Appendix K

2023 Existing 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	520	88	196	62	926	226	248	2002	12
Future Volume (vph)	11	203	390	520	88	196	62	926	226	248	2002	12
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	0.95	1.00	1.00	0.95	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	3343	1485	1770	3406	1336
Flt Permitted	0.698			0.277			0.056			0.205		
Satd. Flow (perm)	1200	1863	1550	1001	1792	1502	101	3343	1427	381	3406	1289
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			152			202			233			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)	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	536	91	202	64	955	233	256	2064	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	209	402	536	91	202	64	955	233	256	2064	12
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)	11.2	23.8	23.8	19.6	32.2	32.2	11.2	79.8	79.8	16.8	85.4	85.4
Total Split (%)	8.0%	17.0%	17.0%	14.0%	23.0%	23.0%	8.0%	57.0%	57.0%	12.0%	61.0%	61.0%
Maximum Green (s)	7.2	17.1	17.1	15.6	25.5	25.5	7.2	73.3	73.3	12.8	78.9	78.9
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)					11	11		7	7		5	5
Act Effct Green (s)	26.2	17.1	17.1	39.4	32.3	32.3	83.4	74.1	74.1	92.6	81.2	81.2
Actuated g/C Ratio	0.19	0.12	0.12	0.28	0.23	0.23	0.60	0.53	0.53	0.66	0.58	0.58
v/c Ratio	0.04	0.92	1.25	0.97	0.22	0.40	0.46	0.54	0.27	0.69	1.04	0.02
Control Delay	37.6	102.6	165.3	76.2	47.3	8.8	30.4	13.5	4.6	19.6	62.6	0.0
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	37.6	102.6	165.3	76.2	47.3	8.8	30.4	13.5	4.6	19.6	62.6	0.0
LOS	D	F	F	E	D	A	C	B	A	B	E	A
Approach Delay		141.9			56.6			12.7			57.5	
Approach LOS		F			E			B			E	
Queue Length 50th (m)	2.3	61.1	~104.7	68.8	20.8	0.0	4.3	63.5	14.3	27.6	~351.4	0.0
Queue Length 95th (m)	7.5	#110.8	#172.2	#91.2	40.6	22.7	14.3	123.0	29.4	40.1	#394.3	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)	254	227	322	552	413	501	143	1768	864	378	1976	799
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	0.04	0.92	1.25	0.97	0.22	0.40	0.45	0.54	0.27	0.68	1.04	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: 1.25	
Intersection Signal Delay: 56.7	Intersection LOS: E
Intersection Capacity Utilization 108.7%	ICU Level of Service G
Analysis Period (min) 15	

~ 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	520	88	196	62	926	226	248	2002	12
Future Volume (vph)	11	203	390	520	88	196	62	926	226	248	2002	12
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	0.95	1.00	1.00	0.95	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	1552	3433	1792	1504	1719	3343	1426	1769	3406	1289
Flt Permitted	0.70	1.00	1.00	0.28	1.00	1.00	0.06	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	1205	1863	1552	1000	1792	1504	101	3343	1426	381	3406	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	536	91	202	64	955	233	256	2064	12
RTOR Reduction (vph)	0	0	131	0	0	155	0	0	114	0	0	5
Lane Group Flow (vph)	11	209	271	536	91	47	64	955	119	256	2064	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)	22.3	19.5	19.5	39.1	32.3	32.3	77.4	71.7	71.7	87.7	78.0	78.0
Effective Green, g (s)	22.3	19.5	19.5	39.1	32.3	32.3	77.4	71.7	71.7	87.7	78.0	78.0
Actuated g/C Ratio	0.16	0.14	0.14	0.28	0.23	0.23	0.55	0.51	0.51	0.63	0.56	0.56
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)	200	259	216	550	413	346	121	1712	730	357	1897	718
v/s Ratio Prot	0.00	0.11		c0.11	0.05		0.02	0.29		c0.06	c0.61	
v/s Ratio Perm	0.01		c0.17	0.16		0.03	0.27		0.08	0.39		0.01
v/c Ratio	0.06	0.81	1.26	0.97	0.22	0.13	0.53	0.56	0.16	0.72	1.09	0.01
Uniform Delay, d1	49.8	58.4	60.2	46.1	43.6	42.8	31.5	23.3	18.2	15.2	31.0	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.41	0.56	1.91	1.00	1.00	1.00
Incremental Delay, d2	0.1	16.6	147.0	31.7	0.3	0.2	3.7	1.2	0.4	6.7	49.1	0.0
Delay (s)	49.9	75.0	207.2	77.7	43.9	42.9	48.3	14.3	35.2	21.9	80.1	13.8
Level of Service	D	E	F	E	D	D	D	B	D	C	F	B
Approach Delay (s)		160.0			65.5			19.9			73.4	
Approach LOS		F			E			B			E	

Intersection Summary			
HCM 2000 Control Delay	69.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.2
Intersection Capacity Utilization	108.7%	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)	139	84	1127	42	26	2886
Future Volume (vph)	139	84	1127	42	26	2886
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		15.0	15.0	
Storage Lanes	1	0		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.949			0.850		
Flt Protected	0.970				0.950	
Satd. Flow (prot)	1715	0	3539	1583	1770	3539
Flt Permitted	0.970				0.950	
Satd. Flow (perm)	1715	0	3539	1583	1770	3539
Link Speed (k/h)	50		60			60
Link Distance (m)	72.4		458.5			731.4
Travel Time (s)	5.2		27.5			43.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	151	91	1225	46	28	3137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	242	0	1225	46	28	3137
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		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	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 99.3%	ICU Level of Service F
Analysis Period (min) 15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	139	84	1127	42	26	2886
Future Volume (Veh/h)	139	84	1127	42	26	2886
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	151	91	1225	46	28	3137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2850	612			1271	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2850	612			1271	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	79			95	
cM capacity (veh/h)	13	436			542	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	242	612	612	46	28	1568	1568
Volume Left	151	0	0	0	28	0	0
Volume Right	91	0	0	46	0	0	0
cSH	20	1700	1700	1700	542	1700	1700
Volume to Capacity	11.98	0.36	0.36	0.03	0.05	0.92	0.92
Queue Length 95th (m)	Err	0.0	0.0	0.0	1.3	0.0	0.0
Control Delay (s)	Err	0.0	0.0	0.0	12.0	0.0	0.0
Lane LOS	F				B		
Approach Delay (s)	Err	0.0			0.1		
Approach LOS	F						

Intersection Summary			
Average Delay	517.3		
Intersection Capacity Utilization	99.3%	ICU Level of Service	F
Analysis Period (min)	15		

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	1150	78	149	2909	0
Future Volume (vph)	1	0	1	161	0	65	0	1150	78	149	2909	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	0.95	1.00	1.00	0.95	0.95
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	3406	1439	1770	3471	0
Flt Permitted		0.976		0.757						0.178		
Satd. Flow (perm)	0	1680	0	1219	0	1369	1863	3406	1406	332	3471	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	1186	80	154	2999	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	166	0	67	0	1186	80	154	2999	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)	40.6	40.6		40.6		40.6	88.2	88.2	88.2	11.2	99.4	
Total Split (%)	29.0%	29.0%		29.0%		29.0%	63.0%	63.0%	63.0%	8.0%	71.0%	
Maximum Green (s)	34.4	34.4		34.4		34.4	82.3	82.3	82.3	7.2	93.5	
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)		24.3		24.3		24.3		91.4	91.4	105.5	103.6	
Actuated g/C Ratio		0.17		0.17		0.17		0.65	0.65	0.75	0.74	
v/c Ratio		0.01		0.79		0.23		0.53	0.09	0.46	1.17	
Control Delay		0.0		79.2		11.5		20.4	12.4	7.0	94.4	
Queue Delay		0.0		0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay		0.0		79.2		11.5		20.4	12.4	7.0	94.4	
LOS		A		E		B		C	B	A	F	
Approach Delay					59.7			19.9			90.2	
Approach LOS					E			B			F	
Queue Length 50th (m)		0.0		46.8		0.0		73.3	3.1	10.8	~545.4	
Queue Length 95th (m)		0.0		68.8		12.8		151.9	m22.2	m13.7	m#542.2	
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)		453		299		386		2224	937	335	2568	
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		0.00		0.56		0.17		0.53	0.09	0.46	1.17	

