Appendix O

2031 Future Total Conditions Synchro Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	203	390	529	88	196	72	1075	284	289	2343	13
Future Volume (vph)	11	203	390	529	88	196	72	1075	284	289	2343	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		70.0	140.0		0.0	135.0		80.0	180.0		50.0
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (m)	65.0			100.0			70.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	0.99		0.98			0.97			0.96	1.00		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	1863	1583	3433	1792	1553	1719	4222	1485	1770	4302	1336
Flt Permitted	0.698			0.422			0.068			0.123		
Satd. Flow (perm)	1200	1863	1556	1525	1792	1503	123	4222	1424	229	4302	1289
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121			202			285			91
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		296.6			291.2			731.4			120.4	
Travel Time (s)		17.8			17.5			43.9			7.2	
Confl. Peds. (#/hr)	11					11	5		7	7		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	9%	2%	2%	2%	6%	4%	5%	8%	7%	2%	6%	18%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	6
Adj. Flow (vph)	11	209	402	545	91	202	74	1108	293	298	2415	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	209	402	545	91	202	74	1108	293	298	2415	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.00	1.03
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

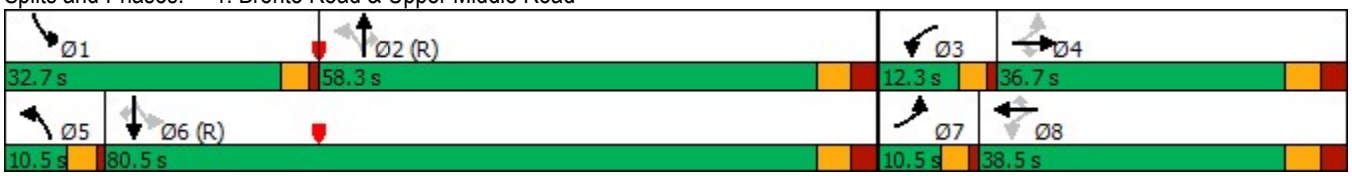
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	20.0	20.0	6.0	20.0	20.0
Minimum Split (s)	10.5	36.7	36.7	10.5	36.7	36.7	10.5	36.5	36.5	10.5	36.5	36.5
Total Split (s)	10.5	36.7	36.7	12.3	38.5	38.5	10.5	58.3	58.3	32.7	80.5	80.5
Total Split (%)	7.5%	26.2%	26.2%	8.8%	27.5%	27.5%	7.5%	41.6%	41.6%	23.4%	57.5%	57.5%
Maximum Green (s)	6.5	30.0	30.0	8.3	31.8	31.8	6.5	51.8	51.8	28.7	74.0	74.0
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.7	6.7	4.0	6.7	6.7	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)					7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)					23.0	23.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)					11	11		7	7		5	5
Act Effct Green (s)	37.9	29.0	29.0	43.1	37.1	37.1	69.7	60.8	60.8	88.0	77.1	77.1
Actuated g/C Ratio	0.27	0.21	0.21	0.31	0.26	0.26	0.50	0.43	0.43	0.63	0.55	0.55
v/c Ratio	0.03	0.54	0.96	0.93	0.19	0.37	0.55	0.60	0.38	0.80	1.02	0.02
Control Delay	33.0	55.1	73.4	67.8	42.4	7.6	51.7	39.2	11.7	40.0	55.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	55.1	73.4	67.8	42.4	7.6	51.7	39.2	11.7	40.0	55.4	0.1
LOS	C	E	E	E	D	A	D	D	B	D	E	A
Approach Delay		66.5			50.5			34.3			53.4	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	2.2	54.4	85.4	66.0	19.6	0.0	9.1	108.9	22.6	49.6	~322.0	0.0
Queue Length 95th (m)	7.1	81.7	#151.2	#100.4	38.3	21.2	#27.0	144.7	46.8	81.9	#354.2	0.0
Internal Link Dist (m)		272.6			267.2			707.4			96.4	
Turn Bay Length (m)	70.0		70.0	140.0			135.0		80.0	180.0		50.0
Base Capacity (vph)	349	399	428	583	475	547	135	1832	779	460	2368	750
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.52	0.94	0.93	0.19	0.37	0.55	0.60	0.38	0.65	1.02	0.02

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 82.6 (59%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	

Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 49.5	Intersection LOS: D
Intersection Capacity Utilization 98.8%	ICU Level of Service F
Analysis Period (min) 15	

* User Entered Value
~ 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.

Splits and Phases: 1: Bronte Road & Upper Middle Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	203	390	529	88	196	72	1075	284	289	2343	13
Future Volume (vph)	11	203	390	529	88	196	72	1075	284	289	2343	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.7	6.7	4.0	6.7	6.7	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1863	1556	3433	1792	1504	1719	4222	1425	1769	4302	1289
Flt Permitted	0.70	1.00	1.00	0.42	1.00	1.00	0.07	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	1205	1863	1556	1526	1792	1504	124	4222	1425	229	4302	1289
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)	11	209	402	545	91	202	74	1108	293	298	2415	13
RTOR Reduction (vph)	0	0	94	0	0	148	0	0	166	0	0	6
Lane Group Flow (vph)	11	209	308	545	91	54	74	1108	127	298	2415	7
Confl. Peds. (#/hr)	11					11	5		7	7		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	9%	2%	2%	2%	6%	4%	5%	8%	7%	2%	6%	18%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	6
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	34.0	31.4	31.4	43.7	37.1	37.1	63.6	58.4	58.4	83.1	73.9	73.9
Effective Green, g (s)	34.0	31.4	31.4	43.7	37.1	37.1	63.6	58.4	58.4	83.1	73.9	73.9
Actuated g/C Ratio	0.24	0.22	0.22	0.31	0.27	0.27	0.45	0.42	0.42	0.59	0.53	0.53
Clearance Time (s)	4.0	6.7	6.7	4.0	6.7	6.7	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	300	417	348	589	474	398	115	1761	594	363	2270	680
v/s Ratio Prot	0.00	0.11		c0.05	0.05		0.02	0.26		c0.12	c0.56	
v/s Ratio Perm	0.01		0.20	c0.23		0.04	0.27		0.09	0.37		0.01
v/c Ratio	0.04	0.50	0.89	0.93	0.19	0.13	0.64	0.63	0.21	0.82	1.06	0.01
Uniform Delay, d1	40.4	47.5	52.6	46.9	39.8	39.2	32.8	32.2	26.1	28.7	33.0	15.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.63	1.18	2.85	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.0	22.5	20.5	0.2	0.2	10.9	1.6	0.8	13.8	38.6	0.0
Delay (s)	40.4	48.4	75.1	67.4	40.0	39.4	64.4	39.7	75.2	42.5	71.6	15.7
Level of Service	D	D	E	E	D	D	E	D	E	D	E	B
Approach Delay (s)		65.5			57.7			48.0			68.2	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	61.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.2
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	63	169	0	95	21	1311	52	30	3421	7
Future Volume (vph)	21	0	63	169	0	95	21	1311	52	30	3421	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		15.0	15.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	1770	1583	0	1770	4471	1583	1770	4471	1583
Flt Permitted	0.645			0.713			0.038			0.127		
Satd. Flow (perm)	1201	1583	0	1328	1583	0	71	4471	1583	237	4471	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			74				24			19
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		42.5			50.2			458.5			731.4	
Travel Time (s)		3.1			3.6			27.5			43.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	0	68	184	0	103	23	1425	57	33	3718	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	68	0	184	103	0	23	1425	57	33	3718	8
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	35.5	35.5		35.5	35.5		35.5	35.5	35.5	35.5	35.5	35.5
Total Split (s)	35.5	35.5		35.5	35.5		104.5	104.5	104.5	104.5	104.5	104.5
Total Split (%)	25.4%	25.4%		25.4%	25.4%		74.6%	74.6%	74.6%	74.6%	74.6%	74.6%
Maximum Green (s)	30.0	30.0		30.0	30.0		99.0	99.0	99.0	99.0	99.0	99.0
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.2	2.2		2.2	2.2		1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	23.0	23.0		23.0	23.0		23.0	23.0	23.0	23.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	23.8	23.8		23.8	23.8		105.2	105.2	105.2	105.2	105.2	105.2
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.75	0.75	0.75	0.75	0.75	0.75
v/c Ratio	0.11	0.24		0.81	0.31		0.43	0.42	0.05	0.19	1.11	0.01
Control Delay	47.7	36.9		82.0	18.9		46.0	5.6	2.7	6.5	65.9	0.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	36.9		82.0	18.9		46.0	5.6	2.7	6.5	65.9	0.4
LOS	D	D		F	B		D	A	A	A	E	A
Approach Delay		39.6			59.4			6.1			65.3	
Approach LOS		D			E			A			E	
Queue Length 50th (m)	5.7	12.3		51.9	7.2		4.0	103.0	1.3	2.2	~530.3	0.0
Queue Length 95th (m)	13.8	25.8		77.2	23.5		m8.4	96.0	2.9	m2.9	m#549.1	m0.0
Internal Link Dist (m)		18.5			26.2			434.5			707.4	
Turn Bay Length (m)	15.0			15.0			15.0		15.0	15.0		15.0
Base Capacity (vph)	257	354		284	397		53	3359	1195	177	3359	1194
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	0.09	0.19		0.65	0.26		0.43	0.42	0.05	0.19	1.11	0.01

