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February 24th, 2026

Reference Number: 24030

Sarah Millar
Director, Development
Daniels Corporation

Dear Mrs. Millar,

**RE: Transportation Impact Study – Addendum Letter
Proposed Mixed-Use Development
21 Dundas Street West and 3000 Sixth Line, Town of Oakville**

LEA Consulting Ltd. (LEA) has been retained by Daniels Corporation to undertake a Transportation Impact Study (TIS) Addendum Letter for the proposed mixed-use development located at 21 Dundas Street West and 3000 Sixth Line (herein referred to as the “subject site”), in the Town of Oakville. By way of background, LEA has prepared the following in support of previous submissions for the subject site:

- ▶ Initial Zoning By-law Amendment (ZBA) Transportation Impact Study (TIS) dated December 2024; and,
- ▶ ZBA TIS Update and Response to Comments dated September 2025.

The purpose of this letter is to respond to comments received from Transportation Engineering staff and to provide an updated sensitivity analysis scenario.

1 PROPOSED DEVELOPMENT

There are no proposed changes to the development site statistics, relative to the previous submission. As a result, conclusions with respect to the site parking, loading, and overall functionality remain valid.



2 RESPONSE TO COMMENTS

The following section provides a response to the Town's comments relating to transportation as provided in a consolidated comment report from Planning Services dated December 5, 2025. Transportation Engineering comments are detailed below, followed by LEA's responses.

2.1 TRANSPORTATION ENGINEERING COMMENTS

Traffic consultant is required to identify and evaluate suitable mitigation measures to address potential access blockages (Sixth Line RI/RO) during peak periods. The development of the site under future conditions will result in impacts on the Town's road network, specifically with respect to Sixth Line south-bound lanes.

LEA Response: A sensitivity analysis scenario assessing queueing blockages and potential traffic reassignment is provided in **Section 3** of this TIS Addendum Letter. The queueing analysis indicates that the site driveways are expected to generally operate well, with minimal queueing blockages from surrounding intersections.

Signalization of Sixth Line and Kaitting Trail will be required in the future. The cost of signalization design and implementation will be borne on the Owner of a development that requires this infrastructure and proceeds first.

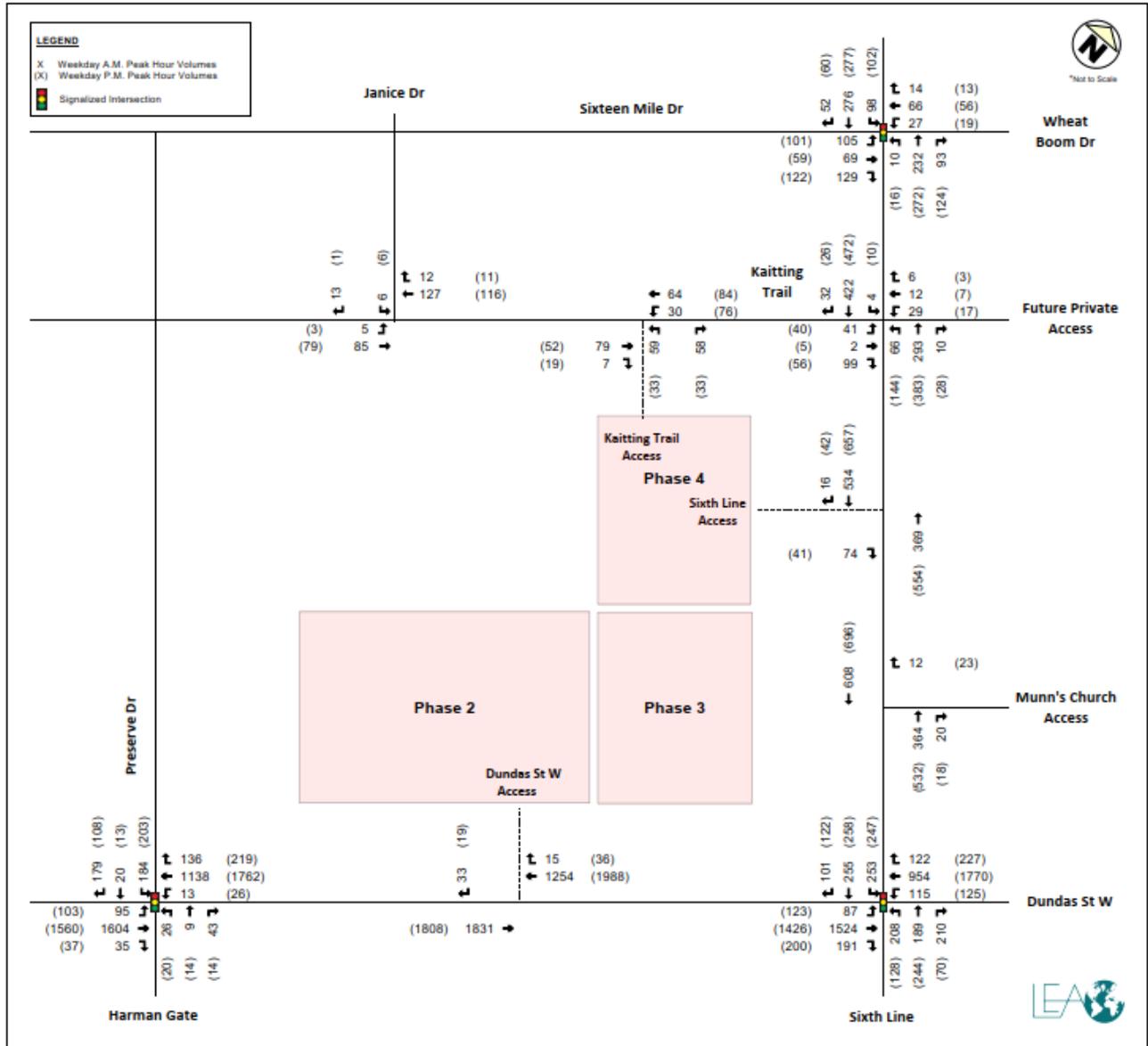
- *A Holding Provision may be applied to the lands identified for Phase 2 and 3 in this regard.*

LEA Response: A sensitivity analysis scenario assessing intersection operations without signalization is provided in **Section 3** of this TIS Addendum Letter. The analysis results confirm that intersection signalization is not required to support site traffic associated with the proposed development.



Future total traffic conditions under Scenario #2 are shown in **Figure 3-2**.
 Note: for volume figures related to Scenario #1, refer to the previous TIS.

Figure 3-2: Scenario #2 - Future Total (2038) Peak Hour Traffic Volumes



3.2 INTERSECTION CAPACITY ANALYSIS

The intersection capacity analysis results for the intersection of Sixth Line and Kaitting Trail/Private Access are provided in **Table 3-1** and **Table 3-2** respectively .



Table 3-1: Intersection Capacity Analysis – Sixth Line & Kaitting Trail/Private Access (Scenario #1 – Base Case)

Sixth Line & Kaitting Trail / Private Access (Unsignalized)				
AM	Future Total (2038 – Scenario #1)			
Mvmt	Vol	V/C	LOS (Delay)	Vehicle Queues (95th)
Overall	-	-	- (4)	-
EBLTR	111	0.34	C (19)	2
WBLTR	47	0.21	C (23)	1
NBL	66	0.07	A (9)	0
SBL	4	0.00	A (8)	0
PM	Future Total (2038 – Sensitivity Analysis)			
Mvmt	Vol	V/C	LOS (Delay)	Vehicle Queues (95th)
Overall	-	-	- (4)	-
EBLTR	83	0.35	D (27)	2
WBLTR	27	0.16	D (29)	1
NBL	144	0.14	A (9)	1
SBL	10	0.01	A (8)	0

Table 3-2: Intersection Capacity Analysis – Sixth Line & Kaitting Trail/Private Access (Scenario #2 – Traffic Reassignment)

Sixth Line & Kaitting Trail / Private Access (Unsignalized)				
AM	Future Total (2038 – Scenario #2)			
Mvmt	Vol	V/C	LOS (Delay)	Vehicle Queues (95th)
Overall	-	-	- (4)	-
EBLTR	142	0.39	C (19)	2
WBLTR	47	0.21	C (23)	1
NBL	66	0.07	A (9)	0
SBL	4	0.00	A (8)	0
PM	Future Total (2038 – Sensitivity Analysis)			
Mvmt	Vol	V/C	LOS (Delay)	Vehicle Queues (95th)
Overall	-	-	- (4)	-
EBLTR	101	0.38	D (26)	2
WBLTR	27	0.16	D (30)	1
NBL	144	0.14	A (9)	1
SBL	10	0.01	A (8)	0

Under both scenarios, all movements are expected to maintain acceptable V/C ratios with the intersection operating as unsignalized and two-way stop control for the east-west legs. Some delays are expected for the east-west movements during the PM peak hour as they need to wait for gaps in Sixth Line traffic. The analysis results do not indicate any adverse conditions that would warrant intersection signalization from a capacity



or delay perspective given the low volume of traffic associated with the minor legs (Kaitting Trail and the private driveway access) or left turn movements.

3.3 SIGNAL WARRANT

A traffic signal warrant analysis was conducted based on the methodologies outlined in *Ontario Traffic Manual (OTM) Book 12: Traffic Signals*, for the 2038 future horizon year for Scenario #2 (Traffic Reassignment). A summary of the signal warrant analysis is provided in **Table 3-3**, with a full detailed analysis provided in **Attachment 2**.

The signal warrant analysis shows that the warrant criteria is not satisfied under Justification 1: Minimum Vehicle Volume or Justification 2: Delay to Cross Traffic. Although the intersection does not meet the MTO warrant criteria for signalization, it is recommended that Town staff continue monitoring intersection operations and consider signalization if warranted based on future traffic growth.

Table 3-3: Signal Warrant Criteria

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimum Vehicular Volumes	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Justification 2	Delay to Cross Traffic	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>		

3.4 QUEUEING ANALYSIS

An analysis of queueing conditions was undertaken using SimTraffic to assess the average and 95th percentile queue lengths extending from intersections near the proposed site accesses on Sixth Line and Kaitting Trail. This analysis was undertaken under Scenario #2 (Traffic Reassignment) conditions to model the impact of additional site vehicles utilizing Kaitting Trail.

As shown in **Figure 3-3**, the Sixth Line site access (RIRO) is approximately 52m north of the intersection of Sixth Line and Dundas Street West whereas the Kaitting Trail site access is approximately 35m west of the intersection of Sixth Line and Kaitting Trail.



3.4.1 SimTraffic Analysis – Dundas Street West & Sixth Line

The SimTraffic analysis results for the intersection of Dundas Street West & Sixth Line are provided in **Table 3-4**.

Table 3-4: SimTraffic Queuing Assessment – Dundas Street West & Sixth Line (FT 2038)

Movement	Time Period	Storage	50 th Queue	95 th Queue
Southbound Through	AM	52m	50m	82.9m
	PM		50.8m	88.8m

During the weekday AM/PM peak hours (2038 FT conditions), the average southbound through queue from Dundas Street West and Sixth Line does not block the Sixth Line (RIRO) driveway access. Exceedances of the 95th percentile queue are predicted for the southbound through lane during both weekday peak hours.

These analysis results indicate that typical peak hour queues will not extend back to the site RIRO access on Sixth Line; occasional blockages may occur during the busiest period of each peak hour but this is expected to be short in duration and clear within a few minutes. Given that the proposed development will have three accesses, multiple routing options will be available to site traffic, allowing site traffic to effectively disperse without being constrained by a single intersection.

3.4.2 SimTraffic Analysis – Sixth Line & Kaitting Trail / Private Driveway Access

The SimTraffic analysis results for the intersection of Sixth Line & Kaitting Trail / Private Driveway Access are provided in **Table 3-5**.

Table 3-5: SimTraffic Queuing Assessment – Sixth Line & Kaitting Trail / Private Driveway Access (FT 2038)

Movement	Time Period	Storage	50 th Queue	95 th Queue
Eastbound Left/Through/Right	AM	35m	13.5m	23.2m
	PM		11.2m	19.9m

During the weekday AM/PM peak hour (2038 FT conditions), the eastbound through queue from Sixth Line & Kaitting Trail / Private Driveway Access is not expected to extend to the site access.

In addition, it should be noted that the analysis assumes a single lane for eastbound left/through/right traffic at the intersection with Sixth Line. In reality, the lane is sufficiently wide to permit multiple vehicles to queue at the intersection, allowing right-turning vehicles to turn without needing to wait behind a left or through turning vehicle (see **Figure 3-4**).



Figure 3-4: Sixth Line & Kaitting Trail Intersection (Source: Google Maps)





4 CONCLUSION

The analysis results provided in this TIS Addendum Letter confirm that signalization is not required at the intersection of Sixth Line & Kaitting Trail, even under full buildout conditions for the proposed development and the assumed completion of the background development near the intersection. This assessment was conducted under 2038 conditions, considering approved background developments and the application of a 2% annual corridor growth rate to observed traffic volumes.

Given these findings, it is our professional opinion that a holding provision related to intersection signalization should not be applied to the subject site. However, it is recommended that Town staff continue monitor traffic conditions in the surrounding area, and that an updated traffic analysis should be undertaken as part of future phases of the development (as part of the SPA process) to validate the study conclusions and confirm that operations remain acceptable.