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: 1.17

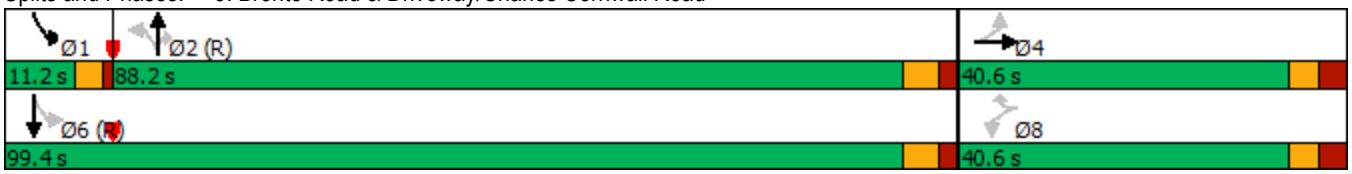
Intersection Signal Delay: 69.5	Intersection LOS: E
Intersection Capacity Utilization 121.7%	ICU Level of Service H
Analysis Period (min) 15	

~ 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	1150	78	149	2909	0
Future Volume (vph)	1	0	1	161	0	65	0	1150	78	149	2909	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		0.95	1.00	1.00	0.95	
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		1367		3406	1406	1770	3471	
Flt Permitted		0.98		0.76		1.00		1.00	1.00	0.18	1.00	
Satd. Flow (perm)		1679		1218		1367		3406	1406	332	3471	
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	1186	80	154	2999	0
RTOR Reduction (vph)	0	2	0	0	0	55	0	0	19	0	0	0
Lane Group Flow (vph)	0	0	0	166	0	12	0	1186	61	154	2999	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)		24.3		24.3		24.3		91.4	91.4	103.6	103.6	
Effective Green, g (s)		24.3		24.3		24.3		91.4	91.4	103.6	103.6	
Actuated g/C Ratio		0.17		0.17		0.17		0.65	0.65	0.74	0.74	
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)		291		211		237		2223	917	329	2568	
v/s Ratio Prot								0.35		0.03	c0.86	
v/s Ratio Perm		0.00		c0.14		0.01			0.04	0.32		
v/c Ratio		0.00		0.79		0.05		0.53	0.07	0.47	1.17	
Uniform Delay, d1		47.8		55.4		48.2		12.9	8.8	8.3	18.2	
Progression Factor		1.00		1.00		1.00		1.39	2.77	1.01	0.75	
Incremental Delay, d2		0.0		17.4		0.1		0.7	0.1	0.3	77.0	
Delay (s)		47.8		72.7		48.3		18.7	24.5	8.7	90.6	
Level of Service		D		E		D		B	C	A	F	
Approach Delay (s)		47.8			65.7			19.1			86.6	
Approach LOS		D			E			B			F	

Intersection Summary			
HCM 2000 Control Delay	67.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.1
Intersection Capacity Utilization	121.7%	ICU Level of Service	H
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	1220	241	268	2865	1
Future Volume (vph)	0	0	0	17	0	44	0	1220	241	268	2865	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	0.95	1.00	1.00	0.95	0.95
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	3438	1583	1770	3471	0
Flt Permitted				0.950	0.950					0.144		
Satd. Flow (perm)	0	1863	0	1681	1681	1555	1863	3438	1546	268	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						112			189			
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	1245	246	273	2923	1
Shared Lane Traffic (%)				50%								
Lane Group Flow (vph)	0	0	0	8	9	45	0	1245	246	273	2924	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		83.0	83.0	116.8	115.4	
Actuated g/C Ratio				0.12	0.12	0.12		0.59	0.59	0.83	0.82	
v/c Ratio				0.04	0.05	0.16		0.61	0.25	0.53	1.02	
Control Delay				49.1	49.3	1.2		18.6	6.0	18.7	19.5	
Queue Delay				0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay				49.1	49.3	1.2		18.6	6.0	18.7	19.5	
LOS				D	D	A		B	A	B	B	
Approach Delay					14.4			16.5			19.4	
Approach LOS					B			B			B	
Queue Length 50th (m)				2.3	2.5	0.0		68.6	1.4	19.3	~74.1	
Queue Length 95th (m)				7.1	7.5	0.0		205.6	27.0	m14.2	m#423.6	
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		2038	993	514	2861	
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	0.25	0.53	1.02	

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: 1.02

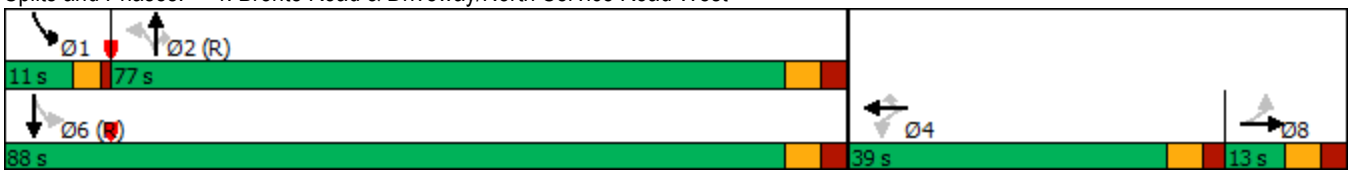
Intersection Signal Delay: 18.4	Intersection LOS: B
Intersection Capacity Utilization 116.7%	ICU Level of Service H
Analysis Period (min) 15	

~ 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	17	0	44	0	1220	241	268	2865	1
Future Volume (vph)	0	0	0	17	0	44	0	1220	241	268	2865	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		0.95	1.00	1.00	0.95	
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		3438	1547	1770	3471	
Flt Permitted				0.95	0.95	1.00		1.00	1.00	0.14	1.00	
Satd. Flow (perm)				1681	1681	1545		3438	1547	269	3471	
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	1245	246	273	2923	1
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	79	0	0	0
Lane Group Flow (vph)	0	0	0	8	9	5	0	1245	167	273	2924	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		81.8	81.8	112.9	112.9	
Effective Green, g (s)				14.5	14.5	14.5		81.8	81.8	112.9	112.9	
Actuated g/C Ratio				0.10	0.10	0.10		0.58	0.58	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		2008	903	507	2799	
v/s Ratio Prot								0.36		0.10	c0.84	
v/s Ratio Perm				0.00	0.01	0.00			0.11	0.33		
v/c Ratio				0.05	0.05	0.03		0.62	0.19	0.54	1.04	
Uniform Delay, d1				56.5	56.6	56.4		19.0	13.6	13.0	13.5	
Progression Factor				1.00	1.00	1.00		0.90	1.31	1.85	0.19	
Incremental Delay, d2				0.2	0.3	0.2		1.1	0.3	0.1	21.4	
Delay (s)				56.7	56.8	56.6		18.1	18.2	24.3	24.0	
Level of Service				E	E	E		B	B	C	C	
Approach Delay (s)		0.0			56.6			18.1			24.0	
Approach LOS		A			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.3
Intersection Capacity Utilization	116.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	193	289	1172	0	0	1798
Future Volume (vph)	193	289	1172	0	0	1798
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	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3335	1568	3471	0	0	3505
Flt Permitted	0.950					
Satd. Flow (perm)	3335	1568	3471	0	0	3505
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		30				
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	314	1274	0	0	1954
Shared Lane Traffic (%)						
Lane Group Flow (vph)	210	314	1274	0	0	1954
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)	30.0	30.0	40.0			40.0
Total Split (%)	42.9%	42.9%	57.1%			57.1%
Maximum Green (s)	23.3	23.3	33.5			33.5
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)	17.7	17.7	39.1			39.1
Actuated g/C Ratio	0.25	0.25	0.56			0.56
v/c Ratio	0.25	0.75	0.66			1.00
Control Delay	20.4	32.9	24.1			26.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	20.4	32.9	24.1			26.2
LOS	C	C	C			C
Approach Delay	27.9		24.1			26.2
Approach LOS	C		C			C
Queue Length 50th (m)	11.8	35.7	136.8			~192.2
Queue Length 95th (m)	17.8	56.5	176.5			m#258.6
Internal Link Dist (m)	41.9		352.8			275.0
Turn Bay Length (m)		90.0				
Base Capacity (vph)	1110	541	1940			1959
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	0.58	0.66			1.00