Intersection Summary

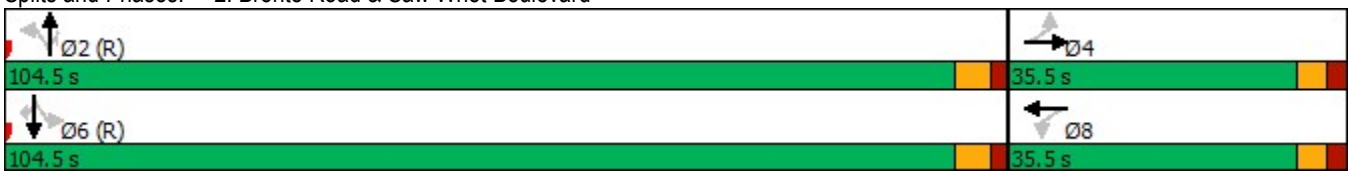
Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 85 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 48.8 Intersection LOS: D
Intersection Capacity Utilization 91.3% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

~ 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: 2: Bronte Road & Saw Whet Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	63	169	0	95	21	1311	52	30	3421	7
Future Volume (vph)	21	0	63	169	0	95	21	1311	52	30	3421	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1583		1770	4471	1583	1770	4471	1583
Flt Permitted	0.65	1.00		0.71	1.00		0.04	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	1202	1583		1328	1583		71	4471	1583	236	4471	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	0	68	184	0	103	23	1425	57	33	3718	8
RTOR Reduction (vph)	0	16	0	0	61	0	0	0	6	0	0	2
Lane Group Flow (vph)	23	52	0	184	42	0	23	1425	51	33	3718	6
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	23.8	23.8		23.8	23.8		105.2	105.2	105.2	105.2	105.2	105.2
Effective Green, g (s)	23.8	23.8		23.8	23.8		105.2	105.2	105.2	105.2	105.2	105.2
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.75	0.75	0.75	0.75	0.75	0.75
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5
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)	204	269		225	269		53	3359	1189	177	3359	1189
v/s Ratio Prot		0.03			0.03			0.32			c0.83	
v/s Ratio Perm	0.02			c0.14			0.32		0.03	0.14		0.00
v/c Ratio	0.11	0.19		0.82	0.15		0.43	0.42	0.04	0.19	1.11	0.01
Uniform Delay, d1	49.2	49.9		56.0	49.5		6.4	6.3	4.5	5.0	17.4	4.3
Progression Factor	1.00	1.00		1.00	1.00		1.73	0.76	0.75	0.79	0.70	0.42
Incremental Delay, d2	0.2	0.4		20.1	0.3		21.4	0.4	0.1	1.0	50.4	0.0
Delay (s)	49.4	50.2		76.1	49.8		32.5	5.2	3.4	5.0	62.6	1.8
Level of Service	D	D		E	D		C	A	A	A	E	A
Approach Delay (s)		50.0			66.6			5.6			62.0	
Approach LOS		D			E			A			E	

Intersection Summary			
HCM 2000 Control Delay	47.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	1	161	0	65	0	1369	78	149	3479	0
Future Volume (vph)	1	0	1	161	0	65	0	1369	78	149	3479	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		40.0	35.0		30.0	70.0		0.0
Storage Lanes	0		0	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			20.0			60.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	0.91
Ped Bike Factor		0.99				0.98			0.98			
Frt		0.932				0.850			0.850			
Flt Protected		0.976		0.950						0.950		
Satd. Flow (prot)	0	1680	0	1530	0	1392	1863	4302	1439	1770	4385	0
Flt Permitted		0.976		0.757						0.112		
Satd. Flow (perm)	0	1680	0	1219	0	1368	1863	4302	1405	209	4385	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54				67			56			
Link Speed (k/h)		20			20			60			60	
Link Distance (m)		78.7			109.0			435.9			458.5	
Travel Time (s)		14.2			19.6			26.2			27.5	
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	18%	2%	16%	2%	6%	10%	2%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	6
Adj. Flow (vph)	1	0	1	166	0	67	0	1411	80	154	3587	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	166	0	67	0	1411	80	154	3587	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1		1	1	2	1	1	2	
Detector Template	Left	Thru		Left		Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0		2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0		2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA		Perm		Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8		8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0		10.0	15.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	24.2	24.2		35.2		35.2	34.9	34.9	34.9	9.5	34.9	
Total Split (s)	35.2	35.2		35.2		35.2	86.4	86.4	86.4	18.4	104.8	
Total Split (%)	25.1%	25.1%		25.1%		25.1%	61.7%	61.7%	61.7%	13.1%	74.9%	
Maximum Green (s)	29.0	29.0		29.0		29.0	80.5	80.5	80.5	14.4	98.9	
Yellow Time (s)	3.1	3.1		3.1		3.1	3.7	3.7	3.7	3.0	3.7	
All-Red Time (s)	3.1	3.1		3.1		3.1	2.2	2.2	2.2	1.0	2.2	
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.2		6.2		6.2	5.9	5.9	5.9	4.0	5.9	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.6	3.6	3.6	3.0	3.6	
Recall Mode	None	None		None		None	C-Max	C-Max	C-Max	None	C-Max	
Walk Time (s)				7.0		7.0	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)				22.0		22.0	22.0	22.0	22.0		22.0	
Pedestrian Calls (#/hr)				0		0	0	0	0		0	
Act Effct Green (s)		23.3		23.3		23.3		91.2	91.2	106.5	104.6	
Actuated g/C Ratio		0.17		0.17		0.17		0.65	0.65	0.76	0.75	
v/c Ratio		0.01		0.82		0.24		0.50	0.09	0.58	1.09	
Control Delay		0.0		85.8		12.2		24.8	14.9	11.9	52.7	
Queue Delay		0.0		0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay		0.0		85.8		12.2		24.8	14.9	11.9	52.7	
LOS		A		F		B		C	B	B	D	
Approach Delay					64.6			24.3			51.0	
Approach LOS					E			C			D	
Queue Length 50th (m)		0.0		46.9		0.0		78.0	4.3	3.0	~492.5	
Queue Length 95th (m)		0.0		71.9		13.4		142.0	m21.8	m2.8	m#430.1	
Internal Link Dist (m)		54.7			85.0			411.9			434.5	
Turn Bay Length (m)						40.0			30.0	70.0		
Base Capacity (vph)		390		252		336		2801	934	319	3277	
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		0.01		0.66		0.20		0.50	0.09	0.48	1.09	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 128.8 (92%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09

Intersection Signal Delay: 44.3	Intersection LOS: D
Intersection Capacity Utilization 108.5%	ICU Level of Service G
Analysis Period (min) 15	

