.0%	40.0%	46.0%	46.0%	46.0%	46.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0		6.0		6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.85	0.75	0.72	0.62	0.44		0.96dl		0.50
Control Delay	73.5	26.3	70.1	28.2	13.4		35.8		24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	73.5	26.3	70.1	28.2	13.4		35.8		24.1
Queue Length 50th (m)	27.8	52.1	25.9	46.0	11.3		58.9		42.8
Queue Length 95th (m)	m#44.1	m69.5	m36.8	m77.0	m19.5		#86.2		59.2
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0		39.0						
Base Capacity (vph)	157	1137	168	644	452		792		1096
Starvation Cap Reductn	0	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0		0
Reduced v/c Ratio	0.85	0.75	0.70	0.62	0.44		0.81		0.50

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 69 (69%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 3-B
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗		↕			↕	
Volume (vph)	130	494	333	114	386	194	249	323	49	49	444	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%			0%	
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.90		1.00	1.00	0.74		0.97			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.98			0.99	
Frt	1.00	0.94		1.00	1.00	0.85		0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			1.00	
Satd. Flow (prot)	1571	2911		1685	1842	1111		3201			3326	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.60			0.82	
Satd. Flow (perm)	1571	2911		1685	1842	1111		1967			2726	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	134	509	343	118	398	200	257	333	51	51	458	43
RTOR Reduction (vph)	0	112	0	0	0	64	0	7	0	0	6	0
Lane Group Flow (vph)	134	740	0	118	398	136	0	634	0	0	546	0
Confl. Peds. (#/hr)	163		149	149		163	62		307	307		62
Confl. Bikes (#/hr)			21			11			18			13
Heavy Vehicles (%)	4%	1%	1%	0%	2%	1%	3%	2%	0%	1%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	10	0	6	12
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		
Actuated Green, G (s)	9.0	34.2		8.8	34.0	34.0		39.0			39.0	
Effective Green, g (s)	10.0	35.2		9.8	35.0	35.0		40.0			40.0	
Actuated g/C Ratio	0.10	0.35		0.10	0.35	0.35		0.40			0.40	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	157	1024		165	644	388		786			1090	
v/s Ratio Prot	c0.09	c0.25		0.07	0.22							
v/s Ratio Perm						0.12		c0.32			0.20	
v/c Ratio	0.85	0.72		0.72	0.62	0.35		0.96dl			0.50	
Uniform Delay, d1	44.3	28.2		43.7	27.0	24.1		26.6			22.5	
Progression Factor	0.96	1.03		1.18	0.91	0.86		1.00			1.00	
Incremental Delay, d2	23.3	2.8		10.1	3.2	1.8		8.7			1.6	
Delay (s)	66.0	31.7		61.8	27.6	22.6		35.3			24.2	
Level of Service	E	C		E	C	C		D			C	
Approach Delay (s)		36.4			31.8			35.3			24.2	
Approach LOS		D			C			D			C	

Intersection Summary

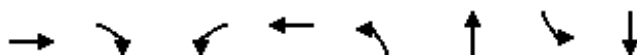
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

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

c Critical Lane Group

Queues
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 3-B
Weekday PM Peak Hour

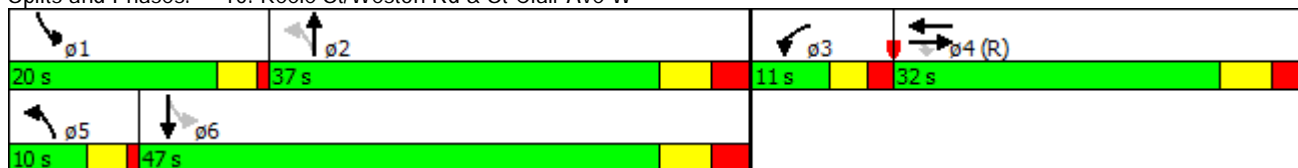


Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑↑	↗	↖	↑↓	↖	↑↓	↖	↑↓
Volume (vph)	498	36	50	470	96	665	374	601
Lane Group Flow (vph)	530	38	53	683	102	801	398	689
Turn Type	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	4		3	4	5	2	1	6
Permitted Phases		4			2		6	
Detector Phase	4	4	3	4	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	32.0	32.0	11.0	32.0	10.0	37.0	20.0	47.0
Total Split (%)	32.0%	32.0%	11.0%	32.0%	10.0%	37.0%	20.0%	47.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	Min	C-Max	None	Max	None	Max
v/c Ratio	0.58	0.10	0.47	0.83	0.29	0.78	1.01	0.47
Control Delay	35.2	0.5	73.2	32.7	18.5	40.8	72.4	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.2	0.5	73.2	32.7	18.5	40.8	72.4	10.7
Queue Length 50th (m)	49.6	0.0	0.0	64.1	9.4	59.2	~34.1	21.4
Queue Length 95th (m)	67.1	0.0	m0.0	m#79.9	25.7	97.1	#115.1	30.5
Internal Link Dist (m)	287.2			365.7		277.9		432.6
Turn Bay Length (m)			37.0		55.0		80.0	
Base Capacity (vph)	919	395	112	826	348	1024	393	1463
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.10	0.47	0.83	0.29	0.78	1.01	0.47