Intersection Summary

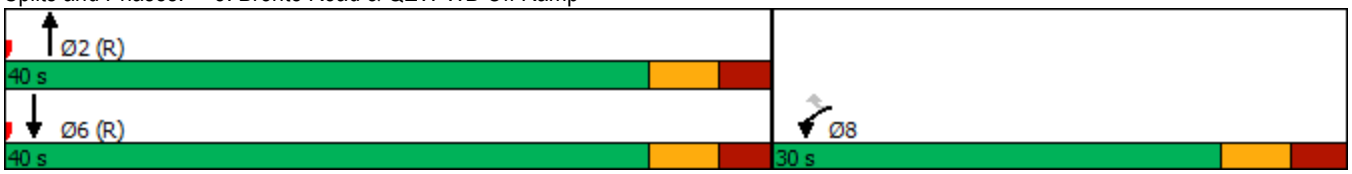
Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 14 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 25.7 Intersection LOS: C
Intersection Capacity Utilization 69.0% ICU Level of Service C
Analysis Period (min) 15

~ 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)	193	289	1172	0	0	1798
Future Volume (vph)	193	289	1172	0	0	1798
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	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3335	1568	3471			3505
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3335	1568	3471			3505
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	210	314	1274	0	0	1954
RTOR Reduction (vph)	0	22	0	0	0	0
Lane Group Flow (vph)	210	292	1274	0	0	1954
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)	17.7	17.7	39.1			39.1
Effective Green, g (s)	17.7	17.7	39.1			39.1
Actuated g/C Ratio	0.25	0.25	0.56			0.56
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)	843	396	1938			1957
v/s Ratio Prot	0.06		0.37			c0.56
v/s Ratio Perm		c0.19				
v/c Ratio	0.25	0.74	0.66			1.00
Uniform Delay, d1	20.9	24.0	10.8			15.4
Progression Factor	1.00	1.00	1.95			1.19
Incremental Delay, d2	0.2	7.0	1.3			5.8
Delay (s)	21.0	31.0	22.3			24.0
Level of Service	C	C	C			C
Approach Delay (s)	27.0		22.3			24.0
Approach LOS	C		C			C

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
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	601	3	780	232	651	1329	9
Future Volume (vph)	7	1	2	359	2	601	3	780	232	651	1329	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	0.95	1.00	1.00	0.95	0.95
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	3374	1583	1770	3468	0
Flt Permitted	0.950			0.950	0.994		0.181			0.121		
Satd. Flow (perm)	1770	1676	0	1665	1424	1461	337	3374	1543	225	3468	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					265	346			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	653	3	848	252	708	1445	10
Shared Lane Traffic (%)				10%		47%						
Lane Group Flow (vph)	8	3	0	351	348	346	3	848	252	708	1455	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		34.3	34.3	34.3	46.5	46.5	46.5	89.4	86.9	
Actuated g/C Ratio	0.05	0.05		0.24	0.24	0.24	0.33	0.33	0.33	0.64	0.62	
v/c Ratio	0.09	0.04		0.86	0.63	0.56	0.03	0.76	0.37	1.30	0.68	
Control Delay	65.6	64.0		71.0	16.7	7.6	32.7	46.9	5.4	174.5	14.9	
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		71.0	16.7	7.6	32.7	46.9	5.4	174.5	14.9	
LOS	E	E		E	B	A	C	D	A	F	B	
Approach Delay		65.1			31.9			37.4			67.2	
Approach LOS		E			C			D			E	
Queue Length 50th (m)	2.3	0.9		101.5	20.9	0.0	0.6	115.8	0.0	~230.0	134.6	
Queue Length 95th (m)	8.3	4.3		#140.9	59.2	26.9	3.1	141.7	19.5	m#299.8	m148.9	
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	135		455	582	651	111	1120	680	545	2153	
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	0.06	0.02		0.77	0.60	0.53	0.03	0.76	0.37	1.30	0.68	

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: 1.30
Intersection Signal Delay: 51.0 Intersection LOS: D

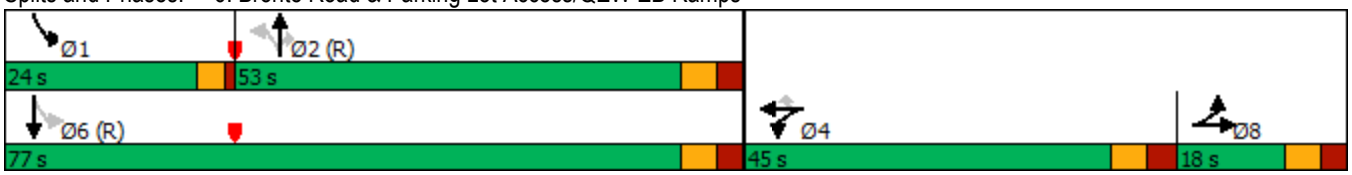
Intersection Capacity Utilization 94.8%	ICU Level of Service F
Analysis Period (min) 15	

~ 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	601	3	780	232	651	1329	9
Future Volume (vph)	7	1	2	359	2	601	3	780	232	651	1329	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	0.95	1.00	1.00	0.95	
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	3374	1542	1770	3467	
Flt Permitted	0.95	1.00		0.95	0.99	1.00	0.18	1.00	1.00	0.12	1.00	
Satd. Flow (perm)	1770	1676		1665	1424	1461	338	3374	1542	225	3467	
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	653	3	848	252	708	1445	10
RTOR Reduction (vph)	0	0	0	0	200	261	0	0	176	0	0	0
Lane Group Flow (vph)	8	3	0	351	148	85	3	848	77	708	1455	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		34.3	34.3	34.3	42.5	42.5	42.5	82.9	82.9	
Effective Green, g (s)	2.9	2.9		34.3	34.3	34.3	42.5	42.5	42.5	82.9	82.9	
Actuated g/C Ratio	0.02	0.02		0.24	0.24	0.24	0.30	0.30	0.30	0.59	0.59	
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		407	348	357	102	1024	468	534	2052	
v/s Ratio Prot	c0.00	0.00		c0.21	0.10			0.25		c0.34	0.42	
v/s Ratio Perm						0.06	0.01		0.05	c0.44		
v/c Ratio	0.22	0.09		0.86	0.43	0.24	0.03	0.83	0.16	1.33	0.71	
Uniform Delay, d1	67.4	67.3		50.6	44.5	42.4	34.3	45.4	35.7	40.1	20.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.18	0.72	
Incremental Delay, d2	3.1	1.1		16.9	0.8	0.3	0.5	7.7	0.8	151.7	0.8	
Delay (s)	70.6	68.4		67.5	45.4	42.7	34.8	53.1	36.5	198.9	15.4	
Level of Service	E	E		E	D	D	C	D	D	F	B	
Approach Delay (s)		70.0			51.9			49.2			75.4	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	63.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	94.8%	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)	11	203	390	520	88	196	62	926	226	248	2002	12
Future Volume (vph)	11	203	390	520	88	196	62	926	226	248	2002	12
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	0.95	1.00	1.00	0.95	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	3343	1485	1770	3406	1336
Flt Permitted	0.698			0.386			0.061			0.188		
Satd. Flow (perm)	1200	1863	1554	1395	1792	1503	110	3343	1426	349	3406	1289
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			152			202			233			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)	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	536	91	202	64	955	233	256	2064	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	209	402	536	91	202	64	955	233	256	2064	12
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)	10.0	16.7	16.7	10.0	36.7	36.7	10.0	36.5	36.5	10.0	36.5	36.5
Total Split (s)	10.0	31.7	31.7	15.0	36.7	36.7	10.0	70.3	70.3	23.0	83.3	83.3
Total Split (%)	7.1%	22.6%	22.6%	10.7%	26.2%	26.2%	7.1%	50.2%	50.2%	16.4%	59.5%	59.5%
Maximum Green (s)	6.0	25.0	25.0	11.0	30.0	30.0	6.0	63.8	63.8	19.0	76.8	76.8
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)	33.7	25.0	25.0	42.7	36.0	36.0	77.0	68.5	68.5	89.3	78.8	78.8
Actuated g/C Ratio	0.24	0.18	0.18	0.30	0.26	0.26	0.55	0.49	0.49	0.64	0.56	0.56
v/c Ratio	0.04	0.63	1.00	0.92	0.20	0.38	0.50	0.58	0.29	0.70	1.08	0.02
Control Delay	34.8	62.7	80.3	64.4	43.8	7.9	30.3	27.8	3.5	21.8	75.2	0.0
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	34.8	62.7	80.3	64.4	43.8	7.9	30.3	27.8	3.5	21.8	75.2	0.0
LOS	C	E	F	E	D	A	C	C	A	C	E	A
Approach Delay		73.5			48.4			23.4			68.9	
Approach LOS		E			D			C			E	
Queue Length 50th (m)	2.3	57.0	79.0	66.4	20.0	0.0	6.6	101.9	0.0	29.7	~359.5	0.0
Queue Length 95th (m)	7.3	85.6	#150.1	#97.9	38.9	21.6	18.7	133.1	15.2	43.5	#402.5	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)	308	332	402	585	461	536	129	1636	816	415	1917	779
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	0.04	0.63	1.00	0.92	0.20	0.38	0.50	0.58	0.29	0.62	1.08	0.02