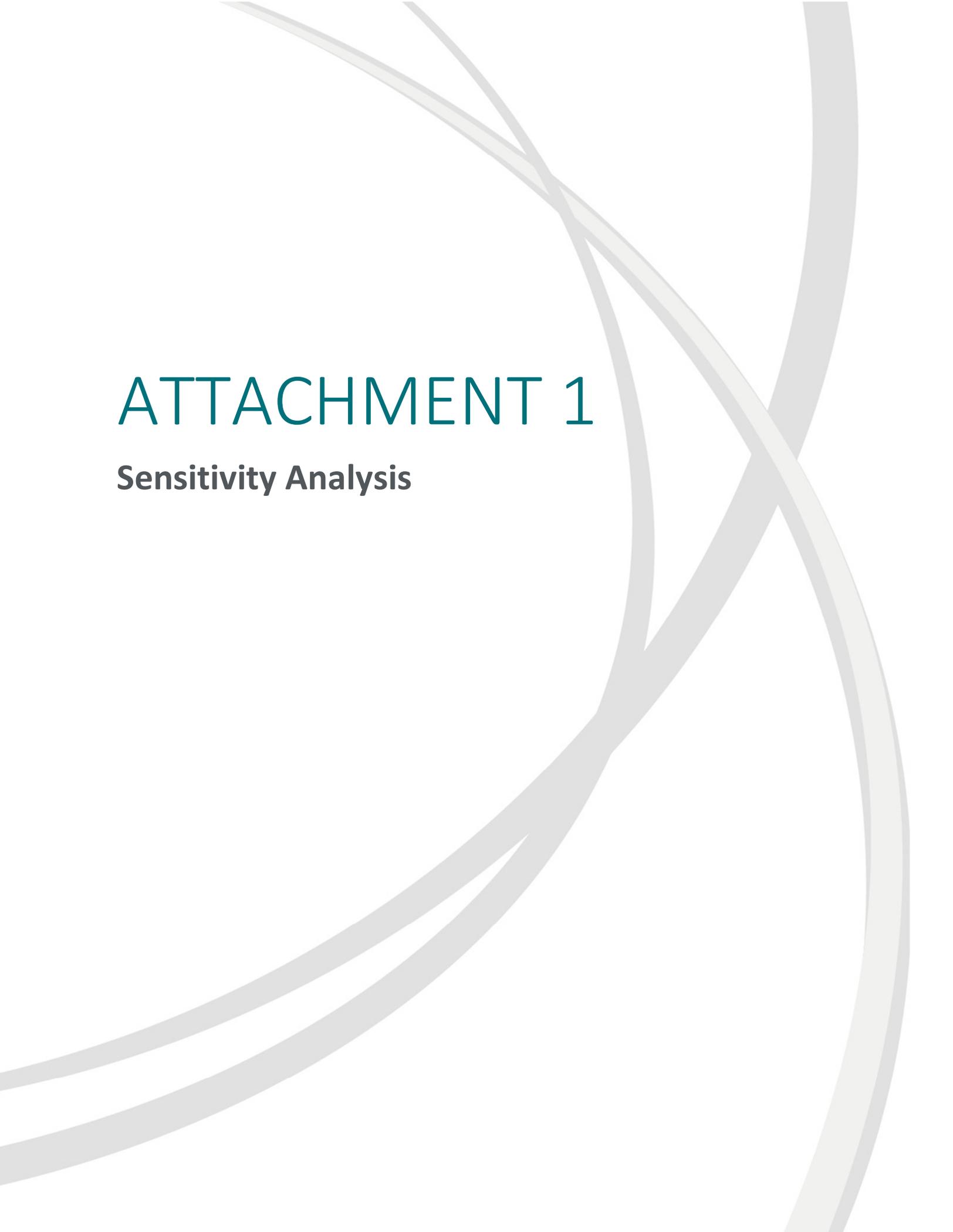
With respect to queueing conditions, an updated analysis was undertaken using SimTraffic, a microsimulation software that typically provides a more accurate assessment of queueing conditions compared to a static model (such as Synchro). The SimTraffic analysis results under 2038 future total conditions indicate that the site accesses on Sixth Line and Kaitting Trail will generally remain unobstructed by any queues from adjacent intersections. Occasional queue spillback may occur during the busiest period of the weekday peak hours, resulting in blockages that are short in duration. These results confirm that the location of the site accesses is appropriate, and that no further mitigation measures are required.

Should you have any questions regarding the above, please do not hesitate to contact the undersigned at rkeel@lea.ca.

Yours truly,

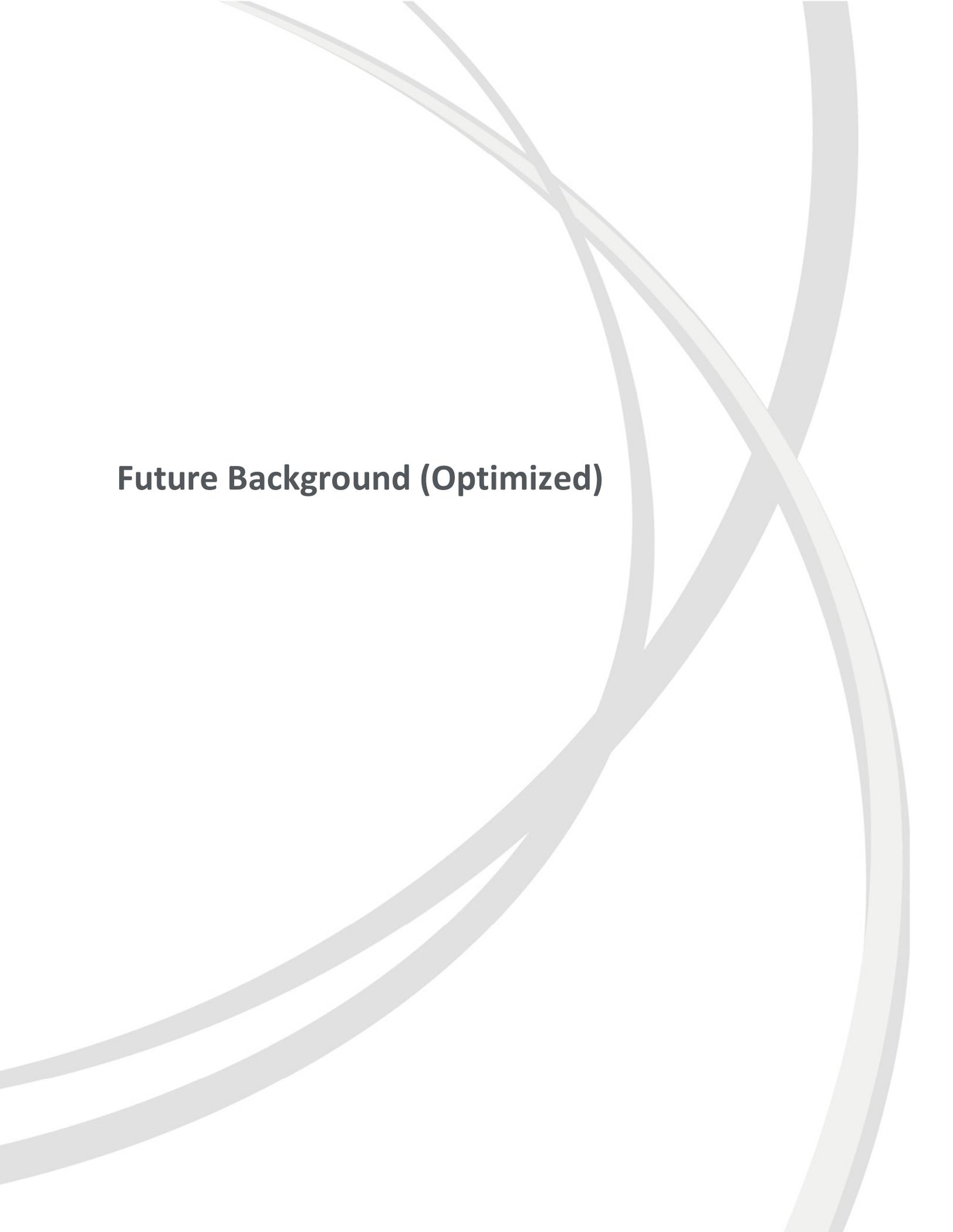
LEA CONSULTING LTD.

Robert Keel, MScPl., MCIP, RPP
Manager, Transportation Planning



ATTACHMENT 1

Sensitivity Analysis



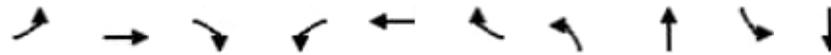
Future Background (Optimized)

Queues

Future Background (2033 Diversions+Opt)

1: Harman Gate/Preserve Dr & Dundas St W

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↶	↑↑↑	↷	↶	↑↑↑	↷	↶	↷	↶	↷
Traffic Volume (vph)	88	1600	35	13	1105	136	26	9	184	20
Future Volume (vph)	88	1600	35	13	1105	136	26	9	184	20
Lane Group Flow (vph)	90	1633	36	13	1128	139	27	53	188	142
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.2	40.2
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.30	0.53	0.04	0.06	0.42	0.16	0.09	0.12	0.58	0.29
Control Delay (s/veh)	9.7	14.8	0.9	7.4	16.3	2.5	35.9	13.6	47.9	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	9.7	14.8	0.9	7.4	16.3	2.5	35.9	13.6	47.9	10.5
Queue Length 50th (m)	7.5	72.5	0.0	1.0	60.2	0.0	5.2	1.7	41.4	3.8
Queue Length 95th (m)	13.8	109.4	1.8	3.2	72.1	9.5	13.3	12.3	67.5	20.4
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	306	3084	897	233	2680	894	287	433	324	490
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	0.29	0.53	0.04	0.06	0.42	0.16	0.09	0.12	0.58	0.29

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 113 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis
1: Harman Gate/Preserve Dr & Dundas St W

Future Background (2033 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	88	1600	35	13	1105	136	26	9	43	184	20	120
Future Volume (vph)	88	1600	35	13	1105	136	26	9	43	184	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	5036	1425	1745	4848	1506	1739	1613		1721	1605	
Flt Permitted	0.19	1.00	1.00	0.11	1.00	1.00	0.63	1.00		0.72	1.00	
Satd. Flow (perm)	334	5036	1425	206	4848	1506	1157	1613		1309	1605	
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)	90	1633	36	13	1128	139	27	9	44	188	20	122
RTOR Reduction (vph)	0	0	15	0	0	62	0	33	0	0	92	0
Lane Group Flow (vph)	90	1633	21	13	1128	77	27	20	0	188	50	0
Confl. Peds. (#/hr)	5		4	4		5	4		4	4		4
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	6%	3%	9%	0%	7%	3%	0%	0%	2%	1%	0%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.65	0.59	0.59	0.58	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	299	2983	844	154	2678	832	287	400		325	398	
v/s Ratio Prot	c0.02	c0.32		0.00	0.23			0.01				0.03
v/s Ratio Perm	0.18		0.01	0.05		0.05	0.02			c0.14		
v/c Ratio	0.30	0.55	0.03	0.08	0.42	0.09	0.09	0.05		0.58	0.13	
Uniform Delay, d1	8.8	14.7	10.1	11.7	15.7	12.7	34.7	34.3		39.6	35.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.7	0.1	0.2	0.5	0.2	0.7	0.2		7.3	0.7	
Delay (s)	9.4	15.5	10.2	11.9	16.1	12.9	35.4	34.6		46.9	35.7	
Level of Service	A	B	B	B	B	B	D	C		D	D	
Approach Delay (s/veh)		15.1			15.8			34.8			42.1	
Approach LOS		B			B			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			18.4			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.3			
Intersection Capacity Utilization			78.7%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

Queues

Future Background (2033 Diversions+Opt)

2: Sixth Line & Dundas St E

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	84	1524	191	115	939	208	177	210	193	210	101
Future Volume (vph)	84	1524	191	115	939	208	177	210	193	210	101
Lane Group Flow (vph)	85	1539	193	116	1056	210	179	212	195	212	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	31.0	31.0	14.0	31.0	11.5	37.0	37.0	11.5	37.0	37.0
Total Split (s)	14.0	64.0	64.0	14.0	64.0	12.0	50.0	50.0	12.0	50.0	50.0
Total Split (%)	10.0%	45.7%	45.7%	10.0%	45.7%	8.6%	35.7%	35.7%	8.6%	35.7%	35.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.38	0.73	0.26	0.79	0.53	0.52	0.31	0.36	0.45	0.37	0.19
Control Delay (s/veh)	22.6	37.0	6.5	60.9	31.4	34.5	38.3	11.0	32.3	39.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.6	37.0	6.5	60.9	31.4	34.5	38.3	11.0	32.3	39.6	7.0
Queue Length 50th (m)	12.9	138.4	4.9	18.1	87.3	41.4	40.5	9.6	37.7	49.4	0.0
Queue Length 95th (m)	23.0	157.3	20.7	#52.9	102.8	62.4	62.4	31.4	57.3	73.8	13.9
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	227	2106	742	147	1981	405	579	585	435	574	549
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.73	0.26	0.79	0.53	0.52	0.31	0.36	0.45	0.37	0.19

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 36 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis
2: Sixth Line & Dundas St E

Future Background (2033 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (vph)	84	1524	191	115	939	107	208	177	210	193	210	101
Future Volume (vph)	84	1524	191	115	939	107	208	177	210	193	210	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1646	5085	1559	1678	4739		1692	1845	1497	1701	1827	1526
Flt Permitted	0.19	1.00	1.00	0.07	1.00		0.53	1.00	1.00	0.58	1.00	1.00
Satd. Flow (perm)	323	5085	1559	126	4739		941	1845	1497	1033	1827	1526
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	85	1539	193	116	948	108	210	179	212	195	212	102
RTOR Reduction (vph)	0	0	97	0	10	0	0	0	115	0	0	70
Lane Group Flow (vph)	85	1539	96	116	1046	0	210	179	97	195	212	32
Confl. Peds. (#/hr)	8		1	1		8	3		10	10		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	6%	2%	1%	4%	8%	3%	3%	3%	4%	2%	4%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	65.8	58.0	58.0	66.2	58.2		52.0	44.0	44.0	52.0	44.0	44.0
Effective Green, g (s)	65.8	58.0	58.0	66.2	58.2		52.0	44.0	44.0	52.0	44.0	44.0
Actuated g/C Ratio	0.47	0.41	0.41	0.47	0.42		0.37	0.31	0.31	0.37	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	225	2106	645	148	1970		392	579	470	421	574	479
v/s Ratio Prot	0.02	0.30		c0.04	0.22		c0.03	0.10		0.03	0.12	
v/s Ratio Perm	0.16		0.06	c0.33			c0.17		0.07	0.15		0.02
v/c Ratio	0.38	0.73	0.15	0.78	0.53		0.54	0.31	0.21	0.46	0.37	0.07
Uniform Delay, d1	21.9	34.4	25.6	27.1	30.7		34.0	36.5	35.2	32.5	37.2	33.6
Progression Factor	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	1.1	2.3	0.5	23.2	1.0		1.4	1.4	1.0	0.8	1.8	0.3
Delay (s)	23.0	36.7	26.1	50.3	31.7		35.4	37.8	36.2	33.4	39.1	33.9
Level of Service	C	D	C	D	C		D	D	D	C	D	C
Approach Delay (s/veh)		34.9			33.5			36.4			35.8	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			34.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			91.5%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	14	2	68	29	12	6	36	293	10	4	406	32
Future Vol, veh/h	14	2	68	29	12	6	36	293	10	4	406	32
Conflicting Peds, #/hr	2	0	0	0	0	2	7	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	7	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	16	2	79	34	14	7	42	341	12	5	472	37