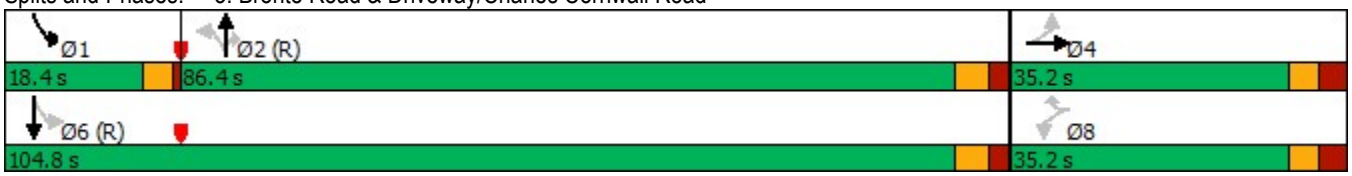
* User Entered Value

~ 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: 3: Bronte Road & Driveway/Charles Cornwall Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	1	161	0	65	0	1369	78	149	3479	0
Future Volume (vph)	1	0	1	161	0	65	0	1369	78	149	3479	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2		6.2		5.9	5.9	4.0	5.9	
Lane Util. Factor		1.00		1.00		1.00		*0.80	1.00	1.00	*0.80	
Frpb, ped/bikes		0.99		1.00		0.98		1.00	0.98	1.00	1.00	
Flpb, ped/bikes		1.00		1.00		1.00		1.00	1.00	1.00	1.00	
Frt		0.93		1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1679		1530		1366		4302	1406	1770	4385	
Flt Permitted		0.98		0.76		1.00		1.00	1.00	0.11	1.00	
Satd. Flow (perm)		1679		1218		1366		4302	1406	208	4385	
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)	1	0	1	166	0	67	0	1411	80	154	3587	0
RTOR Reduction (vph)	0	2	0	0	0	56	0	0	20	0	0	0
Lane Group Flow (vph)	0	0	0	166	0	11	0	1411	60	154	3587	0
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	18%	2%	16%	2%	6%	10%	2%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	6
Turn Type	Perm	NA		Perm		Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)		23.3		23.3		23.3		91.1	91.1	104.6	104.6	
Effective Green, g (s)		23.3		23.3		23.3		91.1	91.1	104.6	104.6	
Actuated g/C Ratio		0.17		0.17		0.17		0.65	0.65	0.75	0.75	
Clearance Time (s)		6.2		6.2		6.2		5.9	5.9	4.0	5.9	
Vehicle Extension (s)		3.0		3.0		3.0		3.6	3.6	3.0	3.6	
Lane Grp Cap (vph)		279		202		227		2799	914	261	3276	
v/s Ratio Prot								0.33		0.04	c0.82	
v/s Ratio Perm		0.00		c0.14		0.01			0.04	0.40		
v/c Ratio		0.00		0.82		0.05		0.50	0.07	0.59	1.09	
Uniform Delay, d1		48.6		56.3		49.0		12.7	8.9	8.9	17.7	
Progression Factor		1.00		1.00		1.00		1.76	3.21	1.60	0.27	
Incremental Delay, d2		0.0		22.8		0.1		0.5	0.1	0.3	43.3	
Delay (s)		48.7		79.1		49.1		22.9	28.8	14.5	48.1	
Level of Service		D		E		D		C	C	B	D	
Approach Delay (s)		48.7			70.5			23.2			46.7	
Approach LOS		D			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.1
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	17	0	44	0	1434	241	269	3378	1
Future Volume (vph)	0	0	0	17	0	44	0	1434	241	269	3378	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	45.0		0.0	35.0		70.0	115.0		0.0
Storage Lanes	0		0	1		1	1		1	1		0
Taper Length (m)	7.5			50.0			65.0			65.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	0.91
Ped Bike Factor						0.98			0.98		1.00	
Frt						0.850			0.850			
Flt Protected				0.950	0.950					0.950		
Satd. Flow (prot)	0	1863	0	1681	1681	1583	1863	4343	1583	1770	4385	0
Flt Permitted				0.950	0.950					0.084		
Satd. Flow (perm)	0	1863	0	1681	1681	1555	1863	4343	1546	156	4385	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						112			203			
Link Speed (k/h)		20			50			60			60	
Link Distance (m)		52.6			84.3			299.0			435.9	
Travel Time (s)		9.5			6.1			17.9			26.2	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	4%	2%
Adj. Flow (vph)	0	0	0	17	0	45	0	1463	246	274	3447	1
Shared Lane Traffic (%)				50%								
Lane Group Flow (vph)	0	0	0	8	9	45	0	1463	246	274	3448	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4		4	2		2	6		
Detector Phase	8	8		4	4	4	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	15.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	24.7	24.7		36.9	36.9	36.9	41.7	41.7	41.7	10.5	24.7	
Total Split (s)	13.0	13.0		39.0	39.0	39.0	77.0	77.0	77.0	11.0	88.0	
Total Split (%)	9.3%	9.3%		27.9%	27.9%	27.9%	55.0%	55.0%	55.0%	7.9%	62.9%	
Maximum Green (s)	6.3	6.3		33.1	33.1	33.1	70.3	70.3	70.3	7.0	81.3	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7	
All-Red Time (s)	3.0	3.0		2.2	2.2	2.2	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7		5.9	5.9	5.9	6.7	6.7	6.7	4.0	6.7	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	3.0	5.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Walk Time (s)				7.0	7.0	7.0	7.0	7.0	7.0		0.0	
Flash Dont Walk (s)				24.0	24.0	24.0	28.0	28.0	28.0		0.0	
Pedestrian Calls (#/hr)				1	1	1	0	0	0		0	
Act Effct Green (s)				16.5	16.5	16.5		76.7	76.7	116.8	115.4	
Actuated g/C Ratio				0.12	0.12	0.12		0.55	0.55	0.83	0.82	
v/c Ratio				0.04	0.05	0.16		0.61	0.26	0.53	0.95	
Control Delay				49.1	49.3	1.2		20.5	4.0	33.5	6.6	
Queue Delay				0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay				49.1	49.3	1.2		20.5	4.0	33.5	6.6	
LOS				D	D	A		C	A	C	A	
Approach Delay					14.4			18.1			8.6	
Approach LOS					B			B			A	
Queue Length 50th (m)				2.3	2.5	0.0		80.4	7.3	38.9	19.3	
Queue Length 95th (m)				7.1	7.5	0.0		164.6	m8.8	m38.6	m#421.6	
Internal Link Dist (m)		28.6			60.3			275.0			411.9	
Turn Bay Length (m)				45.0					70.0	115.0		
Base Capacity (vph)				397	397	453		2379	938	514	3615	
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				0.02	0.02	0.10		0.61	0.26	0.53	0.95	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 27 (19%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95

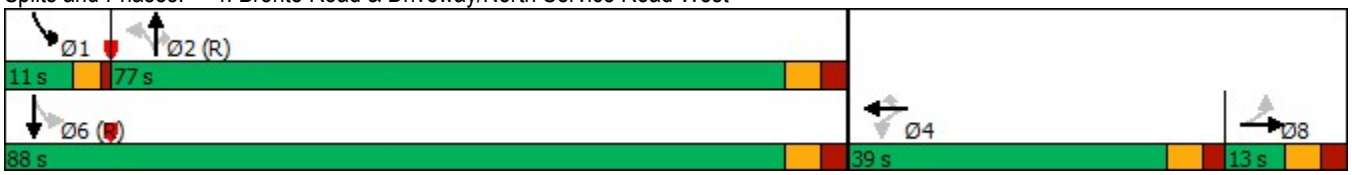
Intersection Signal Delay: 11.6	Intersection LOS: B
Intersection Capacity Utilization 102.8%	ICU Level of Service G
Analysis Period (min) 15	

* User Entered Value

\# 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: 4: Bronte Road & Driveway/North Service Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	17	0	44	0	1434	241	269	3378	1
Future Volume (vph)	0	0	0	17	0	44	0	1434	241	269	3378	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.9	5.9	5.9		6.7	6.7	4.0	6.7	
Lane Util. Factor				0.95	0.95	1.00		*0.80	1.00	1.00	*0.80	
Frpb, ped/bikes				1.00	1.00	0.98		1.00	0.98	1.00	1.00	
Flpb, ped/bikes				1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt				1.00	1.00	0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95	0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1681	1681	1545		4343	1546	1770	4384	
Flt Permitted				0.95	0.95	1.00		1.00	1.00	0.08	1.00	
Satd. Flow (perm)				1681	1681	1545		4343	1546	157	4384	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	17	0	45	0	1463	246	274	3447	1
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	94	0	0	0
Lane Group Flow (vph)	0	0	0	8	9	5	0	1463	152	274	3448	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	4%	2%
Turn Type				Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4		4	2		2	6		
Actuated Green, G (s)				14.5	14.5	14.5		75.5	75.5	112.9	112.9	
Effective Green, g (s)				14.5	14.5	14.5		75.5	75.5	112.9	112.9	
Actuated g/C Ratio				0.10	0.10	0.10		0.54	0.54	0.81	0.81	
Clearance Time (s)				5.9	5.9	5.9		6.7	6.7	4.0	6.7	
Vehicle Extension (s)				5.0	5.0	5.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				174	174	160		2342	833	511	3535	
v/s Ratio Prot								0.34		0.13	c0.79	
v/s Ratio Perm				0.00	0.01	0.00			0.10	0.30		
v/c Ratio				0.05	0.05	0.03		0.62	0.18	0.54	0.98	
Uniform Delay, d1				56.5	56.6	56.4		22.4	16.5	26.2	12.3	
Progression Factor				1.00	1.00	1.00		0.89	0.93	1.36	0.21	
Incremental Delay, d2				0.2	0.3	0.2		1.0	0.4	0.1	1.6	
Delay (s)				56.7	56.8	56.6		20.9	15.7	35.7	4.2	
Level of Service				E	E	E		C	B	D	A	
Approach Delay (s)		0.0			56.6			20.1			6.5	
Approach LOS		A			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.3
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	193	300	1374	0	0	2139
Future Volume (vph)	193	300	1374	0	0	2139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	90.0		0.0	0.0	
Storage Lanes	2	1		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	*0.80	1.00	1.00	*0.80
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3335	1568	4385	0	0	4427
Flt Permitted	0.950					
Satd. Flow (perm)	3335	1568	4385	0	0	4427
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		28				
Link Speed (k/h)	60		60			60
Link Distance (m)	65.9		376.8			299.0
Travel Time (s)	4.0		22.6			17.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	3%	4%	2%	2%	3%
Adj. Flow (vph)	210	326	1493	0	0	2325
Shared Lane Traffic (%)						
Lane Group Flow (vph)	210	326	1493	0	0	2325
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0			20.0
Minimum Split (s)	24.7	24.7	36.5			26.5
Total Split (s)	24.7	24.7	45.3			45.3
Total Split (%)	35.3%	35.3%	64.7%			64.7%
Maximum Green (s)	18.0	18.0	38.8			38.8
Yellow Time (s)	3.7	3.7	3.7			3.7
All-Red Time (s)	3.0	3.0	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.7	6.7	6.5			6.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Act Effct Green (s)	16.5	16.5	40.3			40.3
Actuated g/C Ratio	0.24	0.24	0.58			0.58
v/c Ratio	0.27	0.84	0.59			0.91
Control Delay	22.3	43.2	18.0			18.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	22.3	43.2	18.0			18.1
LOS	C	D	B			B
Approach Delay	35.0		18.0			18.1
Approach LOS	C		B			B
Queue Length 50th (m)	11.8	38.0	104.8			170.0
Queue Length 95th (m)	20.1	#77.5	m114.1			m204.4
Internal Link Dist (m)	41.9		352.8			275.0
Turn Bay Length (m)		90.0				
Base Capacity (vph)	857	424	2527			2551
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.25	0.77	0.59			0.91