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 1 (1%), Referenced to phase 4:EBWB and 8:, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 3-B
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑		↑	↑↑		↑	↑↑	
Volume (vph)	0	498	36	50	470	172	96	665	88	374	601	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)		6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.68	1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		0.99	1.00		0.99	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3535	993	1602	3033		1672	3273		1675	3390	
Flt Permitted		1.00	1.00	0.95	1.00		0.39	1.00		0.17	1.00	
Satd. Flow (perm)		3535	993	1602	3033		686	3273		300	3390	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	530	38	53	500	183	102	707	94	398	639	50
RTOR Reduction (vph)	0	0	28	0	38	0	0	10	0	0	6	0
Lane Group Flow (vph)	0	530	10	53	645	0	102	791	0	398	683	0
Confl. Peds. (#/hr)	31		303	303		31	56		197	197		56
Confl. Bikes (#/hr)			7			3			2			11
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%	0%	3%	2%	0%	2%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	16	0	5	11
Turn Type		NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	4		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		24.2	24.2	6.0	24.2		35.6	30.8		50.8	42.0	
Effective Green, g (s)		25.2	25.2	7.0	25.2		37.6	31.8		51.8	43.0	
Actuated g/C Ratio		0.25	0.25	0.07	0.25		0.38	0.32		0.52	0.43	
Clearance Time (s)		7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		890	250	112	764		315	1040		389	1457	
v/s Ratio Prot		0.15		c0.03	c0.21		0.02	0.24		c0.17	0.20	
v/s Ratio Perm			0.01				0.10			c0.36		
v/c Ratio		0.60	0.04	0.47	0.84		0.32	0.76		1.02	0.47	
Uniform Delay, d1		32.9	28.2	44.7	35.5		20.7	30.7		24.0	20.3	
Progression Factor		1.00	1.00	1.38	0.77		1.33	1.14		1.14	0.46	
Incremental Delay, d2		2.9	0.3	2.4	8.6		0.5	4.6		49.1	1.0	
Delay (s)		35.8	28.5	64.0	36.0		28.2	39.5		76.5	10.4	
Level of Service		D	C	E	D		C	D		E	B	
Approach Delay (s)		35.4			38.0			38.2			34.6	
Approach LOS		D			D			D			C	

Intersection Summary

HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 5
Weekday AM Peak Hour

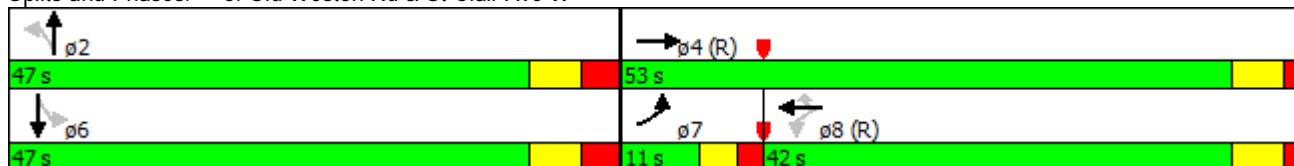


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗		↖	↗		↖		↗
Volume (vph)	49	616	52	502	54	59	491	98	304
Lane Group Flow (vph)	51	969	0	572	56	0	731	0	500
Turn Type	Prot	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		8			2		6
Permitted Phases			8		8	2		6	
Detector Phase	7	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	26.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	11.0	53.0	42.0	42.0	42.0	47.0	47.0	47.0	47.0
Total Split (%)	11.0%	53.0%	42.0%	42.0%	42.0%	47.0%	47.0%	47.0%	47.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0		5.0	5.0		6.0		6.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.49	0.64		0.58	0.12		0.65		0.65
Control Delay	62.6	17.1		25.1	1.0		25.6		27.2
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	62.6	17.1		25.1	1.0		25.6		27.2
Queue Length 50th (m)	10.7	47.1		59.0	0.0		58.2		39.8
Queue Length 95th (m)	m11.4	m52.5		78.7	m0.8		79.4		59.3
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0				39.0				
Base Capacity (vph)	106	1515		978	466		1117		764
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.48	0.64		0.58	0.12		0.65		0.65

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 23 (23%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 5
Weekday AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	616	324	52	502	54	59	491	159	98	304	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%			0%	
Total Lost time (s)	4.0	5.0			5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.96			1.00	0.73		0.99			0.97	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.95			1.00	0.85		0.97			0.97	
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1527	3016			3223	1036		3108			2961	
Flt Permitted	0.95	1.00			0.77	1.00		0.85			0.61	
Satd. Flow (perm)	1527	3016			2496	1036		2662			1822	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	51	635	334	54	518	56	61	506	164	101	313	86
RTOR Reduction (vph)	0	68	0	0	0	35	0	27	0	0	18	0
Lane Group Flow (vph)	51	901	0	0	572	21	0	704	0	0	482	0
Confl. Peds. (#/hr)	176		60	60		176	145		35	35		145
Confl. Bikes (#/hr)			8			3			8			6
Heavy Vehicles (%)	7%	5%	5%	38%	2%	6%	15%	8%	0%	15%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	21	0	0	8	18	0	7	15
Turn Type	Prot	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)	4.8	47.0			37.2	37.2		40.0			40.0	
Effective Green, g (s)	5.8	48.0			38.2	38.2		41.0			41.0	
Actuated g/C Ratio	0.06	0.48			0.38	0.38		0.41			0.41	
Clearance Time (s)	5.0	6.0			6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	88	1447			953	395		1091			747	
v/s Ratio Prot	0.03	c0.30										
v/s Ratio Perm					0.23	0.02		0.26			c0.26	
v/c Ratio	0.58	0.62			0.60	0.05		0.65			0.65	
Uniform Delay, d1	45.9	19.3			24.8	19.5		23.7			23.7	
Progression Factor	1.26	0.98			0.91	0.44		1.00			1.00	
Incremental Delay, d2	2.9	0.6			2.4	0.2		3.0			4.3	
Delay (s)	60.9	19.5			24.9	8.8		26.6			27.9	
Level of Service	E	B			C	A		C			C	
Approach Delay (s)		21.6			23.5			26.6			27.9	
Approach LOS		C			C			C			C	