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	772	945	262	678	957	179	516	0	0	353	0	0
Stage 1	508	508	-	431	431	-	-	-	-	-	-	-
Stage 2	264	437	-	247	526	-	-	-	-	-	-	-
Critical Hdwy	7.64	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.64	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.64	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.57	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	280	264	743	342	260	839	1060	-	-	1217	-	-
Stage 1	503	542	-	578	586	-	-	-	-	-	-	-
Stage 2	704	583	-	741	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	255	251	739	293	247	838	1054	-	-	1217	-	-
Mov Cap-2 Maneuver	255	251	-	293	247	-	-	-	-	-	-	-
Stage 1	480	535	-	555	563	-	-	-	-	-	-	-
Stage 2	653	560	-	655	526	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Ctrl Dly, s/v	13.1		19.4			0.9			0.1		
HCM LOS	B		C								

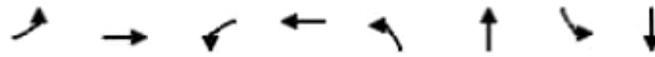
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1054	-	-	542	304	1217	-	-
HCM Lane V/C Ratio	0.04	-	-	0.18	0.18	0.004	-	-
HCM Ctrl Dly (s/v)	8.6	-	-	13.1	19.4	8	0	-
HCM Lane LOS	A	-	-	B	C	A	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0.7	0.6	0	-	-

Queues

Future Background (2033 Diversions+Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	105	69	27	66	10	205	98	267
Future Volume (vph)	105	69	27	66	10	205	98	267
Lane Group Flow (vph)	125	227	32	96	12	355	117	380
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.0	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	14.0	47.0	14.0	47.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	14.0%	47.0%	14.0%	47.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	None	C-Max	None	C-Max
v/c Ratio	0.31	0.39	0.11	0.17	0.02	0.25	0.21	0.21
Control Delay (s/veh)	28.0	17.1	24.9	22.1	9.7	14.4	11.0	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.0	17.1	24.9	22.1	9.7	14.4	11.0	12.7
Queue Length 50th (m)	19.4	21.2	4.9	12.7	1.0	17.8	10.7	18.5
Queue Length 95th (m)	32.7	38.8	11.9	23.5	3.3	26.1	17.9	31.5
Internal Link Dist (m)		84.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	402	582	297	580	602	1439	567	1797
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.39	0.11	0.17	0.02	0.25	0.21	0.21

Intersection Summary

Cycle Length: 100

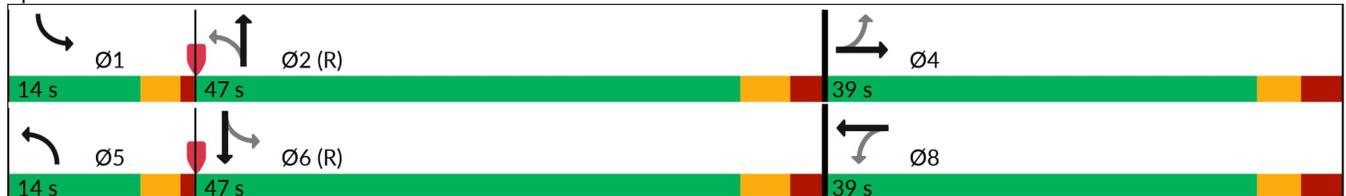
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Future Background (2033 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	69	122	27	66	14	10	205	93	98	267	52
Future Volume (vph)	105	69	122	27	66	14	10	205	93	98	267	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.90		1.00	0.97		1.00	0.95		1.00	0.98	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1591		1567	1757		1744	3284		1675	3385	
Fl _t Permitted	0.69	1.00		0.55	1.00		0.53	1.00		0.49	1.00	
Satd. Flow (perm)	1234	1591		914	1757		966	3284		857	3385	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	125	82	145	32	79	17	12	244	111	117	318	62
RTOR Reduction (vph)	0	63	0	0	7	0	0	51	0	0	14	0
Lane Group Flow (vph)	125	164	0	32	89	0	12	304	0	117	366	0
Confl. Peds. (#/hr)	5		5	5		5	1		3	3		1
Heavy Vehicles (%)	3%	10%	5%	11%	6%	0%	0%	3%	6%	4%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Effective Green, g (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.44	0.42		0.55	0.50	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	402	518		297	572		433	1389		540	1675	
v/s Ratio Prot		c0.10			0.05		0.00	0.09		c0.02	c0.11	
v/s Ratio Perm	0.10			0.04			0.01			0.10		
v/c Ratio	0.31	0.32		0.11	0.15		0.03	0.22		0.22	0.22	
Uniform Delay, d ₁	25.3	25.3		23.5	23.9		16.0	18.3		11.1	14.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	2.0	1.6		0.7	0.6		0.0	0.4		0.2	0.3	
Delay (s)	27.3	26.9		24.3	24.5		16.0	18.7		11.3	14.6	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s/veh)		27.0			24.4			18.6			13.8	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			19.6				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.26									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			75.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	5	77	67	12	6	13
Future Vol, veh/h	5	77	67	12	6	13
Conflicting Peds, #/hr	10	0	0	10	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	64	64	64	64	64	64
Heavy Vehicles, %	0	4	0	8	0	0
Mvmt Flow	8	120	105	19	9	20

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	134	0	-	0	261
Stage 1	-	-	-	-	125
Stage 2	-	-	-	-	136
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1463	-	-	-	732
Stage 1	-	-	-	-	906
Stage 2	-	-	-	-	895
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1452	-	-	-	722
Mov Cap-2 Maneuver	-	-	-	-	722
Stage 1	-	-	-	-	893
Stage 2	-	-	-	-	895

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.5	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1452	-	-	-	848
HCM Lane V/C Ratio	0.005	-	-	-	0.035
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	
Traffic Vol, veh/h	0	0	0	339	503	0
Future Vol, veh/h	0	0	0	339	503	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	3	3	0
Mvmt Flow	0	0	0	394	585	0

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	293	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-
Pot Cap-1 Maneuver	0	709	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	709	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q (veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1827	1254	0	0	0
Future Vol, veh/h	0	1827	1254	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	2	6	0	0	0
Mvmt Flow	0	1864	1280	0	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q (veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	79	0	0	64	0	0
Future Vol, veh/h	79	0	0	64	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	92	0	0	74	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	92	0	166
Stage 1	-	-	-	-	92
Stage 2	-	-	-	-	74
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1515	-	829
Stage 1	-	-	-	-	937
Stage 2	-	-	-	-	954
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1515	-	829
Mov Cap-2 Maneuver	-	-	-	-	829
Stage 1	-	-	-	-	937
Stage 2	-	-	-	-	954

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

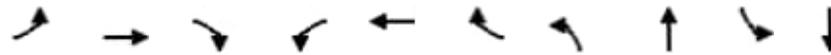
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1515	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q (veh)	-	-	-	0	-

Queues

Future Background (2033 Diversions+Opt)

1: Harman Gate/Preserve Dr & Dundas St W

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑↑↑	↗	↘	↑↑↑	↗	↘	↗	↘	↗
Traffic Volume (vph)	84	1484	37	26	1743	219	20	14	203	13
Future Volume (vph)	84	1484	37	26	1743	219	20	14	203	13
Lane Group Flow (vph)	88	1562	39	27	1835	231	21	30	214	93
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.3	40.3
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.49	0.52	0.04	0.12	0.65	0.24	0.07	0.07	0.64	0.20
Control Delay (s/veh)	21.0	15.7	1.2	8.0	20.2	2.3	35.5	22.1	50.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.0	15.7	1.2	8.0	20.2	2.3	35.5	22.1	50.6	11.4
Queue Length 50th (m)	7.0	87.7	0.0	2.1	113.2	0.0	4.2	3.0	48.0	2.7
Queue Length 95th (m)	20.0	101.5	2.2	5.3	130.8	11.4	11.4	11.4	76.3	16.4
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	186	3021	950	241	2812	964	302	416	332	466
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	0.47	0.52	0.04	0.11	0.65	0.24	0.07	0.07	0.64	0.20

Intersection Summary

Cycle Length: 120

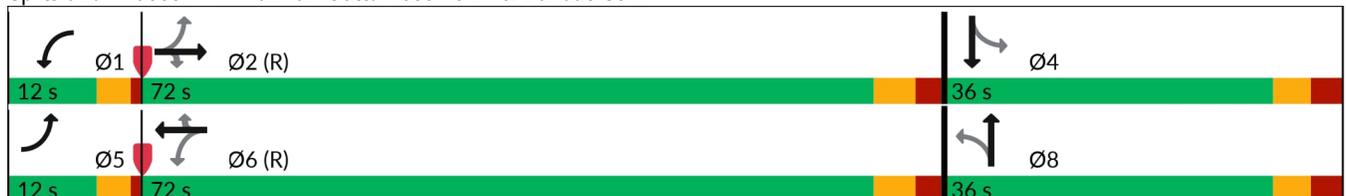
Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis
 1: Harman Gate/Preserve Dr & Dundas St W

Future Background (2033 Diversions+Opt)
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (vph)	84	1484	37	26	1743	219	20	14	14	203	13	75
Future Volume (vph)	84	1484	37	26	1743	219	20	14	14	203	13	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	5085	1556	1745	5085	1557	1659	1631		1724	1638	
Flt Permitted	0.07	1.00	1.00	0.12	1.00	1.00	0.70	1.00		0.74	1.00	
Satd. Flow (perm)	121	5085	1556	220	5085	1557	1216	1631		1339	1638	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	88	1562	39	27	1835	231	21	15	15	214	14	79
RTOR Reduction (vph)	0	0	16	0	0	103	0	11	0	0	59	0
Lane Group Flow (vph)	88	1562	23	27	1835	128	21	19	0	214	34	0
Confl. Peds. (#/hr)	3		3	3		3	2		1	1		2
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	5%	7%	7%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.2	69.7	69.7	70.6	66.4	66.4	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.2	69.7	69.7	70.6	66.4	66.4	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.64	0.58	0.58	0.59	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	179	2953	903	182	2813	861	301	405		332	406	
v/s Ratio Prot	c0.03	0.31		0.01	c0.36			0.01			0.02	
v/s Ratio Perm	0.28		0.01	0.08		0.08	0.02			c0.16		
v/c Ratio	0.49	0.53	0.03	0.15	0.65	0.15	0.07	0.05		0.64	0.08	
Uniform Delay, d1	14.2	15.2	10.7	11.2	18.7	13.0	34.5	34.3		40.4	34.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.7	0.1	0.4	1.2	0.4	0.4	0.2		9.3	0.4	
Delay (s)	16.3	15.9	10.7	11.6	19.9	13.4	34.9	34.5		49.7	35.0	
Level of Service	B	B	B	B	B	B	C	C		D	D	
Approach Delay (s/veh)		15.8			19.1			34.7			45.2	
Approach LOS		B			B			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			19.9			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.3			
Intersection Capacity Utilization			81.4%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

Queues

Future Background (2033 Diversions+Opt)

2: Sixth Line & Dundas St E

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	115	1363	200	125	1734	128	212	70	213	224	122
Future Volume (vph)	115	1363	200	125	1734	128	212	70	213	224	122
Lane Group Flow (vph)	121	1435	211	132	2026	135	223	74	224	236	128
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	31.0	31.0	13.0	31.0	11.0	37.0	37.0	11.0	37.0	37.0
Total Split (s)	14.0	71.0	71.0	14.0	71.0	16.0	39.0	39.0	16.0	39.0	39.0
Total Split (%)	10.0%	50.7%	50.7%	10.0%	50.7%	11.4%	27.9%	27.9%	11.4%	27.9%	27.9%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.81	0.61	0.25	0.70	0.87	0.40	0.50	0.17	0.64	0.51	0.27
Control Delay (s/veh)	64.7	29.3	3.4	36.7	38.4	34.7	50.9	4.1	43.3	50.9	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.7	29.3	3.4	36.7	38.4	34.7	50.9	4.1	43.3	50.9	8.4
Queue Length 50th (m)	19.3	113.9	0.0	17.6	192.1	27.2	56.7	0.0	47.9	60.5	0.0
Queue Length 95th (m)	#55.8	130.0	14.4	#39.0	214.8	44.2	84.1	7.0	71.3	89.0	17.1
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	149	2361	834	189	2332	348	447	436	350	459	473
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.61	0.25	0.70	0.87	0.39	0.50	0.17	0.64	0.51	0.27

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 71 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

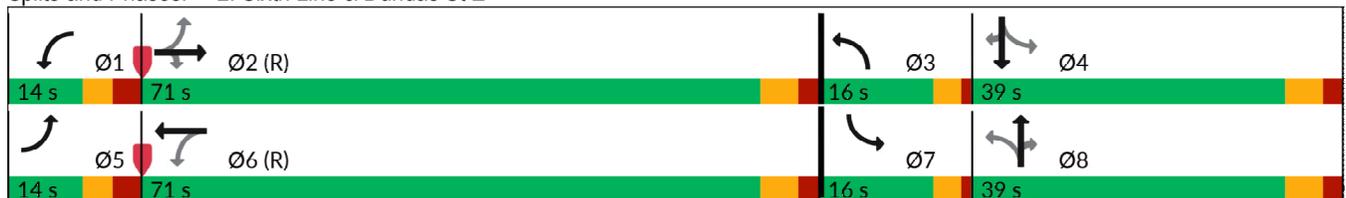
Natural Cycle: 105

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis
2: Sixth Line & Dundas St E