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 14 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 20.1 Intersection LOS: C
Intersection Capacity Utilization 60.7% ICU Level of Service B
Analysis Period (min) 15
* User Entered Value
\# 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: 5: Bronte Road & QEW WB Off Ramp

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	193	300	1374	0	0	2139
Future Volume (vph)	193	300	1374	0	0	2139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.5			6.5
Lane Util. Factor	0.97	1.00	*0.80			*0.80
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3335	1568	4385			4427
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3335	1568	4385			4427
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	210	326	1493	0	0	2325
RTOR Reduction (vph)	0	21	0	0	0	0
Lane Group Flow (vph)	210	305	1493	0	0	2325
Heavy Vehicles (%)	5%	3%	4%	2%	2%	3%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	16.5	16.5	40.3			40.3
Effective Green, g (s)	16.5	16.5	40.3			40.3
Actuated g/C Ratio	0.24	0.24	0.58			0.58
Clearance Time (s)	6.7	6.7	6.5			6.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	786	369	2524			2548
v/s Ratio Prot	0.06		0.34			c0.53
v/s Ratio Perm		c0.19				
v/c Ratio	0.27	0.83	0.59			0.91
Uniform Delay, d1	21.8	25.4	9.6			13.3
Progression Factor	1.00	1.00	1.77			1.12
Incremental Delay, d2	0.2	13.9	0.5			2.3
Delay (s)	22.0	39.3	17.4			17.2
Level of Service	C	D	B			B
Approach Delay (s)	32.5		17.4			17.2
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	1	2	359	2	607	3	914	232	688	1564	9
Future Volume (vph)	7	1	2	359	2	607	3	914	232	688	1564	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	130.0		125.0	120.0		95.0	255.0		0.0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (m)	7.5			65.0			95.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	*0.80	1.00	1.00	*0.80	0.91
Ped Bike Factor									0.97		1.00	
Frt		0.900			0.868	0.850			0.850		0.999	
Flt Protected	0.950			0.950	0.994		0.950			0.950		
Satd. Flow (prot)	1770	1676	0	1665	1424	1461	1770	4262	1583	1770	4380	0
Flt Permitted	0.950			0.950	0.994		0.150			0.130		
Satd. Flow (perm)	1770	1676	0	1665	1424	1461	279	4262	1538	242	4380	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					281	350			252		1	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		53.2			37.5			215.0			376.8	
Travel Time (s)		4.8			3.4			12.9			22.6	
Confl. Bikes (#/hr)									5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	3%	2%	5%	2%	7%	2%	2%	4%	2%
Adj. Flow (vph)	8	1	2	390	2	660	3	993	252	748	1700	10
Shared Lane Traffic (%)				10%		47%						
Lane Group Flow (vph)	8	3	0	351	351	350	3	993	252	748	1710	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	8	8		4	4			2		1	6	
Permitted Phases						4	2		2	6		
Detector Phase	8	8		4	4	4	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0	10.0	20.0	20.0	20.0	7.0	20.0	
Minimum Split (s)	36.7	36.7		36.7	36.7	36.7	36.5	36.5	36.5	11.5	36.5	
Total Split (s)	36.7	36.7		50.0	50.0	50.0	37.3	37.3	37.3	16.0	53.3	
Total Split (%)	26.2%	26.2%		35.7%	35.7%	35.7%	26.6%	26.6%	26.6%	11.4%	38.1%	
Maximum Green (s)	30.0	30.0		43.3	43.3	43.3	30.8	30.8	30.8	12.0	46.8	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.8	2.8	2.8	1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7		6.7	6.7	6.7	6.5	6.5	6.5	4.0	6.5	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Walk Time (s)				7.0	7.0	7.0	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)				23.0	23.0	23.0	23.0	23.0	23.0		23.0	
Pedestrian Calls (#/hr)				0	0	0	0	0	0		0	
Act Effct Green (s)	7.1	7.1		35.8	35.8	35.8	30.8	30.8	30.8	88.0	85.5	
Actuated g/C Ratio	0.05	0.05		0.26	0.26	0.26	0.22	0.22	0.22	0.63	0.61	
v/c Ratio	0.09	0.04		0.83	0.61	0.55	0.05	1.06	0.47	1.06	0.64	
Control Delay	65.6	64.0		65.1	14.0	7.1	45.7	98.1	8.2	77.4	24.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	65.6	64.0		65.1	14.0	7.1	45.7	98.1	8.2	77.4	24.3	
LOS	E	E		E	B	A	D	F	A	E	C	
Approach Delay		65.1			28.8			79.8			40.4	
Approach LOS		E			C			E			D	
Queue Length 50th (m)	2.3	0.9		101.4	17.5	0.0	0.7	~132.0	0.0	215.3	137.9	
Queue Length 95th (m)	8.3	4.3		133.2	50.9	25.1	3.6	#166.5	23.6	m#335.0	164.0	
Internal Link Dist (m)		29.2			13.5			191.0			352.8	
Turn Bay Length (m)	10.0			130.0		125.0	120.0		95.0	255.0		
Base Capacity (vph)	379	359		514	634	693	61	937	534	704	2674	
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	0.02	0.01		0.68	0.55	0.51	0.05	1.06	0.47	1.06	0.64	

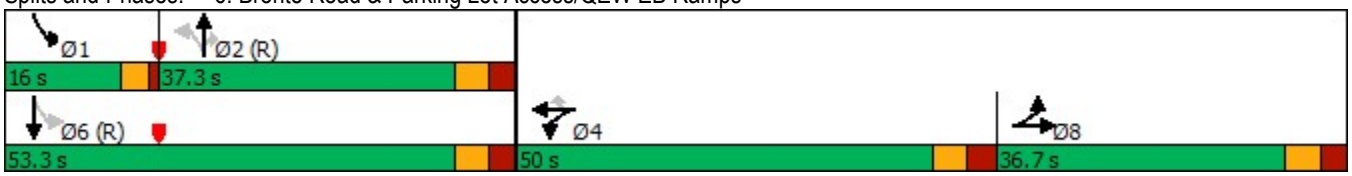
Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 88 (63%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 48.2 Intersection LOS: D

Intersection Capacity Utilization 93.0%	ICU Level of Service F
Analysis Period (min) 15	