Intersection Summary

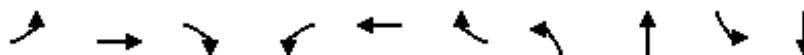
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Queues

SHORT TERM OPTION 4 & 5

10: Keele St/Weston Rd & St Clair Ave W

Weekday AM Peak Hour

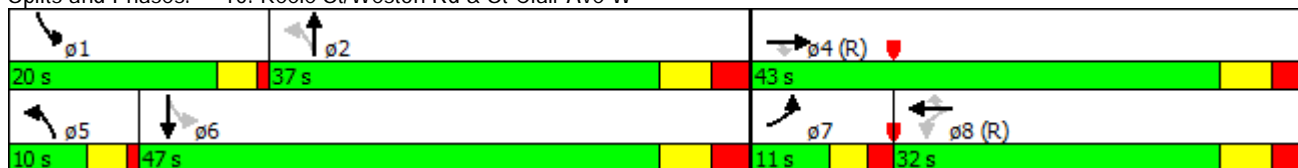


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↕	↗	↖	↕	↖	↕
Volume (vph)	53	546	58	21	468	158	54	634	367	892
Lane Group Flow (vph)	59	607	64	23	520	176	60	791	408	1057
Turn Type	Prot	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4			8		5	2	1	6
Permitted Phases			4	8		8	2		6	
Detector Phase	7	4	4	8	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	7.0	7.0	7.0	7.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	32.0	32.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	11.0	43.0	43.0	32.0	32.0	32.0	10.0	37.0	20.0	47.0
Total Split (%)	11.0%	43.0%	43.0%	32.0%	32.0%	32.0%	10.0%	37.0%	20.0%	47.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Max	None	Max
v/c Ratio	0.54	0.90	0.15	0.33	0.54	0.34	0.30	0.79	1.07	0.76
Control Delay	52.7	53.7	9.3	47.0	38.0	17.8	19.2	44.1	84.1	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	53.7	9.3	47.0	38.0	17.8	19.2	44.1	84.1	18.8
Queue Length 50th (m)	12.1	132.9	2.5	4.4	55.8	18.1	8.0	91.0	-63.9	96.8
Queue Length 95th (m)	#28.9	#188.6	11.2	m7.9	71.6	m33.6	17.1	111.1	#124.6	124.4
Internal Link Dist (m)		287.2			365.7			277.9		432.6
Turn Bay Length (m)	27.0			37.0		37.0	55.0		80.0	
Base Capacity (vph)	111	674	441	69	957	518	203	1006	380	1395
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.90	0.15	0.33	0.54	0.34	0.30	0.79	1.07	0.76

Intersection Summary

- Cycle Length: 100
- Actuated Cycle Length: 100
- Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
- Natural Cycle: 100
- Control Type: Actuated-Coordinated
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis

10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 5
Weekday AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	546	58	21	468	158	54	634	78	367	892	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0	6.0	6.0	6.0	6.0	3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.69	1.00	1.00	0.95	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1589	1824	971	1477	3395	1366	1438	3212		1610	3233	
Flt Permitted	0.95	1.00	1.00	0.16	1.00	1.00	0.20	1.00		0.18	1.00	
Satd. Flow (perm)	1589	1824	971	249	3395	1366	303	3212		297	3233	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	607	64	23	520	176	60	704	87	408	991	66
RTOR Reduction (vph)	0	0	41	0	0	130	0	10	0	0	5	0
Lane Group Flow (vph)	59	607	23	23	520	46	60	781	0	408	1052	0
Confl. Peds. (#/hr)	29		263	263		29	31		115	115		31
Confl. Bikes (#/hr)			5			1			3			5
Heavy Vehicles (%)	6%	3%	7%	1%	2%	2%	17%	4%	4%	4%	5%	25%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	13	27	0	13	27
Turn Type	Prot	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases			4	8		8	2			6		
Actuated Green, G (s)	4.8	35.2	35.2	25.4	25.4	25.4	35.6	30.8		50.8	42.0	
Effective Green, g (s)	5.8	36.2	36.2	26.4	26.4	26.4	37.6	31.8		51.8	43.0	
Actuated g/C Ratio	0.06	0.36	0.36	0.26	0.26	0.26	0.38	0.32		0.52	0.43	
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	92	660	351	65	896	360	179	1021		377	1390	
v/s Ratio Prot	0.04	c0.33			0.15		0.02	0.24		c0.18	0.33	
v/s Ratio Perm			0.02	0.09		0.03	0.11			c0.38		
v/c Ratio	0.64	0.92	0.07	0.35	0.58	0.13	0.34	0.77		1.08	0.76	
Uniform Delay, d1	46.1	30.5	20.9	29.9	32.0	28.0	20.7	30.7		23.6	24.1	
Progression Factor	0.77	1.21	1.00	1.09	1.15	3.89	1.27	1.23		0.71	0.61	
Incremental Delay, d2	13.7	19.4	0.3	12.2	2.3	0.6	1.0	5.0		67.8	3.5	
Delay (s)	49.3	56.3	21.2	44.9	39.0	109.7	27.4	42.7		84.7	18.3	
Level of Service	D	E	C	D	D	F	C	D		F	B	
Approach Delay (s)		52.6			56.5			41.6			36.8	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	44.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 5
Weekday PM Peak Hour