Future Background (2033 Diversions+Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (vph)	115	1363	200	125	1734	191	128	212	70	213	224	122
Future Volume (vph)	115	1363	200	125	1734	191	128	212	70	213	224	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1711	5085	1553	1728	5003		1725	1900	1526	1726	1900	1554
Fl _t Permitted	0.06	1.00	1.00	0.11	1.00		0.44	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)	111	5085	1553	195	5003		804	1900	1526	792	1900	1554
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	121	1435	211	132	1825	201	135	223	74	224	236	128
RTOR Reduction (vph)	0	0	113	0	10	0	0	0	57	0	0	97
Lane Group Flow (vph)	121	1435	98	132	2016	0	135	223	17	224	236	31
Confl. Peds. (#/hr)	6		3	3		6	4		3	3		4
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	2%	1%	1%	2%	1%	1%	0%	3%	1%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	73.0	65.0	65.0	73.0	65.0		44.1	33.0	33.0	45.9	33.9	33.9
Effective Green, g (s)	73.0	65.0	65.0	73.0	65.0		44.1	33.0	33.0	45.9	33.9	33.9
Actuated g/C Ratio	0.52	0.46	0.46	0.52	0.46		0.32	0.24	0.24	0.33	0.24	0.24
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	149	2360	721	189	2322		326	447	359	339	460	376
v/s Ratio Prot	c0.05	0.28		0.04	c0.40		0.03	0.12		c0.06	0.12	
v/s Ratio Perm	0.38		0.06	0.32			0.10		0.01	c0.16		0.02
v/c Ratio	0.81	0.61	0.14	0.70	0.87		0.41	0.50	0.05	0.66	0.51	0.08
Uniform Delay, d ₁	31.3	28.0	21.4	21.2	33.7		36.0	46.3	41.4	38.1	45.9	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	27.4	1.2	0.4	10.7	4.7		0.9	3.9	0.3	4.8	4.0	0.4
Delay (s)	58.7	29.2	21.8	31.9	38.4		36.8	50.3	41.6	42.9	50.0	41.5
Level of Service	E	C	C	C	D		D	D	D	D	D	D
Approach Delay (s/veh)		30.3			38.0			44.6			45.4	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			36.7			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			100.2%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	25	5	38	17	7	3	68	383	28	10	414	26
Future Vol, veh/h	25	5	38	17	7	3	68	383	28	10	414	26
Conflicting Peds, #/hr	3	0	1	1	0	3	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	8
Mvmt Flow	26	5	40	18	7	3	71	399	29	10	431	27

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	815	1037	232	795	1036	217	460	0	0	428	0	0
Stage 1	467	467	-	556	556	-	-	-	-	-	-	-
Stage 2	348	570	-	239	480	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	273	233	776	282	233	794	1112	-	-	1142	-	-
Stage 1	551	565	-	488	516	-	-	-	-	-	-	-
Stage 2	647	509	-	749	558	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	249	215	774	247	215	792	1110	-	-	1142	-	-
Mov Cap-2 Maneuver	249	215	-	247	215	-	-	-	-	-	-	-
Stage 1	515	557	-	457	483	-	-	-	-	-	-	-
Stage 2	593	476	-	695	550	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	16.1		20.7		1.2		0.2	
HCM LOS	C		C					

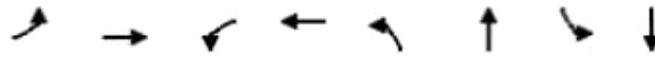
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1110	-	-	394	257	1142	-	-
HCM Lane V/C Ratio	0.064	-	-	0.18	0.109	0.009	-	-
HCM Ctrl Dly (s/v)	8.5	-	-	16.1	20.7	8.2	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q (veh)	0.2	-	-	0.6	0.4	0	-	-

Queues

Future Background (2033 Diversions+Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

PM Peak Hour

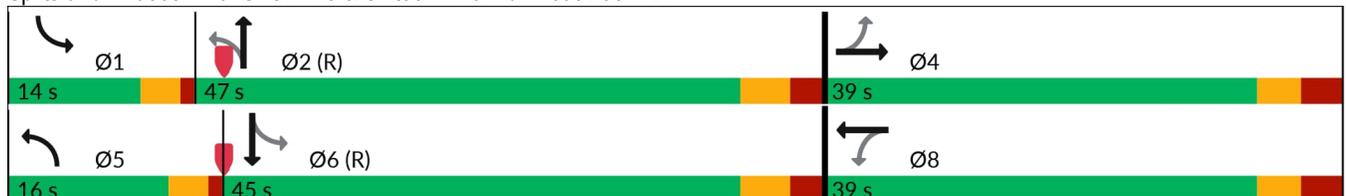


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↘	↘	↘	↘	↘	↑↘	↘	↑↘
Traffic Volume (vph)	101	59	19	56	16	257	102	252
Future Volume (vph)	101	59	19	56	16	257	102	252
Lane Group Flow (vph)	106	173	20	73	17	402	107	328
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.5	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	16.0	47.0	14.0	45.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	16.0%	47.0%	14.0%	45.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.41	0.42	0.09	0.20	0.02	0.21	0.16	0.15
Control Delay (s/veh)	40.4	19.6	34.1	29.6	4.9	8.6	5.5	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.4	19.6	34.1	29.6	4.9	8.6	5.5	7.6
Queue Length 50th (m)	19.0	13.5	3.4	10.5	0.9	14.8	6.3	10.0
Queue Length 95th (m)	35.9	33.7	10.1	23.4	2.9	23.6	11.5	21.2
Internal Link Dist (m)		98.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	423	615	346	581	791	1926	690	2196
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.28	0.06	0.13	0.02	0.21	0.16	0.15

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Future Background (2033 Diversions+Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	59	105	19	56	13	16	257	124	102	252	60
Future Volume (vph)	101	59	105	19	56	13	16	257	124	102	252	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.90		1.00	0.97		1.00	0.95		1.00	0.97	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1739	1690		1742	1756		1742	3377		1728	3462	
Fl _t Permitted	0.71	1.00		0.58	1.00		0.55	1.00		0.48	1.00	
Satd. Flow (perm)	1299	1690		1063	1756		1015	3377		875	3462	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	106	62	111	20	59	14	17	271	131	107	265	63
RTOR Reduction (vph)	0	77	0	0	10	0	0	44	0	0	13	0
Lane Group Flow (vph)	106	96	0	20	63	0	17	358	0	107	315	0
Confl. Peds. (#/hr)	4		2	2		4	2					2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	4%	8%	0%	1%	1%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Effective Green, g (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.59	0.56		0.68	0.61	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	338		212	351		615	1884		656	2101	
v/s Ratio Prot		0.06			0.04		0.00	c0.11		c0.01	0.09	
v/s Ratio Perm	c0.08			0.02			0.02			0.10		
v/c Ratio	0.41	0.28		0.09	0.18		0.03	0.19		0.16	0.15	
Uniform Delay, d ₁	34.9	33.9		32.6	33.2		8.7	10.9		5.7	8.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	1.1	0.5		0.2	0.2		0.0	0.2		0.1	0.2	
Delay (s)	35.9	34.4		32.8	33.4		8.7	11.2		5.8	8.6	
Level of Service	D	C		C	C		A	B		A	A	
Approach Delay (s/veh)		35.0			33.3			11.1			8.0	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			17.1				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.24									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)				16.5	
Intersection Capacity Utilization			66.7%				ICU Level of Service				C	
Analysis Period (min)			15									

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	3	59	82	11	6	1
Future Vol, veh/h	3	59	82	11	6	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	2	2	0	0	100
Mvmt Flow	4	75	104	14	8	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	125	0	-	0	201 118
Stage 1	-	-	-	-	118 -
Stage 2	-	-	-	-	83 -
Critical Hdwy	4.1	-	-	-	6.4 7.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 4.2
Pot Cap-1 Maneuver	1474	-	-	-	792 725
Stage 1	-	-	-	-	912 -
Stage 2	-	-	-	-	945 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1466	-	-	-	786 721
Mov Cap-2 Maneuver	-	-	-	-	786 -
Stage 1	-	-	-	-	905 -
Stage 2	-	-	-	-	945 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.4	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1466	-	-	-	776
HCM Lane V/C Ratio	0.003	-	-	-	0.011
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	
Traffic Vol, veh/h	0	0	0	478	616	0
Future Vol, veh/h	0	0	0	478	616	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	0	0	0	498	642	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	321	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	681	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	681	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q (veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1722	1988	0	0	0
Future Vol, veh/h	0	1722	1988	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	0	1813	2093	0	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1047
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 7.1
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.9
Pot Cap-1 Maneuver	0	-	- 0 196
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 196
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q (veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	52	0	0	84	0	0
Future Vol, veh/h	52	0	0	84	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	54	0	0	88	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	54	0	142
Stage 1	-	-	-	-	54
Stage 2	-	-	-	-	88
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1564	-	856
Stage 1	-	-	-	-	974
Stage 2	-	-	-	-	940
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1564	-	856
Mov Cap-2 Maneuver	-	-	-	-	856
Stage 1	-	-	-	-	974
Stage 2	-	-	-	-	940

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1564	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q (veh)	-	-	-	0	-

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:30	7:30	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5042	4960	5024	5031	4887	4987
Vehs Exited	5049	5009	5022	5046	4930	5011
Starting Vehs	258	281	256	257	251	255
Ending Vehs	251	232	258	242	208	234
Travel Distance (km)	9618	9525	9635	9640	9411	9566
Travel Time (hr)	257.9	253.5	258.7	256.1	251.7	255.6
Total Delay (hr)	70.5	68.2	72.1	68.3	67.8	69.4
Total Stops	5085	4951	5084	4981	4893	4999
Fuel Used (l)	746.0	737.0	743.2	746.2	729.5	740.4

Interval #0 Information Seeding

Start Time	7:30
End Time	8:00
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5042	4960	5024	5031	4887	4987
Vehs Exited	5049	5009	5022	5046	4930	5011
Starting Vehs	258	281	256	257	251	255
Ending Vehs	251	232	258	242	208	234
Travel Distance (km)	9618	9525	9635	9640	9411	9566
Travel Time (hr)	257.9	253.5	258.7	256.1	251.7	255.6
Total Delay (hr)	70.5	68.2	72.1	68.3	67.8	69.4
Total Stops	5085	4951	5084	4981	4893	4999
Fuel Used (l)	746.0	737.0	743.2	746.2	729.5	740.4

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail/Private Access Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Arterial Level of Service: EB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Harman Gate	1	10.8	43.2	0.5	38	39	9.9
Dundas St Access	8	4.1	43.7	0.6	46	46	4.0
Total		14.9	86.9	1.0	42	42	13.9

Arterial Level of Service: EB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Harman Gate	38	11.5	38	11.9	39	10.3	38
Dundas St Access	46	4.2	46	4.0	46	4.0	46
Total	42	15.7	42	15.9	42	14.2	42

Arterial Level of Service: WB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Preserve Dr	1	14.1	43.0	0.6	47	48	12.7
Total		14.1	43.0	0.6	47	48	12.7

Arterial Level of Service: WB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Preserve Dr	45	15.4	47	13.9	47	13.9	46
Total	45	15.4	47	13.9	47	13.9	46

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	32.0	97.6	79.0	66.6	14.5	11.2	94.6	87.6	91.3	25.3	22.0	17.9
Average Queue (m)	13.8	53.2	42.2	31.4	2.8	2.1	38.1	40.1	38.5	7.6	4.2	4.8
95th Queue (m)	27.8	97.5	80.3	61.2	10.1	7.5	80.0	82.1	80.1	19.3	13.5	13.4
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)							0				0	0
Queuing Penalty (veh)							0				0	0

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	64.9	118.0
Average Queue (m)	41.7	32.6
95th Queue (m)	71.2	88.1
Link Distance (m)		113.5
Upstream Blk Time (%)		2
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	25	3
Queuing Penalty (veh)	35	6

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	72.3	123.2	125.8	124.9	121.6	58.0	84.2	83.5	82.8	84.4	62.0	58.8
Average Queue (m)	17.4	83.1	84.5	82.2	20.7	22.6	53.6	56.1	53.2	39.1	30.9	21.7
95th Queue (m)	43.1	122.0	125.2	122.5	61.8	46.3	76.3	79.1	78.8	68.4	55.3	45.6
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)	0	0	1	0	0							
Queuing Penalty (veh)	0	2	4	2	0							
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)		2		12						0		
Queuing Penalty (veh)		2		22						0		

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	75.8	88.8	28.2
Average Queue (m)	34.6	40.5	9.3
95th Queue (m)	61.9	71.2	20.7
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	0	1	
Queuing Penalty (veh)	1	2	

Intersection: 4: Sixth Line & Kaitting Trail/Private Access

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	LT	TR
Maximum Queue (m)	24.2	20.4	10.0	1.4	4.5	8.8	5.3
Average Queue (m)	10.4	8.0	3.1	0.0	0.2	0.4	0.2
95th Queue (m)	18.4	16.3	9.4	1.0	2.1	3.7	2.6
Link Distance (m)	38.2	67.8		45.8	45.8	205.5	205.5
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			25.0				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	47.8	61.9	23.0	30.5	12.0	38.8	49.2	29.1	42.3	33.4
Average Queue (m)	19.1	24.9	5.5	12.3	2.2	13.9	20.7	12.9	19.0	11.7
95th Queue (m)	36.3	48.2	15.4	26.2	8.5	29.1	38.1	24.7	36.6	25.8
Link Distance (m)		93.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	13	18				0				
Queuing Penalty (veh)	24	19				0				

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	3.6	1.7	10.7
Average Queue (m)	0.2	0.1	4.1
95th Queue (m)	2.3	1.2	11.0
Link Distance (m)	529.2	24.2	103.4
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Sixth Line & Site Access

Movement	SB
Directions Served	T
Maximum Queue (m)	12.1
Average Queue (m)	0.5
95th Queue (m)	6.4
Link Distance (m)	45.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB	EB	EB
Directions Served	T	T	T
Maximum Queue (m)	22.3	21.1	20.5
Average Queue (m)	1.5	1.4	1.2
95th Queue (m)	11.3	11.1	9.6
Link Distance (m)	535.3	535.3	535.3
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 121