* User Entered Value
~ 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: 6: Bronte Road & Parking Lot Access/QEW EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	1	2	359	2	607	3	914	232	688	1564	9
Future Volume (vph)	7	1	2	359	2	607	3	914	232	688	1564	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7		6.7	6.7	6.7	6.5	6.5	6.5	4.0	6.5	
Lane Util. Factor	1.00	1.00		0.95	0.91	0.95	1.00	*0.80	1.00	1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.90		1.00	0.87	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1676		1665	1424	1461	1770	4262	1536	1770	4381	
Flt Permitted	0.95	1.00		0.95	0.99	1.00	0.15	1.00	1.00	0.13	1.00	
Satd. Flow (perm)	1770	1676		1665	1424	1461	279	4262	1536	243	4381	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	1	2	390	2	660	3	993	252	748	1700	10
RTOR Reduction (vph)	0	0	0	0	209	261	0	0	204	0	0	0
Lane Group Flow (vph)	8	3	0	351	142	90	3	993	48	748	1710	0
Confl. Bikes (#/hr)									5			5
Heavy Vehicles (%)	2%	2%	2%	3%	2%	5%	2%	7%	2%	2%	4%	2%
Turn Type	Split	NA		Split	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	8	8		4	4			2		1	6	
Permitted Phases						4	2		2	6		
Actuated Green, G (s)	2.9	2.9		35.8	35.8	35.8	26.7	26.7	26.7	81.4	81.4	
Effective Green, g (s)	2.9	2.9		35.8	35.8	35.8	26.7	26.7	26.7	81.4	81.4	
Actuated g/C Ratio	0.02	0.02		0.26	0.26	0.26	0.19	0.19	0.19	0.58	0.58	
Clearance Time (s)	6.7	6.7		6.7	6.7	6.7	6.5	6.5	6.5	4.0	6.5	
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)	36	34		425	364	373	53	812	292	694	2547	
v/s Ratio Prot	c0.00	0.00		c0.21	0.10			c0.23		c0.39	0.39	
v/s Ratio Perm						0.06	0.01		0.03	0.24		
v/c Ratio	0.22	0.09		0.83	0.39	0.24	0.06	1.22	0.16	1.08	0.67	
Uniform Delay, d1	67.4	67.3		49.2	43.1	41.3	46.3	56.6	47.3	38.1	20.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.19	
Incremental Delay, d2	3.1	1.1		12.4	0.7	0.3	2.0	111.3	1.2	47.8	0.7	
Delay (s)	70.6	68.4		61.5	43.8	41.6	48.4	167.9	48.5	87.3	24.6	
Level of Service	E	E		E	D	D	D	F	D	F	C	
Approach Delay (s)		70.0			49.0			143.5			43.7	
Approach LOS		E			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	71.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	74	114	258	155	252	325	2175	417	265	1356	20
Future Volume (vph)	7	74	114	258	155	252	325	2175	417	265	1356	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		70.0	140.0		0.0	135.0		80.0	180.0		50.0
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (m)	65.0			100.0			70.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Ped Bike Factor	0.99		0.98			0.97			0.97			0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3400	1863	1583	1770	4471	1558	1770	4385	1473
Flt Permitted	0.653			0.578			0.080			0.059		
Satd. Flow (perm)	1209	1863	1556	2068	1863	1543	149	4471	1517	110	4385	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121			268			251			122
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		296.6			291.2			731.4			120.4	
Travel Time (s)		17.8			17.5			43.9			7.2	
Confl. Peds. (#/hr)	6					6	1		1	1		1
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	4%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	6
Adj. Flow (vph)	7	79	121	274	165	268	346	2314	444	282	1443	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	79	121	274	165	268	346	2314	444	282	1443	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.00	1.03
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	20.0	20.0	6.0	20.0	20.0
Minimum Split (s)	10.5	36.7	36.7	10.5	36.7	36.7	10.5	36.5	36.5	10.5	36.5	36.5
Total Split (s)	10.5	36.7	36.7	10.5	36.7	36.7	32.4	73.8	73.8	19.0	60.4	60.4
Total Split (%)	7.5%	26.2%	26.2%	7.5%	26.2%	26.2%	23.1%	52.7%	52.7%	13.6%	43.1%	43.1%
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0	30.0	28.4	67.3	67.3	15.0	53.9	53.9
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.7	6.7	4.0	6.7	6.7	4.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)					7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)					23.0	23.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)					6	6		1	1		1	1
Act Effct Green (s)	23.8	14.9	14.9	27.3	23.3	23.3	96.9	70.2	70.2	98.4	71.3	71.3
Actuated g/C Ratio	0.17	0.11	0.11	0.20	0.17	0.17	0.69	0.50	0.50	0.70	0.51	0.51
v/c Ratio	0.03	0.40	0.44	0.59	0.53	0.56	0.85	1.03	0.50	0.70	0.65	0.03
Control Delay	40.3	62.2	13.4	54.0	59.4	10.0	59.4	40.9	3.8	47.1	28.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	62.2	13.4	54.0	59.4	10.0	59.4	40.9	3.8	47.1	28.7	0.1
LOS	D	E	B	D	E	B	E	D	A	D	C	A
Approach Delay		32.9			38.6			37.6			31.3	
Approach LOS		C			D			D			C	
Queue Length 50th (m)	1.7	22.5	0.0	37.4	45.1	0.0	79.6	230.0	13.0	56.7	121.0	0.0
Queue Length 95th (m)	5.3	34.5	17.2	43.3	65.2	24.7	m73.6	m#296.9	m16.8	#146.5	183.8	0.0
Internal Link Dist (m)		272.6			267.2			707.4			96.4	
Turn Bay Length (m)	70.0		70.0	140.0			135.0		80.0	180.0		50.0
Base Capacity (vph)	233	399	428	464	399	541	442	2241	885	400	2233	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.28	0.59	0.41	0.50	0.78	1.03	0.50	0.70	0.65	0.03

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 35 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 35.7	Intersection LOS: D
Intersection Capacity Utilization 87.1%	ICU Level of Service E
Analysis Period (min) 15	

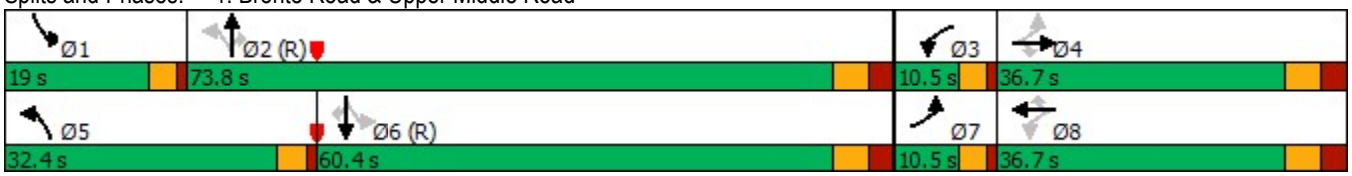
* User Entered Value

\# 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: 1: Bronte Road & Upper Middle Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	74	114	258	155	252	325	2175	417	265	1356	20
Future Volume (vph)	7	74	114	258	155	252	325	2175	417	265	1356	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.7	6.7	4.0	6.7	6.7	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1762	1863	1551	3400	1863	1541	1770	4471	1517	1770	4385	1435
Flt Permitted	0.65	1.00	1.00	0.58	1.00	1.00	0.08	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1211	1863	1551	2068	1863	1541	149	4471	1517	109	4385	1435
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)	7	79	121	274	165	268	346	2314	444	282	1443	21
RTOR Reduction (vph)	0	0	105	0	0	223	0	0	131	0	0	11
Lane Group Flow (vph)	7	79	16	274	165	45	346	2314	313	282	1443	10
Confl. Peds. (#/hr)	6					6	1		1	1		1
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	4%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	6
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	19.4	18.1	18.1	28.6	23.3	23.3	93.1	67.0	67.0	95.3	68.1	68.1
Effective Green, g (s)	19.4	18.1	18.1	28.6	23.3	23.3	93.1	67.0	67.0	95.3	68.1	68.1
Actuated g/C Ratio	0.14	0.13	0.13	0.20	0.17	0.17	0.66	0.48	0.48	0.68	0.49	0.49
Clearance Time (s)	4.0	6.7	6.7	4.0	6.7	6.7	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	240	200	484	310	256	401	2139	725	396	2132	698
v/s Ratio Prot	0.00	0.04		c0.03	0.09		c0.16	c0.52		0.14	0.33	
v/s Ratio Perm	0.01		0.01	c0.09		0.03	0.41		0.21	0.34		0.01
v/c Ratio	0.04	0.33	0.08	0.57	0.53	0.17	0.86	1.08	0.43	0.71	0.68	0.01
Uniform Delay, d1	52.2	55.4	53.6	49.6	53.4	50.1	38.9	36.5	24.0	41.7	27.5	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.49	0.59	0.35	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.8	0.2	1.5	1.8	0.3	4.7	39.2	0.4	6.0	1.7	0.0
Delay (s)	52.2	56.2	53.8	51.2	55.1	50.4	62.8	60.8	8.8	47.6	29.3	18.6
Level of Service	D	E	D	D	E	D	E	E	A	D	C	B
Approach Delay (s)		54.7			51.8			53.6			32.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.2
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	0	40	104	0	59	66	2921	174	99	1670	23
Future Volume (vph)	14	0	40	104	0	59	66	2921	174	99	1670	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		15.0	15.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	1770	1583	0	1770	4471	1583	1770	4471	1583
Flt Permitted	0.715			0.729			0.088			0.039		
Satd. Flow (perm)	1332	1583	0	1358	1583	0	164	4471	1583	73	4471	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			117				55			19
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		42.5			50.2			458.5			731.4	
Travel Time (s)		3.1			3.6			27.5			43.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	0	43	113	0	64	72	3175	189	108	1815	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	43	0	113	64	0	72	3175	189	108	1815	25
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	35.5	35.5		35.5	35.5		35.5	35.5	35.5	9.5	35.5	35.5
Total Split (s)	60.0	60.0		60.0	60.0		68.0	68.0	68.0	12.0	80.0	80.0
Total Split (%)	42.9%	42.9%		42.9%	42.9%		48.6%	48.6%	48.6%	8.6%	57.1%	57.1%
Maximum Green (s)	54.5	54.5		54.5	54.5		62.5	62.5	62.5	7.5	74.5	74.5
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.5	3.7	3.7
All-Red Time (s)	2.2	2.2		2.2	2.2		1.8	1.8	1.8	1.0	1.8	1.8
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.5	5.5	5.5	4.5	5.5	5.5
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	23.0	23.0		23.0	23.0		23.0	23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	0
Act Effct Green (s)	17.2	17.2		17.2	17.2		97.4	97.4	97.4	112.8	111.8	111.8
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.70	0.70	0.70	0.81	0.80	0.80
v/c Ratio	0.09	0.18		0.68	0.22		0.63	1.02	0.17	0.61	0.51	0.02
Control Delay	52.5	9.8		77.7	1.7		21.4	26.6	5.1	31.3	14.9	3.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	9.8		77.7	1.7		21.4	26.6	5.1	31.3	14.9	3.7
LOS	D	A		E	A		C	C	A	C	B	A
Approach Delay		20.8			50.2			25.3			15.6	
Approach LOS		C			D			C			B	
Queue Length 50th (m)	3.9	0.0		32.0	0.0		4.7	~95.9	6.5	16.0	165.1	2.0
Queue Length 95th (m)	10.6	8.2		51.2	0.3		m5.5	m#430.1	m7.2	m28.4	208.2	m2.0
Internal Link Dist (m)		18.5			26.2			434.5			707.4	
Turn Bay Length (m)	15.0			15.0			15.0		15.0	15.0		15.0
Base Capacity (vph)	518	649		528	687		114	3110	1118	181	3569	1267
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	0.03	0.07		0.21	0.09		0.63	1.02	0.17	0.60	0.51	0.02