Intersection Summary

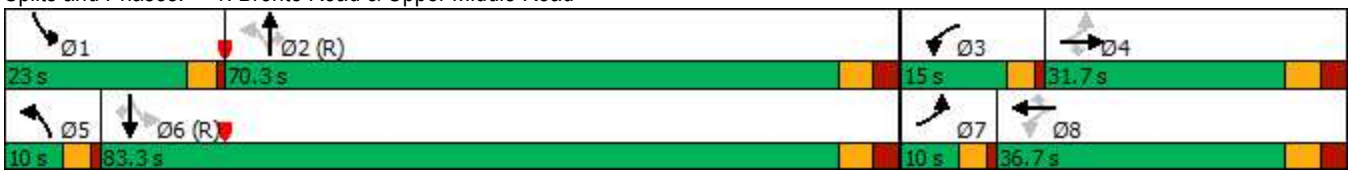
Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 82.6 (59%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 54.8	Intersection LOS: D
Intersection Capacity Utilization 108.7%	ICU Level of Service G
Analysis Period (min) 15	

~ 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	520	88	196	62	926	226	248	2002	12
Future Volume (vph)	11	203	390	520	88	196	62	926	226	248	2002	12
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	0.95	1.00	1.00	0.95	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	1555	3433	1792	1504	1719	3343	1426	1769	3406	1289
Flt Permitted	0.70	1.00	1.00	0.39	1.00	1.00	0.06	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	1205	1863	1555	1393	1792	1504	110	3343	1426	350	3406	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	536	91	202	64	955	233	256	2064	12
RTOR Reduction (vph)	0	0	122	0	0	150	0	0	123	0	0	6
Lane Group Flow (vph)	11	209	280	536	91	52	64	955	110	256	2064	6
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)	29.8	27.4	27.4	42.4	36.0	36.0	70.9	66.1	66.1	84.4	75.6	75.6
Effective Green, g (s)	29.8	27.4	27.4	42.4	36.0	36.0	70.9	66.1	66.1	84.4	75.6	75.6
Actuated g/C Ratio	0.21	0.20	0.20	0.30	0.26	0.26	0.51	0.47	0.47	0.60	0.54	0.54
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)	263	364	304	582	460	386	110	1578	673	355	1839	696
v/s Ratio Prot	0.00	0.11		c0.07	0.05		0.02	0.29		c0.07	c0.61	
v/s Ratio Perm	0.01		0.18	c0.21		0.03	0.27		0.08	0.36		0.01
v/c Ratio	0.04	0.57	0.92	0.92	0.20	0.13	0.58	0.61	0.16	0.72	1.12	0.01
Uniform Delay, d1	43.7	51.0	55.2	46.0	40.7	40.0	32.0	27.3	21.1	17.4	32.2	14.9
Progression 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
Incremental Delay, d2	0.1	2.2	31.7	20.1	0.2	0.2	7.6	1.7	0.5	7.1	62.9	0.0
Delay (s)	43.7	53.2	86.9	66.0	40.9	40.2	39.6	29.0	21.7	24.5	95.1	14.9
Level of Service	D	D	F	E	D	D	D	C	C	C	F	B
Approach Delay (s)		74.8			57.0			28.2			86.9	
Approach LOS		E			E			C			F	

Intersection Summary			
HCM 2000 Control Delay	65.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.2
Intersection Capacity Utilization	108.7%	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)	139	84	1127	42	26	2886
Future Volume (vph)	139	84	1127	42	26	2886
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0	0.0		15.0	15.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.209	
Satd. Flow (perm)	1770	1583	3539	1583	389	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		91		26		
Link Speed (k/h)	50		60			60
Link Distance (m)	72.4		458.5			731.4
Travel Time (s)	5.2		27.5			43.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	151	91	1225	46	28	3137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	91	1225	46	28	3137
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		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	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	0.0	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	Perm	Perm	NA
Protected Phases	3		2			6
Permitted Phases		8		2	6	

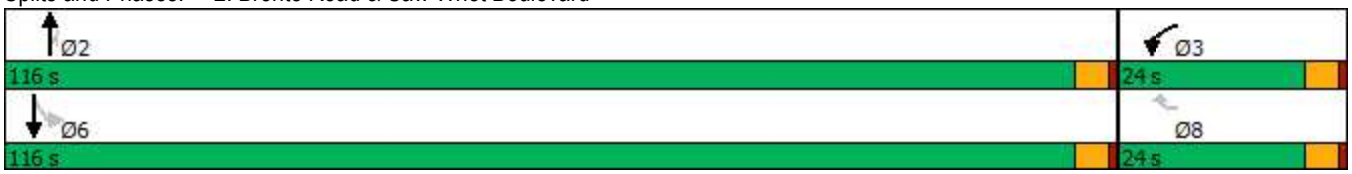
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	24.0	24.0	116.0	116.0	116.0	116.0
Total Split (%)	17.1%	17.1%	82.9%	82.9%	82.9%	82.9%
Maximum Green (s)	19.5	19.5	111.5	111.5	111.5	111.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	16.1	16.1	111.5	111.5	111.5	111.5
Actuated g/C Ratio	0.12	0.12	0.82	0.82	0.82	0.82
v/c Ratio	0.73	0.34	0.42	0.04	0.09	1.09
Control Delay	78.2	13.8	4.2	1.6	3.7	60.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.2	13.8	4.2	1.6	3.7	60.5
LOS	E	B	A	A	A	E
Approach Delay	54.0		4.1			60.0
Approach LOS	D		A			E
Queue Length 50th (m)	42.0	0.0	43.6	0.9	1.3	~531.0
Queue Length 95th (m)	67.0	16.7	58.5	3.5	3.9	#583.8
Internal Link Dist (m)	48.4		434.5			707.4
Turn Bay Length (m)	15.0			15.0	15.0	
Base Capacity (vph)	252	303	2889	1297	317	2889
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.30	0.42	0.04	0.09	1.09

Intersection Summary	
Area Type: Other	
Cycle Length: 140	
Actuated Cycle Length: 136.6	
Natural Cycle: 150	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 44.5	Intersection LOS: D
Intersection Capacity Utilization 95.0%	ICU Level of Service F
Analysis Period (min) 15	

~ 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: 2: Bronte Road & Saw Whet Boulevard



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	139	84	1127	42	26	2886
Future Volume (vph)	139	84	1127	42	26	2886
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.21	1.00
Satd. Flow (perm)	1770	1583	3539	1583	390	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	151	91	1225	46	28	3137
RTOR Reduction (vph)	0	80	0	5	0	0
Lane Group Flow (vph)	151	11	1225	41	28	3137
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	3		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	16.1	16.1	111.6	111.6	111.6	111.6
Effective Green, g (s)	16.1	16.1	111.6	111.6	111.6	111.6
Actuated g/C Ratio	0.12	0.12	0.82	0.82	0.82	0.82
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	186	2889	1292	318	2889
v/s Ratio Prot	c0.09		0.35			c0.89
v/s Ratio Perm		0.01		0.03	0.07	
v/c Ratio	0.73	0.06	0.42	0.03	0.09	1.09
Uniform Delay, d1	58.2	53.6	3.5	2.4	2.5	12.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.9	0.1	0.5	0.0	0.5	45.3
Delay (s)	70.0	53.7	4.0	2.4	3.0	57.9
Level of Service	E	D	A	A	A	E
Approach Delay (s)	63.9		3.9			57.4
Approach LOS	E		A			E