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL SBTL	EBL	WBTL	NBTL	
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	99.3	31.1	7.9	91.9	31.1
g/C Ratio	0.71	0.22	0.04	0.66	0.22
Cycles Skipped (%)	14	14	38	14	14
Cycles @ Minimum (%)	0	0	24	0	0
Cycles Maxed Out (%)	86	86	31	86	86
Cycles with Peds (%)	7	10	0	14	10

Controller Summary

Average Cycle Length (s): 120.0
 Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL	NBL SBTL	EBL	WBTL	SBL	NBTL	
Maximum Green (s)	58.0	8.0	44.0	8.0	58.0	8.0	44.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	58.9	8.3	44.1	7.9	61.2	8.0	44.0
g/C Ratio	0.42	0.06	0.32	0.05	0.44	0.06	0.31
Cycles Skipped (%)	0	0	0	20	0	0	0
Cycles @ Minimum (%)	0	0	0	20	0	0	0
Cycles Maxed Out (%)	100	100	100	48	100	92	100
Cycles with Peds (%)	4	0	8	0	32	0	31

Controller Summary

Average Cycle Length (s): 140.0
 Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	10.0	40.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	46.0	32.6	7.9	53.5	32.6
g/C Ratio	0.46	0.33	0.01	0.53	0.33
Cycles Skipped (%)	0	0	88	0	0
Cycles @ Minimum (%)	0	0	9	0	0
Cycles Maxed Out (%)	100	100	0	100	100
Cycles with Peds (%)	6	11	0	0	11

Controller Summary

Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5491	5413	5433	5448	5329	5424
Vehs Exited	5470	5417	5468	5373	5262	5400
Starting Vehs	319	321	377	298	283	317
Ending Vehs	340	317	342	373	350	345
Travel Distance (km)	10986	10794	10766	10726	10586	10772
Travel Time (hr)	448.6	480.0	565.0	473.1	473.0	488.0
Total Delay (hr)	242.2	277.4	361.8	272.1	274.3	285.5
Total Stops	5381	5300	5427	5434	5198	5343
Fuel Used (l)	975.9	997.1	1068.4	986.6	975.5	1000.7

Interval #0 Information Seeding

Start Time	4:00
End Time	4:30
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5491	5413	5433	5448	5329	5424
Vehs Exited	5470	5417	5468	5373	5262	5400
Starting Vehs	319	321	377	298	283	317
Ending Vehs	340	317	342	373	350	345
Travel Distance (km)	10986	10794	10766	10726	10586	10772
Travel Time (hr)	448.6	480.0	565.0	473.1	473.0	488.0
Total Delay (hr)	242.2	277.4	361.8	272.1	274.3	285.5
Total Stops	5381	5300	5427	5434	5198	5343
Fuel Used (l)	975.9	997.1	1068.4	986.6	975.5	1000.7

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Arterial Level of Service: NE Dundas St E

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Sixth Line	2	26.6	34.3	0.1	15	16	24.1
Total		26.6	34.3	0.1	15	16	24.1

Arterial Level of Service: NE Dundas St E

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Sixth Line	16	24.8	14	28.7	15	26.8	15
Total	16	24.8	14	28.7	15	26.8	15

Arterial Level of Service: WB Dundas St E

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Sixth Line	2	39.3	100.9	1.2	44	44	39.1
Dundas St Access	8	2.5	13.5	0.1	39	39	2.4
Total		41.7	114.4	1.4	44	44	41.5

Arterial Level of Service: WB Dundas St E

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Sixth Line	45	37.4	44	38.7	43	41.5	44
Dundas St Access	39	2.6	39	2.5	39	2.4	39
Total	44	40.0	44	41.3	43	43.9	43

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	28.8	93.8	75.2	65.7	15.3	43.3	134.3	139.1	134.0	76.5	19.3	17.9
Average Queue (m)	13.3	52.8	43.7	31.9	2.9	5.4	51.6	52.9	51.2	14.1	4.6	4.4
95th Queue (m)	23.4	82.1	70.5	56.0	10.7	26.2	119.1	120.2	117.3	46.7	13.8	13.0
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)							1		1			
Queuing Penalty (veh)							0		3			

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	64.8	111.5
Average Queue (m)	43.8	28.4
95th Queue (m)	68.0	84.9
Link Distance (m)		113.5
Upstream Blk Time (%)		2
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	21	0
Queuing Penalty (veh)	19	0

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	58.4	100.8	104.5	102.1	33.5	47.8	175.1	182.4	170.3	46.0	75.1	19.1
Average Queue (m)	27.5	62.3	66.6	63.4	14.8	18.6	98.8	107.1	107.3	22.4	39.6	5.5
95th Queue (m)	52.6	100.1	102.5	97.8	26.1	35.1	144.1	153.3	151.8	39.9	66.2	13.3
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)			0									
Queuing Penalty (veh)			0									
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)		0		4			3				0	
Queuing Penalty (veh)		0		7			4				0	

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	72.9	82.8	31.6
Average Queue (m)	37.4	38.8	12.7
95th Queue (m)	66.5	69.6	26.8
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		2	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	1	1	
Queuing Penalty (veh)	2	2	

Intersection: 4: Sixth Line & Kaitting Trail

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	LT	TR
Maximum Queue (m)	21.5	14.5	14.2	1.3	2.0	9.5	5.0
Average Queue (m)	9.6	6.5	4.0	0.0	0.1	0.8	0.2
95th Queue (m)	17.7	13.8	10.7	0.9	1.0	5.6	2.3
Link Distance (m)	38.1	67.8		45.8	45.8	205.5	205.5
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			25.0				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	48.9	113.3	95.8	199.2	8.1	24.2	30.2	26.2	33.4	22.3
Average Queue (m)	43.0	107.8	29.8	127.0	1.0	2.5	4.4	7.7	3.8	2.2
95th Queue (m)	57.5	111.8	76.8	231.8	5.4	12.6	18.9	18.6	18.7	12.0
Link Distance (m)		107.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)		97		19						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	99	73	2	78						
Queuing Penalty (veh)	162	73	2	15						

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	3.7	15.2
Average Queue (m)	0.1	2.2
95th Queue (m)	1.9	9.6
Link Distance (m)	529.2	103.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Sixth Line & Site Access

Movement	SB
Directions Served	T
Maximum Queue (m)	14.7
Average Queue (m)	0.8
95th Queue (m)	7.7
Link Distance (m)	45.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB
Directions Served	T
Maximum Queue (m)	2.1
Average Queue (m)	0.1
95th Queue (m)	1.5
Link Distance (m)	535.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 291

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL SBTL	EBL	WBTL	NBTL	
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	82.4	30.9	7.8	76.3	30.9
g/C Ratio	0.66	0.25	0.05	0.61	0.25
Cycles Skipped (%)	4	3	28	4	3
Cycles @ Minimum (%)	0	0	31	0	0
Cycles Maxed Out (%)	96	97	31	96	97
Cycles with Peds (%)	7	3	0	7	0

Controller Summary

Average Cycle Length (s): 120.0
Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL	NBL SBTL	EBL	WBTL	SBL	NBTL	
Maximum Green (s)	65.0	12.0	33.0	8.0	65.0	12.0	33.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	66.9	11.3	34.3	8.1	66.4	11.8	33.8
g/C Ratio	0.48	0.08	0.24	0.05	0.47	0.08	0.24
Cycles Skipped (%)	0	0	0	8	0	0	0
Cycles @ Minimum (%)	0	4	0	12	0	0	0
Cycles Maxed Out (%)	100	67	100	72	100	83	100
Cycles with Peds (%)	4	0	12	0	12	0	12

Controller Summary

Average Cycle Length (s): 140.0
Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	12.0	38.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	None	None	C-Max	None
Avg. Green (s)	377.4	32.0	0.0	617.1	32.0
g/C Ratio	0.78	0.05	0.00	0.75	0.05
Cycles Skipped (%)	79	86	100	88	86
Cycles @ Minimum (%)	0	0	0	0	0
Cycles Maxed Out (%)	21	0	0	12	0
Cycles with Peds (%)	0	6	0	3	9

Controller Summary

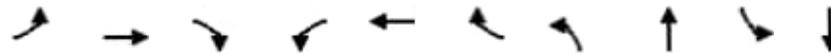
Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35

Queues

Future Background (2038 Diversions+Opt)

1: Harman Gate/Preserve Dr & Dundas St W

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↶	↑↑↑	↷	↶	↑↑↑	↷	↶	↷	↶	↷
Traffic Volume (vph)	88	1600	35	13	1105	136	26	9	184	20
Future Volume (vph)	88	1600	35	13	1105	136	26	9	184	20
Lane Group Flow (vph)	90	1633	36	13	1128	139	27	53	188	142
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.2	40.2
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.30	0.53	0.04	0.06	0.42	0.16	0.09	0.12	0.58	0.29
Control Delay (s/veh)	9.7	14.8	0.9	7.4	16.3	2.5	35.9	13.6	47.9	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	9.7	14.8	0.9	7.4	16.3	2.5	35.9	13.6	47.9	10.5
Queue Length 50th (m)	7.5	72.5	0.0	1.0	60.2	0.0	5.2	1.7	41.4	3.8
Queue Length 95th (m)	13.8	109.4	1.8	3.2	72.1	9.5	13.3	12.3	67.5	20.4
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	306	3084	897	233	2680	894	287	433	324	490
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	0.29	0.53	0.04	0.06	0.42	0.16	0.09	0.12	0.58	0.29

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 113 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis
1: Harman Gate/Preserve Dr & Dundas St W

Future Background (2038 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	88	1600	35	13	1105	136	26	9	43	184	20	120
Future Volume (vph)	88	1600	35	13	1105	136	26	9	43	184	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	5036	1425	1745	4848	1506	1739	1613		1721	1605	
Fl _t Permitted	0.19	1.00	1.00	0.11	1.00	1.00	0.63	1.00		0.72	1.00	
Satd. Flow (perm)	334	5036	1425	206	4848	1506	1157	1613		1309	1605	
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)	90	1633	36	13	1128	139	27	9	44	188	20	122
RTOR Reduction (vph)	0	0	15	0	0	62	0	33	0	0	92	0
Lane Group Flow (vph)	90	1633	21	13	1128	77	27	20	0	188	50	0
Confl. Peds. (#/hr)	5		4	4		5	4		4	4		4
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	6%	3%	9%	0%	7%	3%	0%	0%	2%	1%	0%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.65	0.59	0.59	0.58	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	299	2983	844	154	2678	832	287	400		325	398	
v/s Ratio Prot	c0.02	c0.32		0.00	0.23			0.01			0.03	
v/s Ratio Perm	0.18		0.01	0.05		0.05	0.02			c0.14		
v/c Ratio	0.30	0.55	0.03	0.08	0.42	0.09	0.09	0.05		0.58	0.13	
Uniform Delay, d ₁	8.8	14.7	10.1	11.7	15.7	12.7	34.7	34.3		39.6	35.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	0.6	0.7	0.1	0.2	0.5	0.2	0.7	0.2		7.3	0.7	
Delay (s)	9.4	15.5	10.2	11.9	16.1	12.9	35.4	34.6		46.9	35.7	
Level of Service	A	B	B	B	B	B	D	C		D	D	
Approach Delay (s/veh)		15.1			15.8			34.8			42.1	
Approach LOS		B			B			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			18.4				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			16.3		
Intersection Capacity Utilization			78.7%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

Queues

Future Background (2038 Diversions+Opt)

2: Sixth Line & Dundas St E

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	84	1524	191	115	939	208	177	210	193	210	101
Future Volume (vph)	84	1524	191	115	939	208	177	210	193	210	101
Lane Group Flow (vph)	85	1539	193	116	1056	210	179	212	195	212	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	31.0	31.0	14.0	31.0	11.5	37.0	37.0	11.5	37.0	37.0
Total Split (s)	14.0	64.0	64.0	14.0	64.0	12.0	50.0	50.0	12.0	50.0	50.0
Total Split (%)	10.0%	45.7%	45.7%	10.0%	45.7%	8.6%	35.7%	35.7%	8.6%	35.7%	35.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.38	0.73	0.26	0.79	0.53	0.52	0.31	0.36	0.45	0.37	0.19
Control Delay (s/veh)	22.6	37.0	6.5	60.9	31.4	34.5	38.3	11.0	32.3	39.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.6	37.0	6.5	60.9	31.4	34.5	38.3	11.0	32.3	39.6	7.0
Queue Length 50th (m)	12.9	138.4	4.9	18.1	87.3	41.4	40.5	9.6	37.7	49.4	0.0
Queue Length 95th (m)	23.0	157.3	20.7	#52.9	102.8	62.4	62.4	31.4	57.3	73.8	13.9
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	227	2106	742	147	1981	405	579	585	435	574	549
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.73	0.26	0.79	0.53	0.52	0.31	0.36	0.45	0.37	0.19

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 36 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

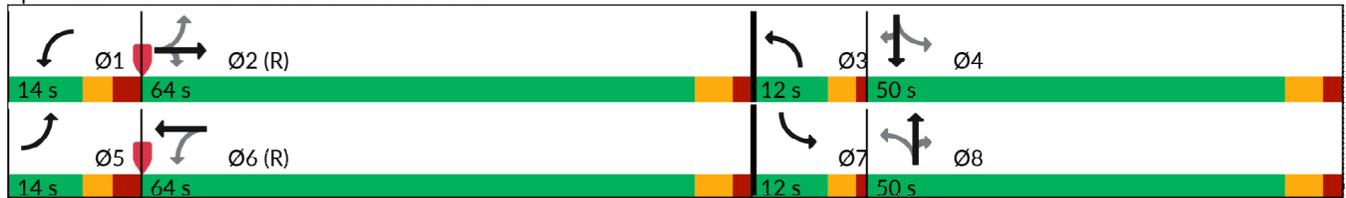
Natural Cycle: 95

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis
2: Sixth Line & Dundas St E