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 22.7 Intersection LOS: C
Intersection Capacity Utilization 87.3% ICU Level of Service E
Analysis Period (min) 15
* User Entered Value

~ 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: 2: Bronte Road & Saw Whet Boulevard

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	0	40	104	0	59	66	2921	174	99	1670	23
Future Volume (vph)	14	0	40	104	0	59	66	2921	174	99	1670	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5		5.5	5.5	5.5	4.5	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1583		1770	4471	1583	1770	4471	1583
Flt Permitted	0.72	1.00		0.73	1.00		0.09	1.00	1.00	0.04	1.00	1.00
Satd. Flow (perm)	1332	1583		1358	1583		164	4471	1583	73	4471	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	0	43	113	0	64	72	3175	189	108	1815	25
RTOR Reduction (vph)	0	38	0	0	56	0	0	0	17	0	0	4
Lane Group Flow (vph)	15	5	0	113	8	0	72	3175	172	108	1815	21
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.2	17.2		17.2	17.2		97.4	97.4	97.4	111.8	111.8	111.8
Effective Green, g (s)	17.2	17.2		17.2	17.2		97.4	97.4	97.4	111.8	111.8	111.8
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.70	0.70	0.70	0.80	0.80	0.80
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5	5.5	4.5	5.5	5.5
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)	163	194		166	194		114	3110	1101	178	3570	1264
v/s Ratio Prot		0.00			0.00			c0.71		0.04	c0.41	
v/s Ratio Perm	0.01			c0.08			0.44		0.11	0.44		0.01
v/c Ratio	0.09	0.03		0.68	0.04		0.63	1.02	0.16	0.61	0.51	0.02
Uniform Delay, d1	54.5	54.0		58.8	54.1		11.6	21.3	7.3	46.4	4.8	2.9
Progression Factor	1.00	1.00		1.00	1.00		0.55	0.41	0.81	0.75	2.73	1.83
Incremental Delay, d2	0.2	0.1		10.9	0.1		8.1	15.0	0.1	4.7	0.4	0.0
Delay (s)	54.7	54.1		69.7	54.2		14.5	23.7	6.0	39.6	13.5	5.3
Level of Service	D	D		E	D		B	C	A	D	B	A
Approach Delay (s)		54.3			64.1			22.5			14.8	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	138	0	110	1	3052	175	89	1762	0
Future Volume (vph)	0	0	0	138	0	110	1	3052	175	89	1762	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		40.0	35.0		30.0	70.0		0.0
Storage Lanes	0		0	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			20.0			60.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	0.91
Ped Bike Factor						0.98			0.98			
Frt						0.850			0.850			
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	0	1863	0	1770	0	1583	1770	4427	1388	1770	4385	0
Flt Permitted				0.757			0.084			0.040		
Satd. Flow (perm)	0	1863	0	1410	0	1556	156	4427	1357	75	4385	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						64			56			
Link Speed (k/h)		20			20			60			60	
Link Distance (m)		78.7			109.0			435.9			458.5	
Travel Time (s)		14.2			19.6			26.2			27.5	
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	14%	2%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	6
Adj. Flow (vph)	0	0	0	142	0	113	1	3146	180	92	1816	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	142	0	113	1	3146	180	92	1816	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1		1	1	2	1	1	2	
Detector Template	Left	Thru		Left		Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0		2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0		2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type				Perm		Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8		8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0		10.0	15.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	24.2	24.2		35.2		35.2	34.9	34.9	34.9	9.5	34.9	
Total Split (s)	35.2	35.2		35.2		35.2	95.3	95.3	95.3	9.5	104.8	
Total Split (%)	25.1%	25.1%		25.1%		25.1%	68.1%	68.1%	68.1%	6.8%	74.9%	
Maximum Green (s)	29.0	29.0		29.0		29.0	89.4	89.4	89.4	5.5	98.9	
Yellow Time (s)	3.1	3.1		3.1		3.1	3.7	3.7	3.7	3.0	3.7	
All-Red Time (s)	3.1	3.1		3.1		3.1	2.2	2.2	2.2	1.0	2.2	
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.2		6.2		6.2	5.9	5.9	5.9	4.0	5.9	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.6	3.6	3.6	3.0	3.6	
Recall Mode	None	None		None		None	C-Max	C-Max	C-Max	None	C-Max	
Walk Time (s)				7.0		7.0	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)				22.0		22.0	22.0	22.0	22.0		22.0	
Pedestrian Calls (#/hr)				0		0	0	0	0		0	
Act Effct Green (s)				19.3		19.3	96.4	96.4	96.4	110.5	108.6	
Actuated g/C Ratio				0.14		0.14	0.69	0.69	0.69	0.79	0.78	
v/c Ratio				0.73		0.42	0.01	1.03	0.19	0.58	0.53	
Control Delay				78.3		28.9	1.0	32.8	0.7	54.3	1.2	
Queue Delay				0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay				78.3		28.9	1.0	32.8	0.7	54.3	1.2	
LOS				E		C	A	C	A	D	A	
Approach Delay					56.4			31.1			3.7	
Approach LOS					E			C			A	
Queue Length 50th (m)				40.2		12.9	0.0	~422.0	2.0	13.6	6.0	
Queue Length 95th (m)				61.1		30.9	m0.0	m341.2	m3.1	#33.5	11.1	
Internal Link Dist (m)		54.7			85.0			411.9			434.5	
Turn Bay Length (m)						40.0	35.0		30.0	70.0		
Base Capacity (vph)				292		373	107	3048	951	158	3400	
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				0.49		0.30	0.01	1.03	0.19	0.58	0.53	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 103.6 (74%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03

Intersection Signal Delay: 22.8	Intersection LOS: C
Intersection Capacity Utilization 83.1%	ICU Level of Service E
Analysis Period (min) 15	