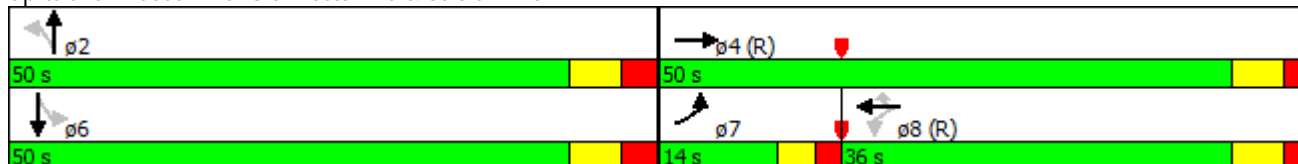


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗		↖	↗		↖		↖
Volume (vph)	130	494	114	386	194	249	323	49	444
Lane Group Flow (vph)	134	852	0	516	200	0	641	0	552
Turn Type	Prot	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		8			2		6
Permitted Phases			8		8	2		6	
Detector Phase	7	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	26.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	50.0	36.0	36.0	36.0	50.0	50.0	50.0	50.0
Total Split (%)	14.0%	50.0%	36.0%	36.0%	36.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0		5.0	5.0		6.0		6.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.85	0.60		0.79	0.49		0.72		0.45
Control Delay	68.6	17.2		34.2	14.1		28.3		20.6
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	68.6	17.2		34.2	14.1		28.3		20.6
Queue Length 50th (m)	27.3	50.2		35.5	11.3		54.1		39.3
Queue Length 95th (m)	m31.9	m69.3		#64.3	m19.5		77.2		54.4
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0				39.0				
Base Capacity (vph)	157	1416		653	411		886		1231
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.85	0.60		0.79	0.49		0.72		0.45

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 69 (69%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 5
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	494	333	114	386	194	249	323	49	49	444	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0			5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.90			1.00	0.74		0.97			0.99	
Flpb, ped/bikes	1.00	1.00			0.98	1.00		0.99			0.99	
Frt	1.00	0.94			1.00	0.85		0.99			0.99	
Flt Protected	0.95	1.00			0.99	1.00		0.98			1.00	
Satd. Flow (prot)	1571	2913			3291	1110		3225			3340	
Flt Permitted	0.95	1.00			0.63	1.00		0.61			0.83	
Satd. Flow (perm)	1571	2913			2108	1110		2000			2785	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	134	509	343	118	398	200	257	333	51	51	458	43
RTOR Reduction (vph)	0	105	0	0	0	68	0	6	0	0	6	0
Lane Group Flow (vph)	134	747	0	0	516	132	0	635	0	0	546	0
Confl. Peds. (#/hr)	163		149	149		163	62		307	307		62
Confl. Bikes (#/hr)			21			11			18			13
Heavy Vehicles (%)	4%	1%	1%	0%	2%	1%	3%	2%	0%	1%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	19	0	0	5	10	0	6	12
Turn Type	Prot	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)	9.0	44.0			30.0	30.0		43.0			43.0	
Effective Green, g (s)	10.0	45.0			31.0	31.0		44.0			44.0	
Actuated g/C Ratio	0.10	0.45			0.31	0.31		0.44			0.44	
Clearance Time (s)	5.0	6.0			6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	157	1310			653	344		880			1225	
v/s Ratio Prot	c0.09	0.26										
v/s Ratio Perm					c0.24	0.12		c0.32			0.20	
v/c Ratio	0.85	0.57			0.79	0.38		0.72			0.45	
Uniform Delay, d1	44.3	20.3			31.5	27.0		23.0			19.5	
Progression Factor	0.99	1.03			0.84	0.77		1.00			1.00	
Incremental Delay, d2	18.5	0.8			6.9	2.3		5.1			1.2	
Delay (s)	62.2	21.8			33.3	23.1		28.1			20.7	
Level of Service	E	C			C	C		C			C	
Approach Delay (s)		27.3			30.5			28.1			20.7	
Approach LOS		C			C			C			C	

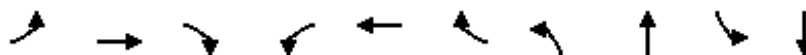
Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Queues