Future Background (2038 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (vph)	84	1524	191	115	939	107	208	177	210	193	210	101
Future Volume (vph)	84	1524	191	115	939	107	208	177	210	193	210	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1646	5085	1559	1678	4739		1692	1845	1497	1701	1827	1526
Flt Permitted	0.19	1.00	1.00	0.07	1.00		0.53	1.00	1.00	0.58	1.00	1.00
Satd. Flow (perm)	323	5085	1559	126	4739		941	1845	1497	1033	1827	1526
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	85	1539	193	116	948	108	210	179	212	195	212	102
RTOR Reduction (vph)	0	0	97	0	10	0	0	0	115	0	0	70
Lane Group Flow (vph)	85	1539	96	116	1046	0	210	179	97	195	212	32
Confl. Peds. (#/hr)	8		1	1		8	3		10	10		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	6%	2%	1%	4%	8%	3%	3%	3%	4%	2%	4%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	65.8	58.0	58.0	66.2	58.2		52.0	44.0	44.0	52.0	44.0	44.0
Effective Green, g (s)	65.8	58.0	58.0	66.2	58.2		52.0	44.0	44.0	52.0	44.0	44.0
Actuated g/C Ratio	0.47	0.41	0.41	0.47	0.42		0.37	0.31	0.31	0.37	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	225	2106	645	148	1970		392	579	470	421	574	479
v/s Ratio Prot	0.02	0.30		c0.04	0.22		c0.03	0.10		0.03	0.12	
v/s Ratio Perm	0.16		0.06	c0.33			c0.17		0.07	0.15		0.02
v/c Ratio	0.38	0.73	0.15	0.78	0.53		0.54	0.31	0.21	0.46	0.37	0.07
Uniform Delay, d1	21.9	34.4	25.6	27.1	30.7		34.0	36.5	35.2	32.5	37.2	33.6
Progression Factor	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	1.1	2.3	0.5	23.2	1.0		1.4	1.4	1.0	0.8	1.8	0.3
Delay (s)	23.0	36.7	26.1	50.3	31.7		35.4	37.8	36.2	33.4	39.1	33.9
Level of Service	C	D	C	D	C		D	D	D	C	D	C
Approach Delay (s/veh)		34.9			33.5			36.4			35.8	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			34.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			91.5%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	14	2	68	29	12	6	36	293	10	4	406	32
Future Vol, veh/h	14	2	68	29	12	6	36	293	10	4	406	32
Conflicting Peds, #/hr	2	0	0	0	0	2	7	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	7	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	16	2	79	34	14	7	42	341	12	5	472	37

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	772	945	262	678	957	179	516	0	0	353	0	0
Stage 1	508	508	-	431	431	-	-	-	-	-	-	-
Stage 2	264	437	-	247	526	-	-	-	-	-	-	-
Critical Hdwy	7.64	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.64	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.64	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.57	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	280	264	743	342	260	839	1060	-	-	1217	-	-
Stage 1	503	542	-	578	586	-	-	-	-	-	-	-
Stage 2	704	583	-	741	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	255	251	739	293	247	838	1054	-	-	1217	-	-
Mov Cap-2 Maneuver	255	251	-	293	247	-	-	-	-	-	-	-
Stage 1	480	535	-	555	563	-	-	-	-	-	-	-
Stage 2	653	560	-	655	526	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Ctrl Dly, s/v	13.1		19.4			0.9			0.1		
HCM LOS	B		C								

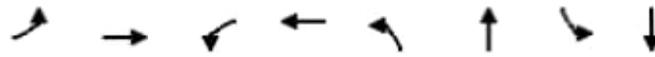
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1054	-	-	542	304	1217	-	-
HCM Lane V/C Ratio	0.04	-	-	0.18	0.18	0.004	-	-
HCM Ctrl Dly (s/v)	8.6	-	-	13.1	19.4	8	0	-
HCM Lane LOS	A	-	-	B	C	A	A	-
HCM 95th %tile Q (veh)	0.1	-	-	0.7	0.6	0	-	-

Queues

Future Background (2038 Diversions+Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	105	69	27	66	10	205	98	267
Future Volume (vph)	105	69	27	66	10	205	98	267
Lane Group Flow (vph)	125	227	32	96	12	355	117	380
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.0	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	14.0	47.0	14.0	47.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	14.0%	47.0%	14.0%	47.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	None	C-Max	None	C-Max
v/c Ratio	0.31	0.39	0.11	0.17	0.02	0.25	0.21	0.21
Control Delay (s/veh)	28.0	17.1	24.9	22.1	9.7	14.4	11.0	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.0	17.1	24.9	22.1	9.7	14.4	11.0	12.7
Queue Length 50th (m)	19.4	21.2	4.9	12.7	1.0	17.8	10.7	18.5
Queue Length 95th (m)	32.7	38.8	11.9	23.5	3.3	26.1	17.9	31.5
Internal Link Dist (m)		84.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	402	582	297	580	602	1439	567	1797
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.39	0.11	0.17	0.02	0.25	0.21	0.21

Intersection Summary

Cycle Length: 100

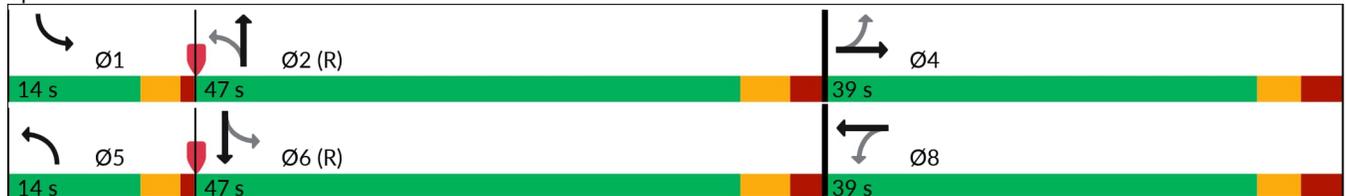
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Future Background (2038 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	69	122	27	66	14	10	205	93	98	267	52
Future Volume (vph)	105	69	122	27	66	14	10	205	93	98	267	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.90		1.00	0.97		1.00	0.95		1.00	0.98	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1591		1567	1757		1744	3284		1675	3385	
Fl _t Permitted	0.69	1.00		0.55	1.00		0.53	1.00		0.49	1.00	
Satd. Flow (perm)	1234	1591		914	1757		966	3284		857	3385	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	125	82	145	32	79	17	12	244	111	117	318	62
RTOR Reduction (vph)	0	63	0	0	7	0	0	51	0	0	14	0
Lane Group Flow (vph)	125	164	0	32	89	0	12	304	0	117	366	0
Confl. Peds. (#/hr)	5		5	5		5	1		3	3		1
Heavy Vehicles (%)	3%	10%	5%	11%	6%	0%	0%	3%	6%	4%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Effective Green, g (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.44	0.42		0.55	0.50	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	402	518		297	572		433	1389		540	1675	
v/s Ratio Prot		c0.10			0.05		0.00	0.09		c0.02	c0.11	
v/s Ratio Perm	0.10			0.04			0.01			0.10		
v/c Ratio	0.31	0.32		0.11	0.15		0.03	0.22		0.22	0.22	
Uniform Delay, d ₁	25.3	25.3		23.5	23.9		16.0	18.3		11.1	14.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	2.0	1.6		0.7	0.6		0.0	0.4		0.2	0.3	
Delay (s)	27.3	26.9		24.3	24.5		16.0	18.7		11.3	14.6	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s/veh)		27.0			24.4			18.6			13.8	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			19.6				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.26									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			75.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c	Critical Lane Group											

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	5	77	67	12	6	13
Future Vol, veh/h	5	77	67	12	6	13
Conflicting Peds, #/hr	10	0	0	10	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	64	64	64	64	64	64
Heavy Vehicles, %	0	4	0	8	0	0
Mvmt Flow	8	120	105	19	9	20

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	134	0	-	0	261
Stage 1	-	-	-	-	125
Stage 2	-	-	-	-	136
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1463	-	-	-	732
Stage 1	-	-	-	-	906
Stage 2	-	-	-	-	895
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1452	-	-	-	722
Mov Cap-2 Maneuver	-	-	-	-	722
Stage 1	-	-	-	-	893
Stage 2	-	-	-	-	895

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.5	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1452	-	-	-	848
HCM Lane V/C Ratio	0.005	-	-	-	0.035
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	
Traffic Vol, veh/h	0	0	0	339	503	0
Future Vol, veh/h	0	0	0	339	503	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	3	3	0
Mvmt Flow	0	0	0	394	585	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	293	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	709	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	709	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q (veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1827	1254	0	0	0
Future Vol, veh/h	0	1827	1254	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	2	6	0	0	0
Mvmt Flow	0	1864	1280	0	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q (veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	79	0	0	64	0	0
Future Vol, veh/h	79	0	0	64	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	92	0	0	74	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	92	0	166 92
Stage 1	-	-	-	-	92 -
Stage 2	-	-	-	-	74 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1515	-	829 971
Stage 1	-	-	-	-	937 -
Stage 2	-	-	-	-	954 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1515	-	829 971
Mov Cap-2 Maneuver	-	-	-	-	829 -
Stage 1	-	-	-	-	937 -
Stage 2	-	-	-	-	954 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

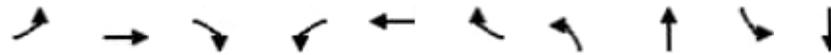
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1515	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q (veh)	-	-	-	0	-

Queues

Future Background (2038 Diversions+Opt)

1: Harman Gate/Preserve Dr & Dundas St W

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑↑↑	↗	↘	↑↑↑	↗	↘	↗	↘	↗
Traffic Volume (vph)	84	1552	37	26	1743	219	20	14	203	13
Future Volume (vph)	84	1552	37	26	1743	219	20	14	203	13
Lane Group Flow (vph)	88	1634	39	27	1835	231	21	30	214	93
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.3	40.3
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.49	0.54	0.04	0.13	0.65	0.24	0.07	0.07	0.64	0.20
Control Delay (s/veh)	21.0	16.0	1.2	8.2	20.2	2.3	35.5	22.1	50.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.0	16.0	1.2	8.2	20.2	2.3	35.5	22.1	50.6	11.4
Queue Length 50th (m)	7.0	93.6	0.0	2.1	113.2	0.0	4.2	3.0	48.0	2.7
Queue Length 95th (m)	20.0	108.1	2.2	5.3	130.8	11.4	11.4	11.4	76.3	16.4
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	186	3021	950	228	2812	964	302	416	332	466
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	0.47	0.54	0.04	0.12	0.65	0.24	0.07	0.07	0.64	0.20

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis
1: Harman Gate/Preserve Dr & Dundas St W

Future Background (2038 Diversions+Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (vph)	84	1552	37	26	1743	219	20	14	14	203	13	75
Future Volume (vph)	84	1552	37	26	1743	219	20	14	14	203	13	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	5085	1556	1745	5085	1557	1659	1631		1724	1638	
Flt Permitted	0.07	1.00	1.00	0.11	1.00	1.00	0.70	1.00		0.74	1.00	
Satd. Flow (perm)	121	5085	1556	197	5085	1557	1216	1631		1339	1638	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	88	1634	39	27	1835	231	21	15	15	214	14	79
RTOR Reduction (vph)	0	0	16	0	0	103	0	11	0	0	59	0
Lane Group Flow (vph)	88	1634	23	27	1835	128	21	19	0	214	34	0
Confl. Peds. (#/hr)	3		3	3		3	2		1	1		2
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	5%	7%	7%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.2	69.7	69.7	70.6	66.4	66.4	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.2	69.7	69.7	70.6	66.4	66.4	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.64	0.58	0.58	0.59	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	179	2953	903	170	2813	861	301	405		332	406	
v/s Ratio Prot	c0.03	0.32		0.01	c0.36			0.01			0.02	
v/s Ratio Perm	0.28		0.01	0.09		0.08	0.02			c0.16		
v/c Ratio	0.49	0.55	0.03	0.16	0.65	0.15	0.07	0.05		0.64	0.08	
Uniform Delay, d1	14.2	15.5	10.7	11.5	18.7	13.0	34.5	34.3		40.4	34.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.8	0.1	0.4	1.2	0.4	0.4	0.2		9.3	0.4	
Delay (s)	16.3	16.3	10.7	11.9	19.9	13.4	34.9	34.5		49.7	35.0	
Level of Service	B	B	B	B	B	B	C	C		D	D	
Approach Delay (s/veh)		16.2			19.1			34.7			45.2	
Approach LOS		B			B			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			20.0			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.3			
Intersection Capacity Utilization			81.4%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

Queues

Future Background (2038 Diversions+Opt)

2: Sixth Line & Dundas St E

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	115	1426	200	125	1734	128	212	70	213	233	122
Future Volume (vph)	115	1426	200	125	1734	128	212	70	213	233	122
Lane Group Flow (vph)	121	1501	211	132	2026	135	223	74	224	245	128
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	31.0	31.0	13.0	31.0	11.0	37.0	37.0	11.0	37.0	37.0
Total Split (s)	14.0	71.0	71.0	14.0	71.0	16.0	39.0	39.0	16.0	39.0	39.0
Total Split (%)	10.0%	50.7%	50.7%	10.0%	50.7%	11.4%	27.9%	27.9%	11.4%	27.9%	27.9%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.81	0.64	0.25	0.74	0.87	0.41	0.50	0.17	0.64	0.53	0.27
Control Delay (s/veh)	64.7	30.0	3.9	42.9	38.4	34.9	50.9	4.1	43.3	51.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.7	30.0	3.9	42.9	38.4	34.9	50.9	4.1	43.3	51.5	8.4
Queue Length 50th (m)	19.3	121.3	1.3	17.6	192.1	27.2	56.7	0.0	47.9	63.1	0.0
Queue Length 95th (m)	#55.8	138.2	15.8	#45.4	214.8	44.2	84.1	7.0	71.3	92.3	17.1
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	149	2360	829	179	2332	341	447	436	350	459	473
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.64	0.25	0.74	0.87	0.40	0.50	0.17	0.64	0.53	0.27

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 71 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