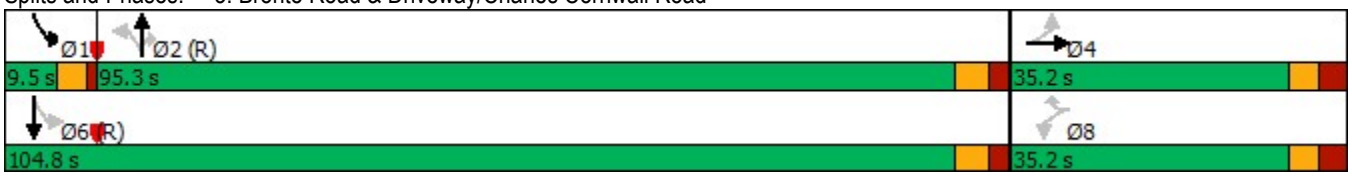
* User Entered Value

~ 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: 3: Bronte Road & Driveway/Charles Cornwall Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	138	0	110	1	3052	175	89	1762	0
Future Volume (vph)	0	0	0	138	0	110	1	3052	175	89	1762	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.2		6.2	5.9	5.9	5.9	4.0	5.9	
Lane Util. Factor				1.00		1.00	1.00	*0.80	1.00	1.00	*0.80	
Frpb, ped/bikes				1.00		0.98	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes				1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Frt				1.00		0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1770		1552	1770	4427	1357	1770	4385	
Flt Permitted				0.76		1.00	0.08	1.00	1.00	0.04	1.00	
Satd. Flow (perm)				1410		1552	156	4427	1357	74	4385	
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)	0	0	0	142	0	113	1	3146	180	92	1816	0
RTOR Reduction (vph)	0	0	0	0	0	55	0	0	17	0	0	0
Lane Group Flow (vph)	0	0	0	142	0	58	1	3146	163	92	1816	0
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	14%	2%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	6
Turn Type				Perm		Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)				19.3		19.3	96.4	96.4	96.4	108.6	108.6	
Effective Green, g (s)				19.3		19.3	96.4	96.4	96.4	108.6	108.6	
Actuated g/C Ratio				0.14		0.14	0.69	0.69	0.69	0.78	0.78	
Clearance Time (s)				6.2		6.2	5.9	5.9	5.9	4.0	5.9	
Vehicle Extension (s)				3.0		3.0	3.6	3.6	3.6	3.0	3.6	
Lane Grp Cap (vph)				194		213	107	3048	934	156	3401	
v/s Ratio Prot								c0.71		0.03	c0.41	
v/s Ratio Perm				c0.10		0.04	0.01		0.12	0.42		
v/c Ratio				0.73		0.27	0.01	1.03	0.17	0.59	0.53	
Uniform Delay, d1				57.9		54.1	6.8	21.8	7.7	43.2	6.0	
Progression Factor				1.00		1.00	0.10	0.68	0.11	1.89	0.10	
Incremental Delay, d2				13.3		0.7	0.0	16.0	0.0	5.0	0.5	
Delay (s)				71.2		54.7	0.7	30.9	0.9	86.7	1.1	
Level of Service				E		D	A	C	A	F	A	
Approach Delay (s)		0.0			63.9			29.2			5.2	
Approach LOS		A			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.1
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	129	0	154	0	2974	74	88	1806	2
Future Volume (vph)	0	0	0	129	0	154	0	2974	74	88	1806	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	45.0		0.0	35.0		70.0	115.0		0.0
Storage Lanes	0		0	1		1	1		1	1		0
Taper Length (m)	7.5			50.0			65.0			65.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	*0.80	1.00	1.00	*0.80	0.91
Ped Bike Factor						0.98			0.97		1.00	
Frt						0.850			0.850			
Flt Protected				0.950	0.950					0.950		
Satd. Flow (prot)	0	1863	0	1681	1681	1583	1863	4427	1583	1770	4385	0
Flt Permitted				0.950	0.950					0.047		
Satd. Flow (perm)	0	1863	0	1681	1681	1553	1863	4427	1538	88	4385	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						159			106			
Link Speed (k/h)		20			50			60			60	
Link Distance (m)		52.6			84.3			299.0			435.9	
Travel Time (s)		9.5			6.1			17.9			26.2	
Confl. Peds. (#/hr)	2					2			2	2		
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	4%	2%
Adj. Flow (vph)	0	0	0	133	0	159	0	3066	76	91	1862	2
Shared Lane Traffic (%)				50%								
Lane Group Flow (vph)	0	0	0	66	67	159	0	3066	76	91	1864	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4		4	2		2	6		
Detector Phase	8	8		4	4	4	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	15.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	24.7	24.7		36.9	36.9	36.9	41.7	41.7	41.7	10.5	24.7	
Total Split (s)	24.7	24.7		40.0	40.0	40.0	64.8	64.8	64.8	10.5	75.3	
Total Split (%)	17.6%	17.6%		28.6%	28.6%	28.6%	46.3%	46.3%	46.3%	7.5%	53.8%	
Maximum Green (s)	18.0	18.0		34.1	34.1	34.1	58.1	58.1	58.1	6.5	68.6	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7	
All-Red Time (s)	3.0	3.0		2.2	2.2	2.2	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7		5.9	5.9	5.9	6.7	6.7	6.7	4.0	6.7	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	3.0	5.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Walk Time (s)				7.0	7.0	7.0	7.0	7.0	7.0		0.0	
Flash Dont Walk (s)				24.0	24.0	24.0	28.0	28.0	28.0		0.0	
Pedestrian Calls (#/hr)				2	2	2	2	2	2		0	
Act Effct Green (s)				34.1	34.1	34.1		80.4	80.4	96.0	93.3	
Actuated g/C Ratio				0.24	0.24	0.24		0.57	0.57	0.69	0.67	
v/c Ratio				0.16	0.16	0.32		1.21	0.08	0.54	0.64	
Control Delay				43.0	43.1	7.8		113.8	0.5	25.9	29.8	
Queue Delay				0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay				43.0	43.1	7.8		113.8	0.5	25.9	29.8	
LOS				D	D	A		F	A	C	C	
Approach Delay					23.9			111.0			29.6	
Approach LOS					C			F			C	
Queue Length 50th (m)				16.1	16.3	0.0		~445.6	0.3	18.1	203.6	
Queue Length 95th (m)				30.4	30.7	18.5		m#389.7	m0.0	24.1	226.7	
Internal Link Dist (m)		28.6			60.3			275.0			411.9	
Turn Bay Length (m)				45.0					70.0	115.0		
Base Capacity (vph)				409	409	498		2542	928	167	2922	
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				0.16	0.16	0.32		1.21	0.08	0.54	0.64	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 85 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.21

Intersection Signal Delay: 76.8	Intersection LOS: E
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	

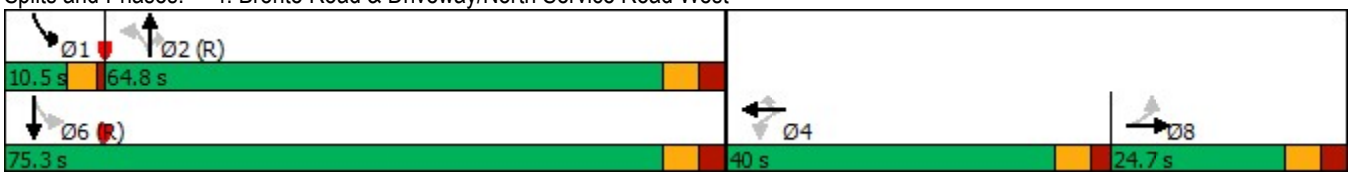
* User Entered Value

~ 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: 4: Bronte Road & Driveway/North Service Road West



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	129	0	154	0	2974	74	88	1806	2
Future Volume (vph)	0	0	0	129	0	154	0	2974	74	88	1806	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.9	5.9	5.9		6.7	6.7	4.0	6.7	
Lane Util. Factor				0.95	0.95	1.00		*0.80	1.00	1.00	*0.80	
Frpb, ped/bikes				1.00	1.00	0.98		1.00	0.97	1.00	1.00	
Flpb, ped/bikes				1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt				1.00	1.00	0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95	0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1681	1681	1553		4427	1540	1770	4384	
Flt Permitted				0.95	0.95	1.00		1.00	1.00	0.05	1.00	
Satd. Flow (perm)				1681	1681	1553		4427	1540	88	4384	
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)	0	0	0	133	0	159	0	3066	76	91	1862	2
RTOR Reduction (vph)	0	0	0	0	0	120	0	0	32	0	0	0
Lane Group Flow (vph)	0	0	0	66	67	39	0	3066	44	91	1864	0
Confl. Peds. (#/hr)	2					2			2	2		
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	4%	2%
Turn Type				Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4		4	2		2	6		
Actuated Green, G (s)				34.1	34.1	34.1		80.4	80.4	93.3	93.3	
Effective Green, g (s)				34.1	34.1	34.1		80.4	80.4	93.3	93.3	
Actuated g/C Ratio				0.24	0.24	0.24		0.57	0.57	0.67	0.67	
Clearance Time (s)				5.9	5.9	5.9		6.7	6.7	4.0	6.7	
Vehicle Extension (s)				5.0	5.0	5.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				409	409	378		2542	884	165	2921	
v/s Ratio Prot								c0.69		0.03	c0.43	
v/s Ratio Perm				0.04	0.04	0.02			0.03	0.33		
v/c Ratio				0.16	0.16	0.10		1.21	0.05	0.55	0.64	
Uniform Delay, d1				41.7	41.7	41.1		29.8	13.1	33.4	13.6	
Progression Factor				1.00	1.00	1.00		0.59	0.50	0.81	2.10	
Incremental Delay, d2				0.4	0.4	0.2		93.1	0.0	3.4	0.9	
Delay (s)				42.1	42.1	41.3		110.8	6.5	30.3	29.4	
Level of Service				D	D	D		F	A	C	C	
Approach Delay (s)		0.0			41.7			108.2			29.4	
Approach LOS		A			D			F			C	

Intersection Summary			
HCM 2000 Control Delay	76.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.3
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	232	652	2281	0	0	1184
Future Volume (vph)	232	652	2281	0	0	1184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	90.0		0.0	0.0	
Storage Lanes	2	1		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	*0.80	1.00	1.00	*0.80
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3433	1583	4427	0	0	4427
Flt Permitted	0.950					
Satd. Flow (perm)	3433	1583	4427	0	0	4427
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		1				
Link Speed (k/h)	60		60			60
Link Distance (m)	65.9		376.8			299.0
Travel Time (s)	4.0		22.6			17.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	2%	2%	3%
Adj. Flow (vph)	252	709	2479	0	0	1287
Shared Lane Traffic (%)						
Lane Group Flow (vph)	252	709	2479	0	0	1287
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0			20.0
Minimum Split (s)	24.7	24.7	36.5			26.5
Total Split (s)	62.0	62.0	78.0			78.0
Total Split (%)	44.3%	44.3%	55.7%			55.7%
Maximum Green (s)	55.3	55.3	71.5			71.5
Yellow Time (s)	3.7	3.7	3.7			3.7
All-Red Time (s)	3.0	3.0	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.7	6.7	6.5			6.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Act Effct Green (s)	55.3	55.3	71.5			71.5
Actuated g/C Ratio	0.40	0.40	0.51			0.51
v/c Ratio	0.19	1.13	1.10			0.57
Control Delay	28.1	118.1	66.0			8.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	28.1	118.1	66.0			8.6
LOS	C	F	E			A
Approach Delay	94.5		66.0			8.6
Approach LOS	F		E			A
Queue Length 50th (m)	24.5	~240.0	~346.7			20.1
Queue Length 95th (m)	34.6	#319.2	m#345.0			24.6
Internal Link Dist (m)	41.9		352.8			275.0
Turn Bay Length (m)		90.0				
Base Capacity (vph)	1356	625	2260			2260
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.19	1.13	1.10			0.57