SHORT TERM OPTION 4 & 5

10: Keele St/Weston Rd & St Clair Ave W

Weekday PM Peak Hour

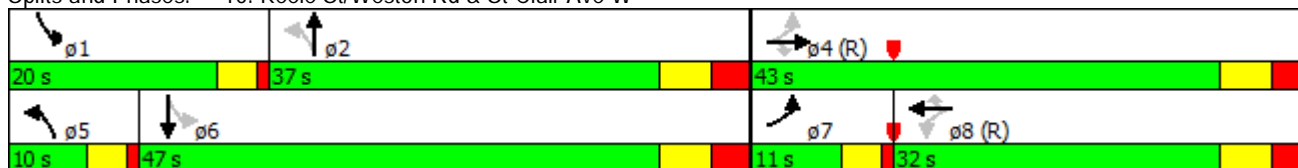


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↕	↗	↖	↕	↖	↕
Volume (vph)	99	498	36	50	470	172	96	665	374	601
Lane Group Flow (vph)	105	530	38	53	500	183	102	801	398	689
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4			8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	8	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	7.0	7.0	7.0	7.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	32.0	32.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	11.0	43.0	43.0	32.0	32.0	32.0	10.0	37.0	20.0	47.0
Total Split (%)	11.0%	43.0%	43.0%	32.0%	32.0%	32.0%	10.0%	37.0%	20.0%	47.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Max	None	Max
v/c Ratio	0.35	0.77	0.08	0.46	0.55	0.36	0.29	0.80	1.02	0.47
Control Delay	22.7	36.8	0.4	36.7	26.8	4.7	18.8	41.9	74.2	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	36.8	0.4	36.7	26.8	4.7	18.8	41.9	74.2	12.2
Queue Length 50th (m)	13.5	93.9	0.0	6.3	34.0	3.0	9.4	60.0	-27.1	46.1
Queue Length 95th (m)	25.0	136.1	0.0	m10.6	m49.7	m5.6	26.1	99.2	#116.6	25.7
Internal Link Dist (m)		287.2			365.7			277.9		432.6
Turn Bay Length (m)	27.0			37.0		37.0	55.0		80.0	
Base Capacity (vph)	305	688	450	114	903	515	348	1007	389	1463
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.77	0.08	0.46	0.55	0.36	0.29	0.80	1.02	0.47

Intersection Summary

- Cycle Length: 100
- Actuated Cycle Length: 100
- Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
- Natural Cycle: 90
- Control Type: Actuated-Coordinated
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 5
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	498	36	50	470	172	96	665	88	374	601	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.68	1.00	1.00	0.95	1.00	0.96		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.88	1.00	1.00	0.99	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1645	1860	994	1415	3204	1361	1672	3219		1669	3390	
Flt Permitted	0.32	1.00	1.00	0.27	1.00	1.00	0.39	1.00		0.17	1.00	
Satd. Flow (perm)	549	1860	994	407	3204	1361	686	3219		298	3390	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	105	530	38	53	500	183	102	707	94	398	639	50
RTOR Reduction (vph)	0	0	24	0	0	134	0	10	0	0	6	0
Lane Group Flow (vph)	105	530	14	53	500	49	102	791	0	398	683	0
Confl. Peds. (#/hr)	31		303	303		31	56		197	197		56
Confl. Bikes (#/hr)			7			3			2			11
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%	0%	3%	2%	0%	2%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	16	0	5	11
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	35.2	35.2	35.2	25.6	25.6	25.6	35.6	30.8		50.8	42.0	
Effective Green, g (s)	36.2	36.2	36.2	26.6	26.6	26.6	37.6	31.8		51.8	43.0	
Actuated g/C Ratio	0.36	0.36	0.36	0.27	0.27	0.27	0.38	0.32		0.52	0.43	
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0	4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	271	673	359	108	852	362	315	1023		387	1457	
v/s Ratio Prot	0.03	c0.28			0.16		0.02	0.25		c0.17	0.20	
v/s Ratio Perm	0.11		0.01	0.13		0.04	0.10			c0.36		
v/c Ratio	0.39	0.79	0.04	0.49	0.59	0.13	0.32	0.77		1.03	0.47	
Uniform Delay, d1	22.3	28.5	20.6	31.0	31.9	27.9	20.7	30.8		24.0	20.3	
Progression Factor	1.00	1.00	1.00	0.79	0.79	0.71	1.36	1.15		1.02	0.54	
Incremental Delay, d2	0.9	9.1	0.2	10.7	2.1	0.5	0.5	4.9		51.2	1.0	
Delay (s)	23.2	37.5	20.8	35.2	27.4	20.3	28.7	40.5		75.6	12.0	
Level of Service	C	D	C	D	C	C	C	D		E	B	
Approach Delay (s)		34.3			26.2			39.2			35.3	
Approach LOS		C			C			D			D	

Intersection Summary

HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 6
Weekday AM Peak Hour

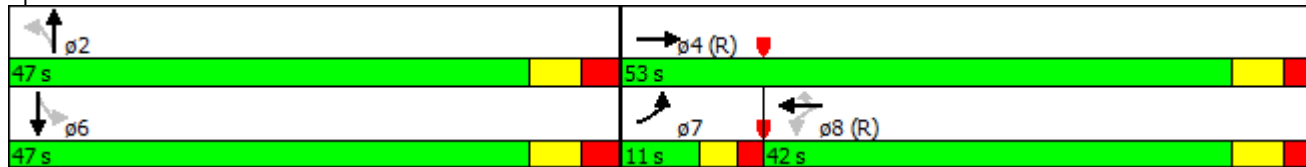


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗		↖	↗		↖		↗
Volume (vph)	49	616	52	502	54	59	491	98	304
Lane Group Flow (vph)	51	969	0	572	56	0	731	0	500
Turn Type	Prot	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		8			2		6
Permitted Phases			8		8	2		6	
Detector Phase	7	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	26.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	11.0	53.0	42.0	42.0	42.0	47.0	47.0	47.0	47.0
Total Split (%)	11.0%	53.0%	42.0%	42.0%	42.0%	47.0%	47.0%	47.0%	47.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0		5.0	5.0		6.0		6.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.49	0.64		0.58	0.12		0.65		0.65
Control Delay	56.3	15.0		25.1	1.0		25.6		27.2
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	56.3	15.0		25.1	1.0		25.6		27.2
Queue Length 50th (m)	10.8	49.1		59.0	0.0		58.2		39.8
Queue Length 95th (m)	m11.1	m43.2		78.7	m0.8		79.4		59.3
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0				39.0				
Base Capacity (vph)	106	1515		978	466		1117		764
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.48	0.64		0.58	0.12		0.65		0.65