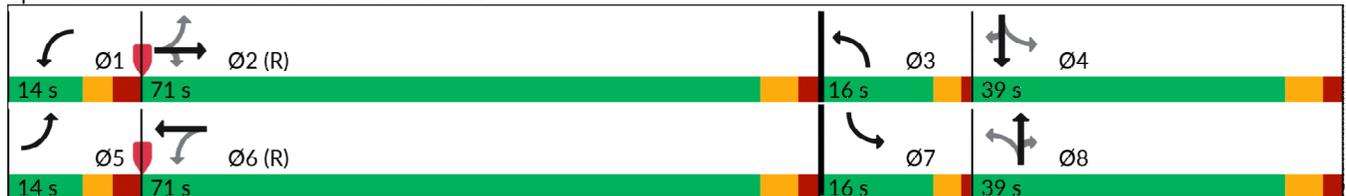
Natural Cycle: 105

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis
2: Sixth Line & Dundas St E

Future Background (2038 Diversions+Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (vph)	115	1426	200	125	1734	191	128	212	70	213	233	122
Future Volume (vph)	115	1426	200	125	1734	191	128	212	70	213	233	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1711	5085	1553	1728	5003		1725	1900	1526	1726	1900	1554
Flt Permitted	0.06	1.00	1.00	0.09	1.00		0.43	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)	111	5085	1553	172	5003		774	1900	1526	792	1900	1554
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	121	1501	211	132	1825	201	135	223	74	224	245	128
RTOR Reduction (vph)	0	0	109	0	10	0	0	0	57	0	0	97
Lane Group Flow (vph)	121	1501	102	132	2016	0	135	223	17	224	245	31
Confl. Peds. (#/hr)	6		3	3		6	4		3	3		4
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	2%	1%	1%	2%	1%	1%	0%	3%	1%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	73.0	65.0	65.0	73.0	65.0		44.1	33.0	33.0	45.9	33.9	33.9
Effective Green, g (s)	73.0	65.0	65.0	73.0	65.0		44.1	33.0	33.0	45.9	33.9	33.9
Actuated g/C Ratio	0.52	0.46	0.46	0.52	0.46		0.32	0.24	0.24	0.33	0.24	0.24
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	149	2360	721	178	2322		319	447	359	339	460	376
v/s Ratio Prot	c0.05	0.30		0.04	c0.40		0.03	0.12		c0.06	0.13	
v/s Ratio Perm	0.38		0.07	0.34			0.10		0.01	c0.16		0.02
v/c Ratio	0.81	0.64	0.14	0.74	0.87		0.42	0.50	0.05	0.66	0.53	0.08
Uniform Delay, d1	31.3	28.5	21.5	22.1	33.7		36.0	46.3	41.4	38.1	46.2	41.0
Progression Factor	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	27.4	1.3	0.4	15.3	4.7		0.9	3.9	0.3	4.8	4.4	0.4
Delay (s)	58.7	29.8	21.9	37.4	38.4		36.9	50.3	41.6	42.9	50.5	41.5
Level of Service	E	C	C	D	D		D	D	D	D	D	D
Approach Delay (s/veh)		30.8			38.3			44.6			45.7	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			37.0			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			100.2%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	25	5	38	17	7	3	68	383	28	10	430	26
Future Vol, veh/h	25	5	38	17	7	3	68	383	28	10	430	26
Conflicting Peds, #/hr	3	0	1	1	0	3	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	8
Mvmt Flow	26	5	40	18	7	3	71	399	29	10	448	27

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	832	1054	241	804	1053	217	477	0	0	428	0	0
Stage 1	484	484	-	556	556	-	-	-	-	-	-	-
Stage 2	348	570	-	248	497	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	265	228	766	278	228	794	1096	-	-	1142	-	-
Stage 1	538	555	-	488	516	-	-	-	-	-	-	-
Stage 2	647	509	-	740	548	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	241	210	764	244	210	792	1094	-	-	1142	-	-
Mov Cap-2 Maneuver	241	210	-	244	210	-	-	-	-	-	-	-
Stage 1	502	547	-	456	482	-	-	-	-	-	-	-
Stage 2	592	476	-	686	540	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	16.5	21	1.2	0.2
HCM LOS	C	C		

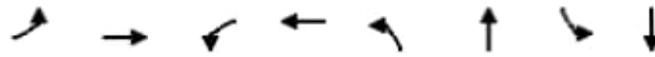
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1094	-	-	384	253	1142	-	-
HCM Lane V/C Ratio	0.065	-	-	0.184	0.111	0.009	-	-
HCM Ctrl Dly (s/v)	8.5	-	-	16.5	21	8.2	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q (veh)	0.2	-	-	0.7	0.4	0	-	-

Queues

Future Background (2038 Diversions+Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	101	59	19	56	16	257	102	252
Future Volume (vph)	101	59	19	56	16	257	102	252
Lane Group Flow (vph)	106	173	20	73	17	402	107	328
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.5	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	16.0	47.0	14.0	45.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	16.0%	47.0%	14.0%	45.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.41	0.42	0.09	0.20	0.02	0.21	0.16	0.15
Control Delay (s/veh)	40.4	19.6	34.1	29.6	4.9	8.6	5.5	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.4	19.6	34.1	29.6	4.9	8.6	5.5	7.6
Queue Length 50th (m)	19.0	13.5	3.4	10.5	0.9	14.8	6.3	10.0
Queue Length 95th (m)	35.9	33.7	10.1	23.4	2.9	23.6	11.5	21.2
Internal Link Dist (m)		98.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	423	615	346	581	791	1926	690	2196
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.28	0.06	0.13	0.02	0.21	0.16	0.15

Intersection Summary

Cycle Length: 100

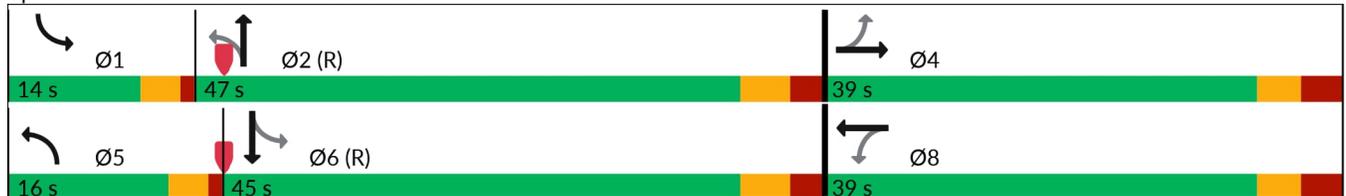
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Future Background (2038 Diversions+Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	59	105	19	56	13	16	257	124	102	252	60
Future Volume (vph)	101	59	105	19	56	13	16	257	124	102	252	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.90		1.00	0.97		1.00	0.95		1.00	0.97	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1739	1690		1742	1756		1742	3377		1728	3462	
Fl _t Permitted	0.71	1.00		0.58	1.00		0.55	1.00		0.48	1.00	
Satd. Flow (perm)	1299	1690		1063	1756		1015	3377		875	3462	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	106	62	111	20	59	14	17	271	131	107	265	63
RTOR Reduction (vph)	0	77	0	0	10	0	0	44	0	0	13	0
Lane Group Flow (vph)	106	96	0	20	63	0	17	358	0	107	315	0
Confl. Peds. (#/hr)	4		2	2		4	2					2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	4%	8%	0%	1%	1%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Effective Green, g (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.59	0.56		0.68	0.61	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	338		212	351		615	1884		656	2101	
v/s Ratio Prot		0.06			0.04		0.00	c0.11		c0.01	0.09	
v/s Ratio Perm	c0.08			0.02			0.02			0.10		
v/c Ratio	0.41	0.28		0.09	0.18		0.03	0.19		0.16	0.15	
Uniform Delay, d ₁	34.9	33.9		32.6	33.2		8.7	10.9		5.7	8.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	1.1	0.5		0.2	0.2		0.0	0.2		0.1	0.2	
Delay (s)	35.9	34.4		32.8	33.4		8.7	11.2		5.8	8.6	
Level of Service	D	C		C	C		A	B		A	A	
Approach Delay (s/veh)		35.0			33.3			11.1			8.0	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			17.1				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.24									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)				16.5	
Intersection Capacity Utilization			66.7%				ICU Level of Service				C	
Analysis Period (min)			15									

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	3	59	82	11	6	1
Future Vol, veh/h	3	59	82	11	6	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	2	2	0	0	100
Mvmt Flow	4	75	104	14	8	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	125	0	-	0	201 118
Stage 1	-	-	-	-	118 -
Stage 2	-	-	-	-	83 -
Critical Hdwy	4.1	-	-	-	6.4 7.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 4.2
Pot Cap-1 Maneuver	1474	-	-	-	792 725
Stage 1	-	-	-	-	912 -
Stage 2	-	-	-	-	945 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1466	-	-	-	786 721
Mov Cap-2 Maneuver	-	-	-	-	786 -
Stage 1	-	-	-	-	905 -
Stage 2	-	-	-	-	945 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.4	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1466	-	-	-	776
HCM Lane V/C Ratio	0.003	-	-	-	0.011
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	
Traffic Vol, veh/h	0	0	0	478	639	0
Future Vol, veh/h	0	0	0	478	639	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	0	0	0	498	666	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	333	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	669	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	669	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q (veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1800	1988	0	0	0
Future Vol, veh/h	0	1800	1988	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	0	1895	2093	0	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1047
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 7.1
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.9
Pot Cap-1 Maneuver	0	-	- 0 196
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 196
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q (veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1			4	3	
Traffic Vol, veh/h	52	0	0	84	0	0
Future Vol, veh/h	52	0	0	84	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	54	0	0	88	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	54	0	142
Stage 1	-	-	-	-	54
Stage 2	-	-	-	-	88
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1564	-	856
Stage 1	-	-	-	-	974
Stage 2	-	-	-	-	940
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1564	-	856
Mov Cap-2 Maneuver	-	-	-	-	856
Stage 1	-	-	-	-	974
Stage 2	-	-	-	-	940

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1564	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q (veh)	-	-	-	0	-

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:30	7:30	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5042	4960	5024	5031	4887	4987
Vehs Exited	5049	5009	5022	5046	4930	5011
Starting Vehs	258	281	256	257	251	255
Ending Vehs	251	232	258	242	208	234
Travel Distance (km)	9618	9525	9635	9640	9411	9566
Travel Time (hr)	257.9	253.5	258.7	256.1	251.7	255.6
Total Delay (hr)	70.5	68.2	72.1	68.3	67.8	69.4
Total Stops	5085	4951	5084	4981	4893	4999
Fuel Used (l)	746.0	737.0	743.2	746.2	729.5	740.4

Interval #0 Information Seeding

Start Time	7:30
End Time	8:00
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5042	4960	5024	5031	4887	4987
Vehs Exited	5049	5009	5022	5046	4930	5011
Starting Vehs	258	281	256	257	251	255
Ending Vehs	251	232	258	242	208	234
Travel Distance (km)	9618	9525	9635	9640	9411	9566
Travel Time (hr)	257.9	253.5	258.7	256.1	251.7	255.6
Total Delay (hr)	70.5	68.2	72.1	68.3	67.8	69.4
Total Stops	5085	4951	5084	4981	4893	4999
Fuel Used (l)	746.0	737.0	743.2	746.2	729.5	740.4

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail/Private Access Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Arterial Level of Service: EB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Harman Gate	1	10.8	43.2	0.5	38	39	9.9
Dundas St Access	8	4.1	43.7	0.6	46	46	4.0
Total		14.9	86.9	1.0	42	42	13.9

Arterial Level of Service: EB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Harman Gate	38	11.5	38	11.9	39	10.3	38
Dundas St Access	46	4.2	46	4.0	46	4.0	46
Total	42	15.7	42	15.9	42	14.2	42

Arterial Level of Service: WB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Preserve Dr	1	14.1	43.0	0.6	47	48	12.7
Total		14.1	43.0	0.6	47	48	12.7

Arterial Level of Service: WB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Preserve Dr	45	15.4	47	13.9	47	13.9	46
Total	45	15.4	47	13.9	47	13.9	46

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	32.0	97.6	79.0	66.6	14.5	11.2	94.6	87.6	91.3	25.3	22.0	17.9
Average Queue (m)	13.8	53.2	42.2	31.4	2.8	2.1	38.1	40.1	38.5	7.6	4.2	4.8
95th Queue (m)	27.8	97.5	80.3	61.2	10.1	7.5	80.0	82.1	80.1	19.3	13.5	13.4
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)							0				0	0
Queuing Penalty (veh)							0				0	0

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	64.9	118.0
Average Queue (m)	41.7	32.6
95th Queue (m)	71.2	88.1
Link Distance (m)		113.5
Upstream Blk Time (%)		2
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	25	3
Queuing Penalty (veh)	35	6

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	72.3	123.2	125.8	124.9	121.6	58.0	84.2	83.5	82.8	84.4	62.0	58.8
Average Queue (m)	17.4	83.1	84.5	82.2	20.7	22.6	53.6	56.1	53.2	39.1	30.9	21.7
95th Queue (m)	43.1	122.0	125.2	122.5	61.8	46.3	76.3	79.1	78.8	68.4	55.3	45.6
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)	0	0	1	0	0							
Queuing Penalty (veh)	0	2	4	2	0							
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)		2		12						0		
Queuing Penalty (veh)		2		22						0		

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	75.8	88.8	28.2
Average Queue (m)	34.6	40.5	9.3
95th Queue (m)	61.9	71.2	20.7
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	0	1	
Queuing Penalty (veh)	1	2	

Intersection: 4: Sixth Line & Kaitting Trail/Private Access

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	LT	TR
Maximum Queue (m)	24.2	20.4	10.0	1.4	4.5	8.8	5.3
Average Queue (m)	10.4	8.0	3.1	0.0	0.2	0.4	0.2
95th Queue (m)	18.4	16.3	9.4	1.0	2.1	3.7	2.6
Link Distance (m)	38.2	67.8		45.8	45.8	205.5	205.5
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			25.0				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	47.8	61.9	23.0	30.5	12.0	38.8	49.2	29.1	42.3	33.4
Average Queue (m)	19.1	24.9	5.5	12.3	2.2	13.9	20.7	12.9	19.0	11.7
95th Queue (m)	36.3	48.2	15.4	26.2	8.5	29.1	38.1	24.7	36.6	25.8
Link Distance (m)		93.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	13	18				0				
Queuing Penalty (veh)	24	19				0				