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 67 (48%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.13
Intersection Signal Delay: 56.1 Intersection LOS: E
Intersection Capacity Utilization 95.4% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value
~ 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: 5: Bronte Road & QEW WB Off Ramp

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	232	652	2281	0	0	1184
Future Volume (vph)	232	652	2281	0	0	1184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.5			6.5
Lane Util. Factor	0.97	1.00	*0.80			*0.80
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3433	1583	4427			4427
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3433	1583	4427			4427
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	252	709	2479	0	0	1287
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	252	708	2479	0	0	1287
Heavy Vehicles (%)	2%	2%	3%	2%	2%	3%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	55.3	55.3	71.5			71.5
Effective Green, g (s)	55.3	55.3	71.5			71.5
Actuated g/C Ratio	0.39	0.39	0.51			0.51
Clearance Time (s)	6.7	6.7	6.5			6.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1356	625	2260			2260
v/s Ratio Prot	0.07		c0.56			0.29
v/s Ratio Perm		c0.45				
v/c Ratio	0.19	1.13	1.10			0.57
Uniform Delay, d1	27.7	42.4	34.2			23.6
Progression Factor	1.00	1.00	0.49			0.33
Incremental Delay, d2	0.1	78.7	46.9			0.8
Delay (s)	27.7	121.1	63.8			8.5
Level of Service	C	F	E			A
Approach Delay (s)	96.6		63.8			8.5
Approach LOS	F		E			A

Intersection Summary			
HCM 2000 Control Delay	55.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	4	214	1	863	1	1786	228	317	1085	3
Future Volume (vph)	6	0	4	214	1	863	1	1786	228	317	1085	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	130.0		125.0	120.0		95.0	255.0		0.0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (m)	7.5			65.0			95.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	*0.80	1.00	1.00	*0.80	0.91
Ped Bike Factor									0.97		1.00	
Frt		0.850			0.857	0.850			0.850			
Flt Protected	0.950			0.950	0.998		0.950			0.950		
Satd. Flow (prot)	1770	1583	0	1681	1423	1475	1770	4471	1583	1770	4470	0
Flt Permitted	0.950			0.950	0.998		0.191			0.068		
Satd. Flow (perm)	1770	1583	0	1681	1423	1475	356	4471	1543	127	4470	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					423	423			152			
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		53.2			37.5			215.0			376.8	
Travel Time (s)		4.8			3.4			12.9			22.6	
Confl. Bikes (#/hr)									5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	7	0	4	233	1	938	1	1941	248	345	1179	3
Shared Lane Traffic (%)				10%		49%						
Lane Group Flow (vph)	7	4	0	210	484	478	1	1941	248	345	1182	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	8	8		4	4			2		1	6	
Permitted Phases						4	2		2	6		
Detector Phase	8	8		4	4	4	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0	10.0	20.0	20.0	20.0	7.0	20.0	
Minimum Split (s)	36.7	36.7		36.7	36.7	36.7	36.5	36.5	36.5	11.5	36.5	
Total Split (s)	18.0	18.0		45.0	45.0	45.0	53.0	53.0	53.0	24.0	77.0	
Total Split (%)	12.9%	12.9%		32.1%	32.1%	32.1%	37.9%	37.9%	37.9%	17.1%	55.0%	
Maximum Green (s)	11.3	11.3		38.3	38.3	38.3	46.5	46.5	46.5	20.0	70.5	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.7	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.8	2.8	2.8	1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7		6.7	6.7	6.7	6.5	6.5	6.5	4.0	6.5	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Walk Time (s)				7.0	7.0	7.0	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)				23.0	23.0	23.0	23.0	23.0	23.0		23.0	
Pedestrian Calls (#/hr)				0	0	0	0	0	0		0	
Act Effct Green (s)	7.1	7.1		26.1	26.1	26.1	59.2	59.2	59.2	97.7	95.2	
Actuated g/C Ratio	0.05	0.05		0.19	0.19	0.19	0.42	0.42	0.42	0.70	0.68	
v/c Ratio	0.08	0.05		0.67	0.79	0.77	0.01	1.03	0.34	0.75	0.39	
Control Delay	65.3	64.8		62.5	18.0	16.3	31.0	66.9	13.4	52.6	15.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	65.3	64.8		62.5	18.0	16.3	31.0	66.9	13.4	52.6	15.5	
LOS	E	E		E	B	B	C	E	B	D	B	
Approach Delay		65.1			25.3			60.9			23.9	
Approach LOS		E			C			E			C	
Queue Length 50th (m)	2.0	1.1		60.9	16.9	14.5	0.2	218.2	15.6	82.6	54.0	
Queue Length 95th (m)	7.4	5.4		81.1	61.3	54.3	1.6	#336.4	44.6	#154.9	97.6	
Internal Link Dist (m)		29.2			13.5			191.0			352.8	
Turn Bay Length (m)	10.0			130.0		125.0	120.0		95.0	255.0		
Base Capacity (vph)	142	127		459	696	710	150	1890	740	463	3038	
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	0.05	0.03		0.46	0.70	0.67	0.01	1.03	0.34	0.75	0.39	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 66 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 40.8 Intersection LOS: D

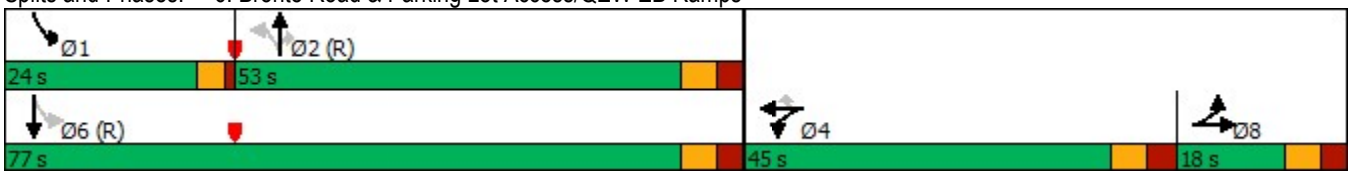
Intersection Capacity Utilization 92.5%	ICU Level of Service F
Analysis Period (min) 15	

* User Entered Value

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Bronte Road & Parking Lot Access/QEW EB Ramps



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	4	214	1	863	1	1786	228	317	1085	3
Future Volume (vph)	6	0	4	214	1	863	1	1786	228	317	1085	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7		6.7	6.7	6.7	6.5	6.5	6.5	4.0	6.5	
Lane Util. Factor	1.00	1.00		0.95	0.91	0.95	1.00	*0.80	1.00	1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85		1.00	0.86	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1583		1681	1423	1475	1770	4471	1544	1770	4469	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.19	1.00	1.00	0.07	1.00	
Satd. Flow (perm)	1770	1583		1681	1423	1475	356	4471	1544	126	4469	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	0	4	233	1	938	1	1941	248	345	1179	3
RTOR Reduction (vph)	0	0	0	0	344	344	0	0	92	0	0	0
Lane Group Flow (vph)	7	4	0	210	140	134	1	1941	156	345	1182	0
Confl. Bikes (#/hr)									5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Split	NA		Split	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	8	8		4	4			2		1	6	
Permitted Phases						4	2		2	6		
Actuated Green, G (s)	2.9	2.9		26.1	26.1	26.1	55.1	55.1	55.1	91.1	91.1	
Effective Green, g (s)	2.9	2.9		26.1	26.1	26.1	55.1	55.1	55.1	91.1	91.1	
Actuated g/C Ratio	0.02	0.02		0.19	0.19	0.19	0.39	0.39	0.39	0.65	0.65	
Clearance Time (s)	6.7	6.7		6.7	6.7	6.7	6.5	6.5	6.5	4.0	6.5	
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)	36	32		313	265	274	140	1759	607	457	2908	
v/s Ratio Prot	c0.00	0.00		c0.12	0.10			c0.43		c0.17	0.26	
v/s Ratio Perm						0.09	0.00		0.10	0.32		
v/c Ratio	0.19	0.12		0.67	0.53	0.49	0.01	1.10	0.26	0.75	0.41	
Uniform Delay, d1	67.4	67.3		53.0	51.4	51.0	25.8	42.5	28.6	40.3	11.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.22	1.29	
Incremental Delay, d2	2.6	1.8		5.6	1.9	1.4	0.1	55.7	1.0	6.1	0.4	
Delay (s)	70.0	69.1		58.5	53.3	52.3	25.9	98.1	29.7	55.4	15.3	
Level of Service	E	E		E	D	D	C	F	C	E	B	
Approach Delay (s)		69.7			53.8			90.3			24.4	
Approach LOS		E			D			F			C	

Intersection Summary			
HCM 2000 Control Delay	61.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group