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 23 (23%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 6
Weekday AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	616	324	52	502	54	59	491	159	98	304	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%			0%	
Total Lost time (s)	4.0	5.0			5.0	5.0		6.0			6.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.96			1.00	0.73		0.99			0.97	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.95			1.00	0.85		0.97			0.97	
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1527	3016			3223	1036		3108			2961	
Flt Permitted	0.95	1.00			0.77	1.00		0.85			0.61	
Satd. Flow (perm)	1527	3016			2496	1036		2662			1822	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	51	635	334	54	518	56	61	506	164	101	313	86
RTOR Reduction (vph)	0	68	0	0	0	35	0	27	0	0	18	0
Lane Group Flow (vph)	51	901	0	0	572	21	0	704	0	0	482	0
Confl. Peds. (#/hr)	176		60	60		176	145		35	35		145
Confl. Bikes (#/hr)			8			3			8			6
Heavy Vehicles (%)	7%	5%	5%	38%	2%	6%	15%	8%	0%	15%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	21	0	0	8	18	0	7	15
Turn Type	Prot	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)	4.8	47.0			37.2	37.2		40.0			40.0	
Effective Green, g (s)	5.8	48.0			38.2	38.2		41.0			41.0	
Actuated g/C Ratio	0.06	0.48			0.38	0.38		0.41			0.41	
Clearance Time (s)	5.0	6.0			6.0	6.0		7.0			7.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	88	1447			953	395		1091			747	
v/s Ratio Prot	0.03	c0.30										
v/s Ratio Perm					0.23	0.02		0.26			c0.26	
v/c Ratio	0.58	0.62			0.60	0.05		0.65			0.65	
Uniform Delay, d1	45.9	19.3			24.8	19.5		23.7			23.7	
Progression Factor	1.20	0.88			0.91	0.44		1.00			1.00	
Incremental Delay, d2	0.8	0.2			2.4	0.2		3.0			4.3	
Delay (s)	56.1	17.2			24.9	8.8		26.6			27.9	
Level of Service	E	B			C	A		C			C	
Approach Delay (s)		19.2			23.5			26.6			27.9	
Approach LOS		B			C			C			C	

Intersection Summary

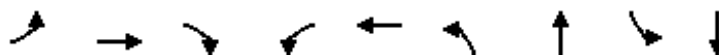
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Queues

SHORT TERM OPTION 4 & 6

10: Keele St/Weston Rd & St Clair Ave W

Weekday AM Peak Hour

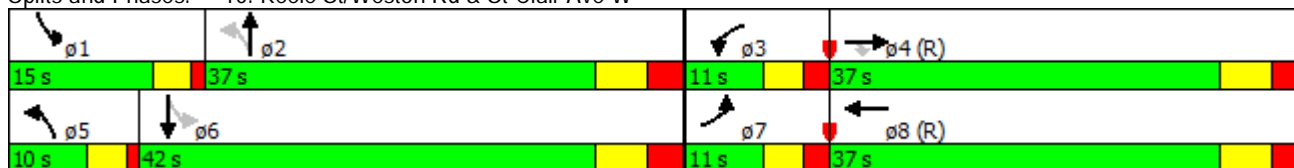


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	53	546	58	21	468	54	634	367	892
Lane Group Flow (vph)	59	607	64	23	696	60	791	408	1057
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	11.0	37.0	37.0	11.0	37.0	10.0	37.0	15.0	42.0
Total Split (%)	11.0%	37.0%	37.0%	11.0%	37.0%	10.0%	37.0%	15.0%	42.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	None	Max
v/c Ratio	0.54	0.88	0.13	0.20	0.67	0.35	0.79	1.36	0.86
Control Delay	52.7	55.5	6.3	40.1	38.8	23.8	44.1	200.9	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	55.5	6.3	40.1	38.8	23.8	44.1	200.9	27.4
Queue Length 50th (m)	12.1	131.8	1.3	5.0	73.8	8.7	91.0	-81.9	106.0
Queue Length 95th (m)	#28.9	#213.0	8.3	m8.6	91.8	18.5	111.1	#142.7	#147.5
Internal Link Dist (m)		287.2			365.7		277.9		432.6
Turn Bay Length (m)	27.0			37.0		55.0		80.0	
Base Capacity (vph)	111	686	480	113	1043	172	1006	299	1233
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.88	0.13	0.20	0.67	0.35	0.79	1.36	0.86