Intersection Summary			
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	136.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	95.0%	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	1	2	359	2	601	3	780	232	651	1329	9
Future Volume (vph)	7	1	2	359	2	601	3	780	232	651	1329	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	0.95	1.00	1.00	0.95	0.95
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	3374	1583	1770	3468	0
Flt Permitted	0.950			0.950	0.994		0.181			0.106		
Satd. Flow (perm)	1770	1676	0	1665	1424	1461	337	3374	1541	197	3468	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					246	346			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	653	3	848	252	708	1445	10
Shared Lane Traffic (%)				10%		47%						
Lane Group Flow (vph)	8	3	0	351	348	346	3	848	252	708	1455	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	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases						4	2		2	6		
Detector Phase	8	8		4	4	4	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0	10.0	5.0	20.0	20.0	7.0	20.0	
Minimum Split (s)	13.7	13.7		36.7	36.7	36.7	9.5	36.5	36.5	11.0	36.5	
Total Split (s)	13.7	13.7		37.0	37.0	37.0	9.5	44.3	44.3	45.0	79.8	
Total Split (%)	9.8%	9.8%		26.4%	26.4%	26.4%	6.8%	31.6%	31.6%	32.1%	57.0%	
Maximum Green (s)	7.0	7.0		30.3	30.3	30.3	5.0	37.8	37.8	41.0	73.3	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.5	3.7	3.7	3.0	3.7	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	1.0	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	4.5	6.5	6.5	4.0	6.5	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	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	
Recall Mode	None	None		None	None	None	None	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)				23.0	23.0	23.0		23.0	23.0		23.0	
Pedestrian Calls (#/hr)				0	0	0		0	0		0	
Act Effct Green (s)	7.0	7.0		30.3	30.3	30.3	45.1	37.8	37.8	93.5	89.1	
Actuated g/C Ratio	0.05	0.05		0.22	0.22	0.22	0.32	0.27	0.27	0.67	0.64	
v/c Ratio	0.09	0.04		0.97	0.70	0.59	0.02	0.93	0.42	1.04	0.66	
Control Delay	65.9	64.3		95.7	23.0	9.0	17.0	67.2	6.8	58.8	24.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	65.9	64.3		95.7	23.0	9.0	17.0	67.2	6.8	58.8	24.7	
LOS	E	E		F	C	A	B	E	A	E	C	
Approach Delay		65.4			42.8			53.2			35.9	
Approach LOS		E			D			D			D	
Queue Length 50th (m)	2.3	0.9		108.0	29.4	0.0	0.4	127.4	0.0	129.8	100.3	
Queue Length 95th (m)	8.3	4.3		#175.5	72.0	29.8	1.7	#167.5	21.6	m#237.6	m233.6	
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)	88	83		360	500	587	163	910	600	684	2207	
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	0.04		0.97	0.70	0.59	0.02	0.93	0.42	1.04	0.66	

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: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 42.0 Intersection LOS: D

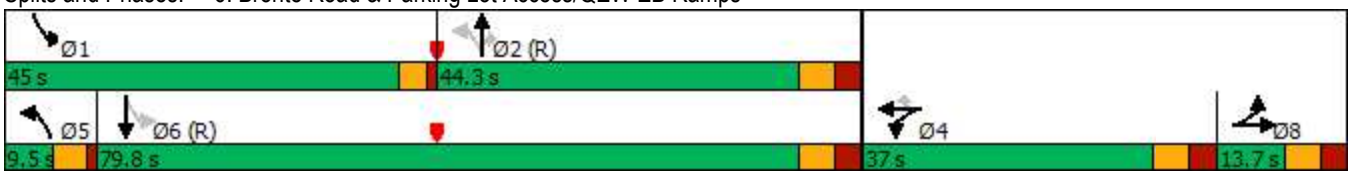
Intersection Capacity Utilization 94.8% ICU Level of Service F

Analysis Period (min) 15

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	601	3	780	232	651	1329	9
Future Volume (vph)	7	1	2	359	2	601	3	780	232	651	1329	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	4.5	6.5	6.5	4.0	6.5	
Lane Util. Factor	1.00	1.00		0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.95	
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	3374	1540	1770	3467	
Flt Permitted	0.95	1.00		0.95	0.99	1.00	0.18	1.00	1.00	0.11	1.00	
Satd. Flow (perm)	1770	1676		1665	1424	1461	338	3374	1540	197	3467	
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	653	3	848	252	708	1445	10
RTOR Reduction (vph)	0	0	0	0	193	271	0	0	191	0	0	0
Lane Group Flow (vph)	8	3	0	351	155	75	3	848	61	708	1455	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	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases						4	2		2	6		
Actuated Green, G (s)	2.8	2.8		30.3	30.3	30.3	34.8	33.8	33.8	87.0	81.5	
Effective Green, g (s)	2.8	2.8		30.3	30.3	30.3	34.8	33.8	33.8	87.0	81.5	
Actuated g/C Ratio	0.02	0.02		0.22	0.22	0.22	0.25	0.24	0.24	0.62	0.58	
Clearance Time (s)	6.7	6.7		6.7	6.7	6.7	4.5	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)	35	33		360	308	316	94	814	371	675	2018	
v/s Ratio Prot	c0.00	0.00		c0.21	0.11		0.00	0.25		c0.37	0.42	
v/s Ratio Perm						0.05	0.01		0.04	c0.28		
v/c Ratio	0.23	0.09		0.97	0.50	0.24	0.03	1.04	0.16	1.05	0.72	
Uniform Delay, d1	67.5	67.4		54.5	48.2	45.3	39.6	53.1	41.9	39.1	21.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.71	1.34	
Incremental Delay, d2	3.3	1.2		40.4	1.3	0.4	0.1	42.9	0.9	35.5	0.9	
Delay (s)	70.9	68.5		94.9	49.5	45.7	39.7	96.0	42.9	63.2	29.1	
Level of Service	E	E		F	D	D	D	F	D	E	C	
Approach Delay (s)		70.2			63.5			83.7			40.3	
Approach LOS		E			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	57.1	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)	24.4
Intersection Capacity Utilization	94.8%	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)	7	74	114	230	155	252	278	1863	346	228	1166	16
Future Volume (vph)	7	74	114	230	155	252	278	1863	346	228	1166	16
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	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98			0.97	1.00		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	3539	1558	1770	3471	1473
Flt Permitted	0.653			0.561			0.132			0.054		
Satd. Flow (perm)	1208	1863	1550	2008	1863	1542	246	3539	1518	101	3471	1435
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121			186			224			122
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		296.6			291.2			731.2			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	245	165	268	296	1982	368	243	1240	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	79	121	245	165	268	296	1982	368	243	1240	17
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)	11.2	23.8	23.8	19.6	32.2	32.2	12.6	84.0	84.0	12.6	84.0	84.0
Total Split (%)	8.0%	17.0%	17.0%	14.0%	23.0%	23.0%	9.0%	60.0%	60.0%	9.0%	60.0%	60.0%
Maximum Green (s)	7.2	17.1	17.1	15.6	25.5	25.5	8.6	77.5	77.5	8.6	77.5	77.5
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)	21.2	12.3	12.3	32.5	27.6	27.6	95.5	77.5	77.5	95.5	77.5	77.5
Actuated g/C Ratio	0.15	0.09	0.09	0.23	0.20	0.20	0.68	0.55	0.55	0.68	0.55	0.55
v/c Ratio	0.03	0.48	0.49	0.41	0.45	0.59	0.88	1.01	0.39	0.96	0.65	0.02
Control Delay	39.3	70.3	16.5	45.8	53.7	21.7	38.7	23.0	0.8	87.0	23.7	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	39.3	70.3	16.5	45.8	53.7	21.7	38.7	23.0	0.8	87.0	23.7	0.1
LOS	D	E	B	D	D	C	D	C	A	F	C	A
Approach Delay		37.8			38.2			21.7			33.7	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	1.6	22.5	0.0	30.8	42.1	20.2	39.0	~264.8	3.0	53.0	127.5	0.0
Queue Length 95th (m)	5.6	38.7	19.3	40.6	67.8	53.2	m#53.9	m90.6	m0.0	#136.4	151.5	0.0
Internal Link Dist (m)		272.6			267.2			707.2			96.4	
Turn Bay Length (m)	70.0		70.0	140.0			135.0		80.0	180.0		50.0
Base Capacity (vph)	220	227	295	621	370	455	336	1959	940	253	1921	848
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	0.35	0.41	0.39	0.45	0.59	0.88	1.01	0.39	0.96	0.65	0.02

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: 1.01	
Intersection Signal Delay: 28.1	Intersection LOS: C
Intersection Capacity Utilization 93.8%	ICU Level of Service F
Analysis Period (min) 15	