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 6
Weekday AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	546	58	21	468	158	54	634	78	367	892	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.69	1.00	0.99		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		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1589	1824	971	1618	3046		1439	3212		1610	3233	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.14	1.00		0.18	1.00	
Satd. Flow (perm)	1589	1824	971	1618	3046		210	3212		297	3233	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	607	64	23	520	176	60	704	87	408	991	66
RTOR Reduction (vph)	0	0	42	0	33	0	0	10	0	0	5	0
Lane Group Flow (vph)	59	607	22	23	663	0	60	781	0	408	1052	0
Confl. Peds. (#/hr)	29		263	263		29	31		115	115		31
Confl. Bikes (#/hr)			5			1			3			5
Heavy Vehicles (%)	6%	3%	7%	1%	2%	2%	17%	4%	4%	4%	5%	25%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	13	27	0	13	27
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	4.8	32.8	32.8	2.4	30.4		35.6	30.8		45.8	37.0	
Effective Green, g (s)	5.8	33.8	33.8	3.4	31.4		37.6	31.8		46.8	38.0	
Actuated g/C Ratio	0.06	0.34	0.34	0.03	0.31		0.38	0.32		0.47	0.38	
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	92	616	328	55	956		150	1021		296	1228	
v/s Ratio Prot	c0.04	c0.33		0.01	0.22		0.02	0.24		c0.17	0.33	
v/s Ratio Perm			0.02				0.13			c0.48		
v/c Ratio	0.64	0.99	0.07	0.42	0.69		0.40	0.77		1.38	0.86	
Uniform Delay, d1	46.1	32.9	22.4	47.3	30.1		21.7	30.7		20.4	28.5	
Progression Factor	0.77	1.34	1.00	0.83	1.30		1.30	1.23		0.67	0.67	
Incremental Delay, d2	13.7	32.1	0.4	4.3	3.5		1.6	5.0		188.3	7.1	
Delay (s)	49.3	76.1	22.8	43.4	42.6		29.9	42.7		202.0	26.1	
Level of Service	D	E	C	D	D		C	D		F	C	
Approach Delay (s)		69.3			42.6			41.8			75.1	
Approach LOS		E			D			D			E	

Intersection Summary

HCM 2000 Control Delay	60.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 6
Weekday PM Peak Hour

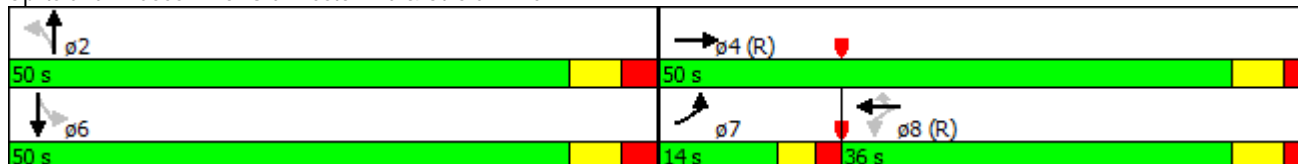


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗		↖	↗		↖		↖
Volume (vph)	130	494	114	386	194	249	323	49	444
Lane Group Flow (vph)	134	852	0	516	200	0	641	0	552
Turn Type	Prot	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4		8			2		6
Permitted Phases			8		8	2		6	
Detector Phase	7	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	26.0	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (s)	14.0	50.0	36.0	36.0	36.0	50.0	50.0	50.0	50.0
Total Split (%)	14.0%	50.0%	36.0%	36.0%	36.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	4.0	5.0		5.0	5.0		6.0		6.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.85	0.60		0.79	0.49		0.72		0.45
Control Delay	49.4	12.0		34.2	14.1		28.3		20.6
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	49.4	12.0		34.2	14.1		28.3		20.6
Queue Length 50th (m)	28.2	47.1		35.5	11.3		54.1		39.3
Queue Length 95th (m)	m27.6	m46.0		#64.3	m19.5		77.2		54.4
Internal Link Dist (m)		365.7		674.1			256.1		547.0
Turn Bay Length (m)	34.0				39.0				
Base Capacity (vph)	157	1416		653	411		886		1231
Starvation Cap Reductn	0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0		0
Reduced v/c Ratio	0.85	0.60		0.79	0.49		0.72		0.45

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 69 (69%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Old Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis
6: Old Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 6
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	494	333	114	386	194	249	323	49	49	444	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		6%			0%			0%				0%
Total Lost time (s)	4.0	5.0			5.0	5.0		6.0				6.0
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95				0.95
Frbp, ped/bikes	1.00	0.90			1.00	0.74		0.97				0.99
Flpb, ped/bikes	1.00	1.00			0.98	1.00		0.99				0.99
Frt	1.00	0.94			1.00	0.85		0.99				0.99
Flt Protected	0.95	1.00			0.99	1.00		0.98				1.00
Satd. Flow (prot)	1571	2913			3291	1110		3225				3340
Flt Permitted	0.95	1.00			0.63	1.00		0.61				0.83
Satd. Flow (perm)	1571	2913			2108	1110		2000				2785
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	134	509	343	118	398	200	257	333	51	51	458	43
RTOR Reduction (vph)	0	105	0	0	0	68	0	6	0	0	6	0
Lane Group Flow (vph)	134	747	0	0	516	132	0	635	0	0	546	0
Confl. Peds. (#/hr)	163		149	149		163	62		307	307		62
Confl. Bikes (#/hr)			21			11			18			13
Heavy Vehicles (%)	4%	1%	1%	0%	2%	1%	3%	2%	0%	1%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	19	0	0	5	10	0	6	12
Turn Type	Prot	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2				6
Permitted Phases				8		8	2			6		
Actuated Green, G (s)	9.0	44.0			30.0	30.0		43.0				43.0
Effective Green, g (s)	10.0	45.0			31.0	31.0		44.0				44.0
Actuated g/C Ratio	0.10	0.45			0.31	0.31		0.44				0.44
Clearance Time (s)	5.0	6.0			6.0	6.0		7.0				7.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0				3.0
Lane Grp Cap (vph)	157	1310			653	344		880				1225
v/s Ratio Prot	c0.09	0.26										
v/s Ratio Perm					c0.24	0.12		c0.32				0.20
v/c Ratio	0.85	0.57			0.79	0.38		0.72				0.45
Uniform Delay, d1	44.3	20.3			31.5	27.0		23.0				19.5
Progression Factor	0.94	0.74			0.84	0.77		1.00				1.00
Incremental Delay, d2	4.3	0.2			6.9	2.3		5.1				1.2
Delay (s)	46.0	15.3			33.3	23.1		28.1				20.7
Level of Service	D	B			C	C		C				C
Approach Delay (s)		19.5			30.5			28.1				20.7
Approach LOS		B			C			C				C

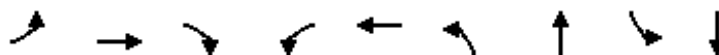
Intersection Summary		
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.76	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 15.0
Intersection Capacity Utilization	107.2%	ICU Level of Service G
Analysis Period (min)	15	
c Critical Lane Group		

Queues

SHORT TERM OPTION 4 & 6

10: Keele St/Weston Rd & St Clair Ave W

Weekday PM Peak Hour

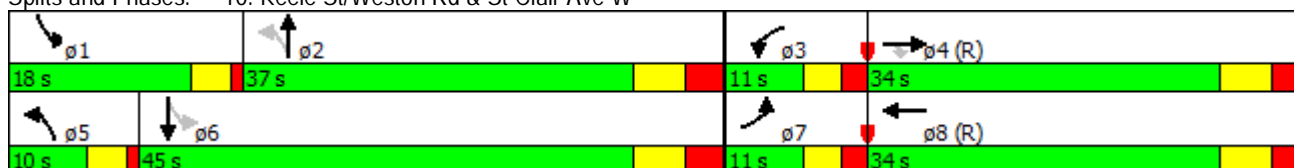


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↘	↕
Volume (vph)	99	498	36	50	470	96	665	374	601
Lane Group Flow (vph)	105	530	38	53	683	102	801	398	689
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4			2		6	
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	7.0	7.0	6.0	7.0	6.0	7.0	6.0	7.0
Minimum Split (s)	11.0	32.0	32.0	11.0	32.0	10.0	37.0	10.0	37.0
Total Split (s)	11.0	34.0	34.0	11.0	34.0	10.0	37.0	18.0	45.0
Total Split (%)	11.0%	34.0%	34.0%	11.0%	34.0%	10.0%	37.0%	18.0%	45.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	3.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	Min	C-Max	None	Max	None	Max
v/c Ratio	0.91	1.02	0.09	0.47	0.77	0.29	0.80	1.12	0.49
Control Delay	111.4	81.4	0.4	72.1	29.2	19.9	41.9	106.5	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.4	81.4	0.4	72.1	29.2	19.9	41.9	106.5	13.9
Queue Length 50th (m)	21.7	~111.4	0.0	11.8	51.8	9.8	60.0	~63.6	54.8
Queue Length 95th (m)	#54.3	#179.6	0.0	m16.6	68.8	27.0	99.2	#124.0	41.2
Internal Link Dist (m)		287.2			365.7		277.9		432.6
Turn Bay Length (m)	27.0			37.0		55.0		80.0	
Base Capacity (vph)	115	520	411	112	886	348	1007	355	1395
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	1.02	0.09	0.47	0.77	0.29	0.80	1.12	0.49

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Keele St/Weston Rd & St Clair Ave W



HCM Signalized Intersection Capacity Analysis

10: Keele St/Weston Rd & St Clair Ave W

SHORT TERM OPTION 4 & 6
Weekday PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	498	36	50	470	172	96	665	88	374	601	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Grade (%)		0%			6%			0%			0%	
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.68	1.00	0.99		1.00	0.96		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	1860	993	1602	3034		1672	3219		1669	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.39	1.00		0.17	1.00	
Satd. Flow (perm)	1652	1860	993	1602	3034		686	3219		298	3390	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	105	530	38	53	500	183	102	707	94	398	639	50
RTOR Reduction (vph)	0	0	28	0	38	0	0	10	0	0	5	0
Lane Group Flow (vph)	105	530	10	53	645	0	102	791	0	398	684	0
Confl. Peds. (#/hr)	31		303	303		31	56		197	197		56
Confl. Bikes (#/hr)			7			3			2			11
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%	0%	3%	2%	0%	2%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	8	16	0	5	11
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	6.0	26.2	26.2	6.0	26.2		35.6	30.8		48.8	40.0	
Effective Green, g (s)	7.0	27.2	27.2	7.0	27.2		37.6	31.8		49.8	41.0	
Actuated g/C Ratio	0.07	0.27	0.27	0.07	0.27		0.38	0.32		0.50	0.41	
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	115	505	270	112	825		315	1023		354	1389	
v/s Ratio Prot	c0.06	c0.28		0.03	0.21		0.02	0.25		c0.17	0.20	
v/s Ratio Perm			0.01				0.10			c0.39		
v/c Ratio	0.91	1.05	0.04	0.47	0.78		0.32	0.77		1.12	0.49	
Uniform Delay, d1	46.2	36.4	26.8	44.7	33.7		20.7	30.8		23.1	21.8	
Progression Factor	1.00	1.00	1.00	1.37	0.80		1.36	1.15		1.01	0.57	
Incremental Delay, d2	57.2	53.7	0.3	2.2	5.2		0.5	4.9		83.9	1.1	
Delay (s)	103.4	90.1	27.0	63.6	32.1		28.8	40.5		107.2	13.6	
Level of Service	F	F	C	E	C		C	D		F	B	
Approach Delay (s)		88.6			34.4			39.2			47.8	
Approach LOS		F			C			D			D	

Intersection Summary

HCM 2000 Control Delay	50.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			