~ 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: 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	230	155	252	278	1863	346	228	1166	16
Future Volume (vph)	7	74	114	230	155	252	278	1863	346	228	1166	16
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	0.95	1.00	1.00	0.95	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	1548	3400	1863	1543	1770	3539	1518	1770	3471	1435
Flt Permitted	0.65	1.00	1.00	0.56	1.00	1.00	0.13	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1211	1863	1548	2007	1863	1543	245	3539	1518	100	3471	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	245	165	268	296	1982	368	243	1240	17
RTOR Reduction (vph)	0	0	108	0	0	149	0	0	105	0	0	8
Lane Group Flow (vph)	7	79	13	245	165	119	296	1982	263	243	1240	9
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)	16.9	15.5	15.5	33.0	27.6	27.6	89.8	74.3	74.3	89.8	74.3	74.3
Effective Green, g (s)	16.9	15.5	15.5	33.0	27.6	27.6	89.8	74.3	74.3	89.8	74.3	74.3
Actuated g/C Ratio	0.12	0.11	0.11	0.24	0.20	0.20	0.64	0.53	0.53	0.64	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)	151	206	171	607	367	304	325	1878	805	249	1842	761
v/s Ratio Prot	0.00	0.04		c0.04	c0.09		0.10	c0.56		c0.11	0.36	
v/s Ratio Perm	0.01		0.01	0.06		0.08	0.48		0.17	0.52		0.01
v/c Ratio	0.05	0.38	0.08	0.40	0.45	0.39	0.91	1.06	0.33	0.98	0.67	0.01
Uniform Delay, d1	54.3	57.8	55.8	44.1	49.5	48.9	26.5	32.9	18.6	48.9	24.0	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	2.09	0.38	0.10	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.2	0.2	0.4	0.9	0.8	4.0	26.5	0.1	49.8	2.0	0.0
Delay (s)	54.5	59.0	56.0	44.6	50.4	49.7	59.4	39.1	2.0	98.8	26.0	15.5
Level of Service	D	E	E	D	D	D	E	D	A	F	C	B
Approach Delay (s)		57.1			48.0			36.2			37.6	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.2
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	52	2453	144	88	1422
Future Volume (vph)	85	52	2453	144	88	1422
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		15.0	15.0	
Storage Lanes	1	0		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.948			0.850		
Flt Protected	0.970				0.950	
Satd. Flow (prot)	1713	0	3539	1583	1770	3539
Flt Permitted	0.970				0.950	
Satd. Flow (perm)	1713	0	3539	1583	1770	3539
Link Speed (k/h)	50		60			60
Link Distance (m)	77.9		458.7			731.2
Travel Time (s)	5.6		27.5			43.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	57	2666	157	96	1546
Shared Lane Traffic (%)						
Lane Group Flow (vph)	149	0	2666	157	96	1546
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		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	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 87.7%	ICU Level of Service E
Analysis Period (min) 15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	85	52	2453	144	88	1422
Future Volume (Veh/h)	85	52	2453	144	88	1422
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	92	57	2666	157	96	1546
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	3631	1333			2823	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3631	1333			2823	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	60			28	
cM capacity (veh/h)	1	144			133	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	149	1333	1333	157	96	773	773
Volume Left	92	0	0	0	96	0	0
Volume Right	57	0	0	157	0	0	0
cSH	2	1700	1700	1700	133	1700	1700
Volume to Capacity	87.72	0.78	0.78	0.09	0.72	0.45	0.45
Queue Length 95th (m)	Err	0.0	0.0	0.0	32.9	0.0	0.0
Control Delay (s)	Err	0.0	0.0	0.0	81.9	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	Err	0.0			4.8		
Approach LOS	F						

Intersection Summary			
Average Delay	324.6		
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

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	2547	175	89	1464	0
Future Volume (vph)	0	0	0	138	0	110	1	2547	175	89	1464	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	0.95	1.00	1.00	0.95	0.95
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	3505	1388	1770	3471	0
Flt Permitted				0.757			0.161			0.040		
Satd. Flow (perm)	0	1863	0	1410	0	1557	300	3505	1356	75	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						90			56			
Link Speed (k/h)		20			20			60			60	
Link Distance (m)		78.7			109.0			435.9			458.7	
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	2626	180	92	1509	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	142	0	113	1	2626	180	92	1509	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)	40.6	40.6		40.6		40.6	88.2	88.2	88.2	11.2	99.4	
Total Split (%)	29.0%	29.0%		29.0%		29.0%	63.0%	63.0%	63.0%	8.0%	71.0%	
Maximum Green (s)	34.4	34.4		34.4		34.4	82.3	82.3	82.3	7.2	93.5	
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)				19.4		19.4	95.7	95.7	95.7	110.4	108.5	
Actuated g/C Ratio				0.14		0.14	0.68	0.68	0.68	0.79	0.78	
v/c Ratio				0.73		0.39	0.00	1.10	0.19	0.56	0.56	
Control Delay				77.9		18.5	1.0	56.0	0.1	50.6	5.3	
Queue Delay				0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay				77.9		18.5	1.0	56.0	0.1	50.6	5.3	
LOS				E		B	A	E	A	D	A	
Approach Delay					51.5			52.4			7.9	
Approach LOS					D			D			A	
Queue Length 50th (m)				40.2		5.9	0.0	~464.4	0.0	13.9	44.3	
Queue Length 95th (m)				61.0		23.4	m0.0	m13.0	m0.0	m31.1	56.0	
Internal Link Dist (m)		54.7			85.0			411.9			434.7	
Turn Bay Length (m)						40.0	35.0		30.0	70.0		
Base Capacity (vph)				346		450	205	2396	944	169	2689	
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				0.41		0.25	0.00	1.10	0.19	0.54	0.56	

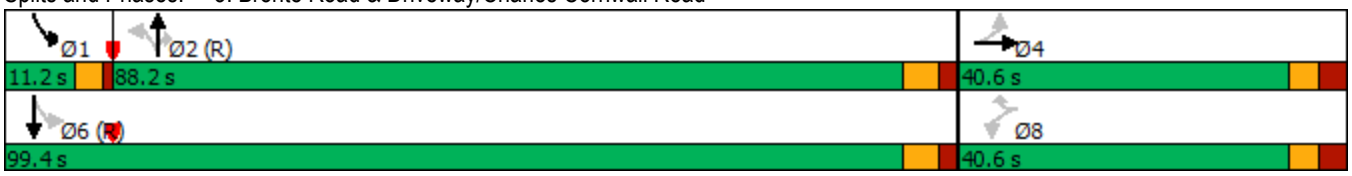
Intersection Summary

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: 1.10

Intersection Signal Delay: 37.1	Intersection LOS: D
Intersection Capacity Utilization 89.9%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
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	2547	175	89	1464	0
Future Volume (vph)	0	0	0	138	0	110	1	2547	175	89	1464	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	0.95	1.00	1.00	0.95	
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	3505	1357	1770	3471	
Flt Permitted				0.76		1.00	0.16	1.00	1.00	0.04	1.00	
Satd. Flow (perm)				1410		1552	299	3505	1357	75	3471	
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	2626	180	92	1509	0
RTOR Reduction (vph)	0	0	0	0	0	78	0	0	18	0	0	0
Lane Group Flow (vph)	0	0	0	142	0	35	1	2626	162	92	1509	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)				19.4		19.4	95.7	95.7	95.7	108.5	108.5	
Effective Green, g (s)				19.4		19.4	95.7	95.7	95.7	108.5	108.5	
Actuated g/C Ratio				0.14		0.14	0.68	0.68	0.68	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)				195		215	204	2395	927	164	2690	
v/s Ratio Prot								c0.75		0.04	c0.43	
v/s Ratio Perm				c0.10		0.02	0.00		0.12	0.40		
v/c Ratio				0.73		0.16	0.00	1.10	0.18	0.56	0.56	
Uniform Delay, d1				57.8		53.2	7.0	22.1	8.0	42.6	6.3	
Progression Factor				1.00		1.00	0.08	0.34	0.00	1.84	0.66	
Incremental Delay, d2				12.7		0.4	0.0	44.2	0.0	3.7	0.7	
Delay (s)				70.5		53.5	0.6	51.6	0.1	82.2	4.8	
Level of Service				E		D	A	D	A	F	A	
Approach Delay (s)		0.0			63.0			48.3			9.3	
Approach LOS		A			E			D			A	

Intersection Summary			
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.1
Intersection Capacity Utilization	89.9%	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	2536	74	88	1540	2
Future Volume (vph)	0	0	0	129	0	154	0	2536	74	88	1540	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	0.95	1.00	1.00	0.95	0.95
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	3505	1583	1770	3471	0
Flt Permitted				0.950	0.950					0.047		
Satd. Flow (perm)	0	1863	0	1681	1681	1553	1863	3505	1540	88	3471	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	2614	76	91	1588	2
Shared Lane Traffic (%)				50%								
Lane Group Flow (vph)	0	0	0	66	67	159	0	2614	76	91	1590	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)				2	2	2	2	2	2		0	
Act Effct Green (s)				33.1	33.1	33.1		81.5	81.5	97.0	94.3	
Actuated g/C Ratio				0.24	0.24	0.24		0.58	0.58	0.69	0.67	
v/c Ratio				0.17	0.17	0.33		1.28	0.08	0.55	0.68	
Control Delay				43.9	44.0	8.0		149.1	0.6	35.0	16.6	
Queue Delay				0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay				43.9	44.0	8.0		149.2	0.6	35.0	16.6	
LOS				D	D	A		F	A	C	B	
Approach Delay					24.4			145.0			17.6	
Approach LOS					C			F			B	
Queue Length 50th (m)				16.2	16.5	0.0		~503.8	0.0	13.7	115.7	
Queue Length 95th (m)				30.7	31.0	18.7		m#477.6	m0.0	32.7	139.7	
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)				397	397	488		2040	940	168	2337	
Starvation Cap Reductn				0	0	0		17	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				0.17	0.17	0.33		1.29	0.08	0.54	0.68	

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: 1.28

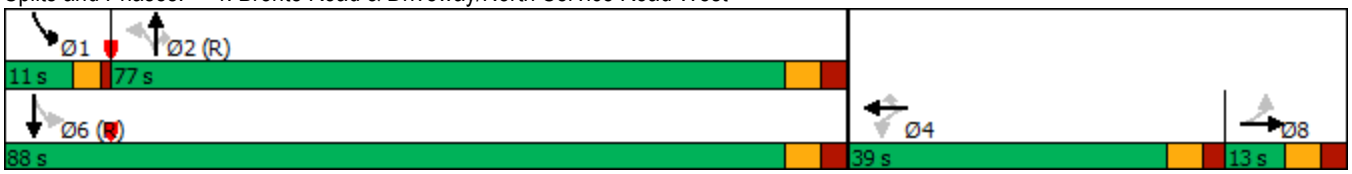
Intersection Signal Delay: 91.5	Intersection LOS: F
Intersection Capacity Utilization 93.1%	ICU Level of Service F
Analysis Period (min) 15	

~ 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	2536	74	88	1540	2
Future Volume (vph)	0	0	0	129	0	154	0	2536	74	88	1540	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		0.95	1.00	1.00	0.95	
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		3505	1540	1770	3470	
Flt Permitted				0.95	0.95	1.00		1.00	1.00	0.05	1.00	
Satd. Flow (perm)				1681	1681	1553		3505	1540	87	3470	
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	2614	76	91	1588	2
RTOR Reduction (vph)	0	0	0	0	0	121	0	0	32	0	0	0
Lane Group Flow (vph)	0	0	0	66	67	38	0	2614	44	91	1590	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)				33.1	33.1	33.1		81.5	81.5	94.3	94.3	
Effective Green, g (s)				33.1	33.1	33.1		81.5	81.5	94.3	94.3	
Actuated g/C Ratio				0.24	0.24	0.24		0.58	0.58	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)				397	397	367		2040	896	164	2337	
v/s Ratio Prot								c0.75		0.03	c0.46	
v/s Ratio Perm				0.04	0.04	0.02			0.03	0.34		
v/c Ratio				0.17	0.17	0.10		1.28	0.05	0.55	0.68	
Uniform Delay, d1				42.5	42.5	41.8		29.2	12.6	34.1	13.8	
Progression Factor				1.00	1.00	1.00		0.67	0.58	1.30	1.09	
Incremental Delay, d2				0.4	0.4	0.3		127.0	0.0	3.4	1.4	
Delay (s)				42.9	42.9	42.1		146.7	7.3	47.7	16.3	
Level of Service				D	D	D		F	A	D	B	
Approach Delay (s)		0.0			42.5			142.8			18.0	
Approach LOS		A			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	91.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.3
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	232	617	1952	0	0	1002
Future Volume (vph)	232	617	1952	0	0	1002
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	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3433	1583	3505	0	0	3505
Flt Permitted	0.950					
Satd. Flow (perm)	3433	1583	3505	0	0	3505
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		10				
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	671	2122	0	0	1089
Shared Lane Traffic (%)						
Lane Group Flow (vph)	252	671	2122	0	0	1089
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)	46.0	46.0	94.0			94.0
Total Split (%)	32.9%	32.9%	67.1%			67.1%
Maximum Green (s)	39.3	39.3	87.5			87.5
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)	39.3	39.3	87.5			87.5
Actuated g/C Ratio	0.28	0.28	0.62			0.62
v/c Ratio	0.26	1.49	0.97			0.50
Control Delay	40.0	266.5	23.9			14.8
Queue Delay	0.0	0.0	43.2			0.0
Total Delay	40.0	266.5	67.2			14.8
LOS	D	F	E			B
Approach Delay	204.7		67.2			14.8
Approach LOS	F		E			B
Queue Length 50th (m)	29.4	~268.9	324.0			56.5
Queue Length 95th (m)	41.7	#346.8	m75.6			56.3
Internal Link Dist (m)	41.9		352.8			275.0
Turn Bay Length (m)		90.0				
Base Capacity (vph)	963	451	2190			2190
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	1	728			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.26	1.49	1.45			0.50

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: 1.49
Intersection Signal Delay: 84.1 Intersection LOS: F
Intersection Capacity Utilization 103.2% ICU Level of Service G
Analysis Period (min) 15

~ 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	617	1952	0	0	1002
Future Volume (vph)	232	617	1952	0	0	1002
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	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3433	1583	3505			3505
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3433	1583	3505			3505
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	252	671	2122	0	0	1089
RTOR Reduction (vph)	0	7	0	0	0	0
Lane Group Flow (vph)	252	664	2122	0	0	1089
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)	39.3	39.3	87.5			87.5
Effective Green, g (s)	39.3	39.3	87.5			87.5
Actuated g/C Ratio	0.28	0.28	0.62			0.62
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)	963	444	2190			2190
v/s Ratio Prot	0.07		c0.61			0.31
v/s Ratio Perm		c0.42				
v/c Ratio	0.26	1.50	0.97			0.50
Uniform Delay, d1	39.1	50.4	25.0			14.3
Progression Factor	1.00	1.00	0.66			0.98
Incremental Delay, d2	0.1	234.4	6.8			0.6
Delay (s)	39.2	284.8	23.2			14.7
Level of Service	D	F	C			B
Approach Delay (s)	217.7		23.2			14.7
Approach LOS	F		C			B

Intersection Summary			
HCM 2000 Control Delay	64.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	103.2%	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)	6	0	4	214	1	851	1	1530	228	296	929	3
Future Volume (vph)	6	0	4	214	1	851	1	1530	228	296	929	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		0	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	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.97		1.00	
Frt		0.850			0.858	0.850			0.850			
Flt Protected	0.950			0.950	0.998		0.950			0.950		
Satd. Flow (prot)	1770	1583	0	1681	1425	1475	1770	3539	1583	1770	3539	0
Flt Permitted	0.950			0.950	0.998		0.283			0.064		
Satd. Flow (perm)	1770	1583	0	1681	1425	1475	527	3539	1543	119	3539	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					423	423			141			
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	925	1	1663	248	322	1010	3
Shared Lane Traffic (%)				10%		49%						
Lane Group Flow (vph)	7	4	0	210	477	472	1	1663	248	322	1013	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		25.9	25.9	25.9	62.8	62.8	62.8	97.9	95.4	
Actuated g/C Ratio	0.05	0.05		0.18	0.18	0.18	0.45	0.45	0.45	0.70	0.68	
v/c Ratio	0.08	0.05		0.68	0.78	0.76	0.00	1.05	0.32	0.77	0.42	
Control Delay	65.3	64.8		63.0	17.1	15.7	30.0	73.6	14.0	52.3	14.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	65.3	64.8		63.0	17.1	15.7	30.0	73.6	14.0	52.3	14.7	
LOS	E	E		E	B	B	C	E	B	D	B	
Approach Delay		65.1			24.8			65.8			23.8	
Approach LOS		E			C			E			C	
Queue Length 50th (m)	2.0	1.1		60.9	14.9	12.8	0.2	240.6	16.8	76.5	62.1	
Queue Length 95th (m)	7.4	5.4		82.0	58.4	52.4	1.6	#386.7	47.5	#137.1	118.9	
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	697	710	236	1586	769	420	2410	
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	0.68	0.66	0.00	1.05	0.32	0.77	0.42	

Intersection Summary

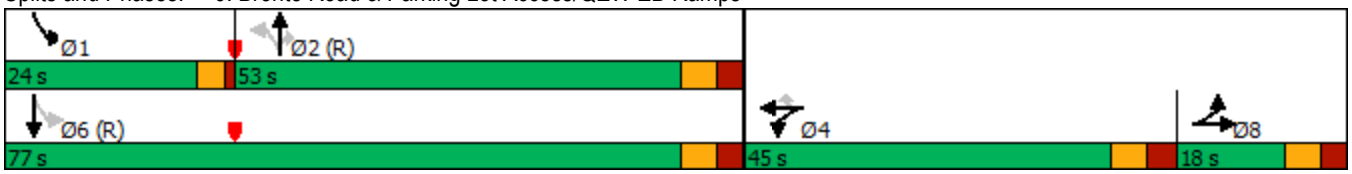
Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 66 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 42.4 Intersection LOS: D

Intersection Capacity Utilization 99.8% ICU Level of Service F

Analysis Period (min) 15

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	851	1	1530	228	296	929	3
Future Volume (vph)	6	0	4	214	1	851	1	1530	228	296	929	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	0.95	1.00	1.00	0.95	
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	1424	1475	1770	3539	1545	1770	3537	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.28	1.00	1.00	0.06	1.00	
Satd. Flow (perm)	1770	1583		1681	1424	1475	527	3539	1545	119	3537	
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	925	1	1663	248	322	1010	3
RTOR Reduction (vph)	0	0	0	0	345	345	0	0	82	0	0	0
Lane Group Flow (vph)	7	4	0	210	132	127	1	1663	166	322	1013	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		25.9	25.9	25.9	58.7	58.7	58.7	91.3	91.3	
Effective Green, g (s)	2.9	2.9		25.9	25.9	25.9	58.7	58.7	58.7	91.3	91.3	
Actuated g/C Ratio	0.02	0.02		0.18	0.18	0.18	0.42	0.42	0.42	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		310	263	272	220	1483	647	414	2306	
v/s Ratio Prot	c0.00	0.00		c0.12	0.09			c0.47		c0.16	0.29	
v/s Ratio Perm						0.09	0.00		0.11	0.35		
v/c Ratio	0.19	0.12		0.68	0.50	0.47	0.00	1.12	0.26	0.78	0.44	
Uniform Delay, d1	67.4	67.3		53.2	51.3	50.9	23.7	40.6	26.5	42.1	11.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.11	1.17	
Incremental Delay, d2	2.6	1.8		5.8	1.5	1.3	0.0	64.2	1.0	8.1	0.6	
Delay (s)	70.0	69.1		58.9	52.8	52.2	23.7	104.8	27.4	54.9	14.4	
Level of Service	E	E		E	D	D	C	F	C	D	B	
Approach Delay (s)		69.7			53.6			94.7			24.2	
Approach LOS		E			D			F			C	

Intersection Summary			
HCM 2000 Control Delay	62.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	52	2453	144	88	1422
Future Volume (vph)	85	52	2453	144	88	1422
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0	0.0		15.0	15.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.037	
Satd. Flow (perm)	1770	1583	3539	1583	69	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		57		32		
Link Speed (k/h)	50		60			60
Link Distance (m)	77.9		458.7			731.2
Travel Time (s)	5.6		27.5			43.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	57	2666	157	96	1546
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	57	2666	157	96	1546
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		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	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	0.0	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	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	22.5	22.5	108.0	108.0	9.5	117.5
Total Split (%)	16.1%	16.1%	77.1%	77.1%	6.8%	83.9%
Maximum Green (s)	18.0	18.0	103.5	103.5	5.0	113.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	12.3	12.3	103.6	103.6	113.1	113.1
Actuated g/C Ratio	0.09	0.09	0.77	0.77	0.84	0.84
v/c Ratio	0.57	0.29	0.98	0.13	0.79	0.52
Control Delay	72.3	17.2	28.0	3.7	64.3	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	17.2	28.0	3.7	64.3	3.9
LOS	E	B	C	A	E	A
Approach Delay	51.3		26.7			7.5
Approach LOS	D		C			A
Queue Length 50th (m)	25.0	0.0	314.1	7.5	10.3	49.2
Queue Length 95th (m)	43.8	13.6	#466.4	15.5	#44.9	76.6
Internal Link Dist (m)	53.9		434.7			707.2
Turn Bay Length (m)	15.0			15.0	15.0	
Base Capacity (vph)	237	261	2727	1227	121	2978
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.22	0.98	0.13	0.79	0.52

Intersection Summary	
Area Type: Other	
Cycle Length: 140	
Actuated Cycle Length: 134.4	
Natural Cycle: 150	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 20.6	Intersection LOS: C
Intersection Capacity Utilization 85.3%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 2: Bronte Road & Saw Whet Boulevard

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	52	2453	144	88	1422
Future Volume (vph)	85	52	2453	144	88	1422
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.04	1.00
Satd. Flow (perm)	1770	1583	3539	1583	69	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	57	2666	157	96	1546
RTOR Reduction (vph)	0	52	0	7	0	0
Lane Group Flow (vph)	92	5	2666	150	96	1546
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	12.3	12.3	103.6	103.6	113.1	113.1
Effective Green, g (s)	12.3	12.3	103.6	103.6	113.1	113.1
Actuated g/C Ratio	0.09	0.09	0.77	0.77	0.84	0.84
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	161	144	2727	1220	121	2978
v/s Ratio Prot			c0.75		c0.03	0.44
v/s Ratio Perm	c0.05	0.00		0.09	0.64	
v/c Ratio	0.57	0.04	0.98	0.12	0.79	0.52
Uniform Delay, d1	58.5	55.6	14.3	3.9	49.4	3.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.8	0.1	12.7	0.2	29.0	0.7
Delay (s)	63.4	55.8	27.1	4.1	78.4	3.6
Level of Service	E	E	C	A	E	A
Approach Delay (s)	60.4		25.8			8.0
Approach LOS	E		C			A

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	134.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	85.3%	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	617	1952	0	0	1002
Future Volume (vph)	232	617	1952	0	0	1002
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	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3433	1583	3505	0	0	3505
Flt Permitted	0.950					
Satd. Flow (perm)	3433	1583	3505	0	0	3505
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		5				
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	671	2122	0	0	1089
Shared Lane Traffic (%)						
Lane Group Flow (vph)	252	671	2122	0	0	1089
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)	16.7	16.7	26.5			26.5
Total Split (s)	57.0	57.0	83.0			83.0
Total Split (%)	40.7%	40.7%	59.3%			59.3%
Maximum Green (s)	50.3	50.3	76.5			76.5
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)	50.3	50.3	76.5			76.5
Actuated g/C Ratio	0.36	0.36	0.55			0.55
v/c Ratio	0.20	1.18	1.11			0.57
Control Delay	31.6	135.8	72.0			36.1
Queue Delay	0.0	8.8	0.7			0.0
Total Delay	31.6	144.6	72.7			36.1
LOS	C	F	E			D
Approach Delay	113.7		72.7			36.1
Approach LOS	F		E			D
Queue Length 50th (m)	26.0	~232.7	~374.8			133.0
Queue Length 95th (m)	36.8	#310.6	m#371.9			166.5
Internal Link Dist (m)	41.9		352.8			275.0
Turn Bay Length (m)		90.0				
Base Capacity (vph)	1233	571	1915			1915
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	326	397			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.20	2.74	1.40			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: 1.18
Intersection Signal Delay: 72.2 Intersection LOS: E
Intersection Capacity Utilization 103.2% ICU Level of Service G
Analysis Period (min) 15

~ 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	617	1952	0	0	1002
Future Volume (vph)	232	617	1952	0	0	1002
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	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3433	1583	3505			3505
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3433	1583	3505			3505
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	252	671	2122	0	0	1089
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	252	668	2122	0	0	1089
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)	50.3	50.3	76.5			76.5
Effective Green, g (s)	50.3	50.3	76.5			76.5
Actuated g/C Ratio	0.36	0.36	0.55			0.55
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)	1233	568	1915			1915
v/s Ratio Prot	0.07		c0.61			0.31
v/s Ratio Perm		c0.42				
v/c Ratio	0.20	1.18	1.11			0.57
Uniform Delay, d1	31.0	44.9	31.8			20.9
Progression Factor	1.00	1.00	0.55			1.66
Incremental Delay, d2	0.1	96.4	52.2			1.0
Delay (s)	31.1	141.3	69.8			35.7
Level of Service	C	F	E			D
Approach Delay (s)	111.2		69.8			35.7
Approach LOS	F		E			D

Intersection Summary			
HCM 2000 Control Delay	70.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			