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	3.6	1.7	10.7
Average Queue (m)	0.2	0.1	4.1
95th Queue (m)	2.3	1.2	11.0
Link Distance (m)	529.2	24.2	103.4
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Sixth Line & Site Access

Movement	SB
Directions Served	T
Maximum Queue (m)	12.1
Average Queue (m)	0.5
95th Queue (m)	6.4
Link Distance (m)	45.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB	EB	EB
Directions Served	T	T	T
Maximum Queue (m)	22.3	21.1	20.5
Average Queue (m)	1.5	1.4	1.2
95th Queue (m)	11.3	11.1	9.6
Link Distance (m)	535.3	535.3	535.3
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 121

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL SBTL	EBL	WBTL	NBTL	
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	99.3	31.1	7.9	91.9	31.1
g/C Ratio	0.71	0.22	0.04	0.66	0.22
Cycles Skipped (%)	14	14	38	14	14
Cycles @ Minimum (%)	0	0	24	0	0
Cycles Maxed Out (%)	86	86	31	86	86
Cycles with Peds (%)	7	10	0	14	10

Controller Summary

Average Cycle Length (s): 120.0
 Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL	NBL SBTL	EBL	WBTL	SBL	NBTL	
Maximum Green (s)	58.0	8.0	44.0	8.0	58.0	8.0	44.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	58.9	8.3	44.1	7.9	61.2	8.0	44.0
g/C Ratio	0.42	0.06	0.32	0.05	0.44	0.06	0.31
Cycles Skipped (%)	0	0	0	20	0	0	0
Cycles @ Minimum (%)	0	0	0	20	0	0	0
Cycles Maxed Out (%)	100	100	100	48	100	92	100
Cycles with Peds (%)	4	0	8	0	32	0	31

Controller Summary

Average Cycle Length (s): 140.0
 Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	10.0	40.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	46.0	32.6	7.9	53.5	32.6
g/C Ratio	0.46	0.33	0.01	0.53	0.33
Cycles Skipped (%)	0	0	88	0	0
Cycles @ Minimum (%)	0	0	9	0	0
Cycles Maxed Out (%)	100	100	0	100	100
Cycles with Peds (%)	6	11	0	0	11

Controller Summary

Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5453	5468	5441	5436	5426	5444
Vehs Exited	5441	5445	5493	5486	5391	5450
Starting Vehs	320	310	351	366	331	333
Ending Vehs	332	333	299	316	366	327
Travel Distance (km)	10829	10901	10872	10803	10761	10833
Travel Time (hr)	500.1	470.2	452.2	546.7	575.7	509.0
Total Delay (hr)	295.5	265.5	247.2	343.0	373.6	305.0
Total Stops	5282	5399	5321	5354	5257	5321
Fuel Used (l)	1013.4	989.3	975.6	1057.4	1069.1	1021.0

Interval #0 Information Seeding

Start Time	4:00
End Time	4:30
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5453	5468	5441	5436	5426	5444
Vehs Exited	5441	5445	5493	5486	5391	5450
Starting Vehs	320	310	351	366	331	333
Ending Vehs	332	333	299	316	366	327
Travel Distance (km)	10829	10901	10872	10803	10761	10833
Travel Time (hr)	500.1	470.2	452.2	546.7	575.7	509.0
Total Delay (hr)	295.5	265.5	247.2	343.0	373.6	305.0
Total Stops	5282	5399	5321	5354	5257	5321
Fuel Used (l)	1013.4	989.3	975.6	1057.4	1069.1	1021.0

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Arterial Level of Service: EB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Harman Gate	1	13.1	45.5	0.5	36	36	13.4
Dundas St Access	8	4.1	43.8	0.6	46	46	4.1
Total		17.2	89.3	1.0	41	41	17.5

Arterial Level of Service: EB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Harman Gate	36	13.4	37	12.1	36	13.3	36
Dundas St Access	46	4.3	46	4.1	46	4.2	46
Total	41	17.7	41	16.1	41	17.5	41

Arterial Level of Service: WB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Preserve Dr	1	19.1	48.1	0.6	42	42	19.0
Total		19.1	48.1	0.6	42	42	19.0

Arterial Level of Service: WB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Preserve Dr	41	19.3	43	17.4	41	20.2	41
Total	41	19.3	43	17.4	41	20.2	41

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	37.2	105.2	97.2	69.1	11.8	24.0	128.2	135.0	128.4	55.4	11.6	23.5
Average Queue (m)	13.5	57.9	48.9	34.4	3.0	6.3	47.5	50.0	48.2	11.1	3.2	4.4
95th Queue (m)	27.8	91.5	80.0	60.7	10.2	16.5	114.1	116.9	111.1	32.1	9.5	14.3
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)							1		1	0		0
Queuing Penalty (veh)							0		1	0		0

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	64.7	92.3
Average Queue (m)	42.6	20.6
95th Queue (m)	64.7	61.7
Link Distance (m)		113.5
Upstream Blk Time (%)		1
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	16	0
Queuing Penalty (veh)	14	0

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	76.6	118.4	119.9	119.3	38.4	81.4	150.3	154.0	151.9	43.5	75.8	27.4
Average Queue (m)	32.1	64.7	67.2	65.3	14.6	22.3	97.9	104.1	105.3	21.5	40.2	6.6
95th Queue (m)	65.2	107.1	110.6	108.9	28.0	50.0	136.2	141.9	144.2	38.8	64.9	17.7
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)		0	0	0								
Queuing Penalty (veh)		2	1	2								
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)		1		7			2					
Queuing Penalty (veh)		1		14			3					

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	72.2	88.0	26.5
Average Queue (m)	36.1	38.7	11.5
95th Queue (m)	62.2	70.1	23.5
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		2	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	0	1	
Queuing Penalty (veh)	0	3	

Intersection: 4: Sixth Line & Kaitting Trail

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	LT	TR
Maximum Queue (m)	21.4	14.2	12.7	3.4	3.7	14.4	3.1
Average Queue (m)	10.0	5.1	3.4	0.1	0.2	1.3	0.1
95th Queue (m)	18.9	12.9	10.3	1.4	1.8	7.5	1.3
Link Distance (m)	38.1	67.8		45.8	45.8	205.5	205.5
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			25.0				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	48.9	111.9	95.8	201.3	8.1	22.7	35.5	21.4	25.6	21.4
Average Queue (m)	45.8	106.2	26.5	125.8	1.0	3.2	5.7	7.8	3.6	2.5
95th Queue (m)	58.8	110.4	69.0	243.0	5.3	14.3	22.3	17.9	15.8	11.9
Link Distance (m)		107.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)		98		25						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	96	56	4	74						
Queuing Penalty (veh)	157	57	3	14						

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	1.8	19.2
Average Queue (m)	0.1	2.2
95th Queue (m)	1.3	10.4
Link Distance (m)	529.2	103.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Sixth Line & Site Access

Movement	SB
Directions Served	T
Maximum Queue (m)	13.0
Average Queue (m)	0.8
95th Queue (m)	7.6
Link Distance (m)	45.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB	EB	EB	WB
Directions Served	T	T	T	TR
Maximum Queue (m)	11.1	12.7	7.4	1.8
Average Queue (m)	0.4	0.5	0.2	0.1
95th Queue (m)	6.1	6.3	4.2	1.3
Link Distance (m)	535.3	535.3	535.3	123.4
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 275

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL SBTL	EBL	WBTL	NBTL	
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	81.4	30.9	7.7	77.1	30.9
g/C Ratio	0.65	0.25	0.04	0.62	0.25
Cycles Skipped (%)	4	3	34	4	3
Cycles @ Minimum (%)	0	0	28	0	0
Cycles Maxed Out (%)	96	97	31	96	97
Cycles with Peds (%)	4	3	0	11	0

Controller Summary

Average Cycle Length (s): 120.0
 Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL	NBL SBTL	EBL	WBTL	SBL	NBTL	
Maximum Green (s)	65.0	12.0	33.0	8.0	65.0	12.0	33.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	66.7	11.3	34.2	8.0	65.5	12.1	33.4
g/C Ratio	0.48	0.08	0.24	0.06	0.47	0.09	0.24
Cycles Skipped (%)	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	4	0	12	0	0	0
Cycles Maxed Out (%)	100	63	100	80	100	88	100
Cycles with Peds (%)	8	0	12	0	19	0	8

Controller Summary

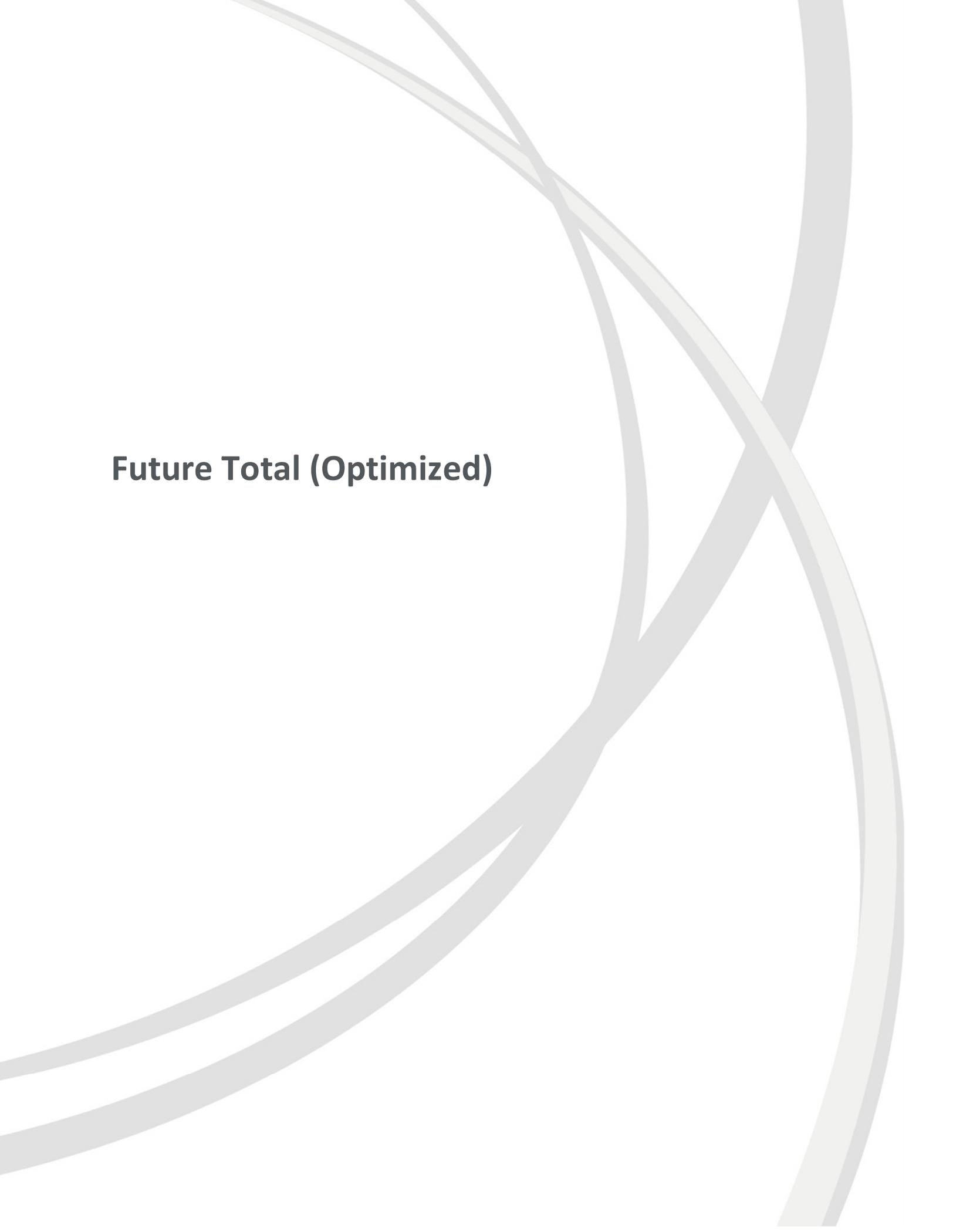
Average Cycle Length (s): 140.0
 Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	12.0	38.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	None	None	C-Max	None
Avg. Green (s)	316.2	34.6	11.4	485.0	34.6
g/C Ratio	0.74	0.05	0.00	0.71	0.05
Cycles Skipped (%)	76	85	97	85	85
Cycles @ Minimum (%)	0	0	3	0	0
Cycles Maxed Out (%)	24	0	0	15	0
Cycles with Peds (%)	0	3	0	3	12

Controller Summary

Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35



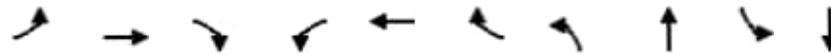
Future Total (Optimized)

Queues

1: Harman Gate/Preserve Dr & Dundas St W

Future Total (2033 Diversions+Opt)

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↶	↑↑↑	↷	↶	↑↑↑	↷	↶	↷	↶	↷
Traffic Volume (vph)	95	1604	35	13	1138	136	26	9	184	20
Future Volume (vph)	95	1604	35	13	1138	136	26	9	184	20
Lane Group Flow (vph)	97	1637	36	13	1161	139	27	53	188	203
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.2	40.2
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.33	0.53	0.04	0.06	0.43	0.16	0.11	0.12	0.58	0.38
Control Delay (s/veh)	10.2	14.8	0.9	7.4	16.5	2.5	36.6	13.6	47.9	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.2	14.8	0.9	7.4	16.5	2.5	36.6	13.6	47.9	10.3
Queue Length 50th (m)	8.1	72.7	0.0	1.0	62.7	0.0	5.2	1.7	41.4	5.5
Queue Length 95th (m)	14.6	109.8	1.8	3.2	74.6	9.5	13.5	12.3	67.5	25.7
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	297	3084	897	233	2676	893	235	433	324	529
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	0.33	0.53	0.04	0.06	0.43	0.16	0.11	0.12	0.58	0.38

Intersection Summary

Cycle Length: 120

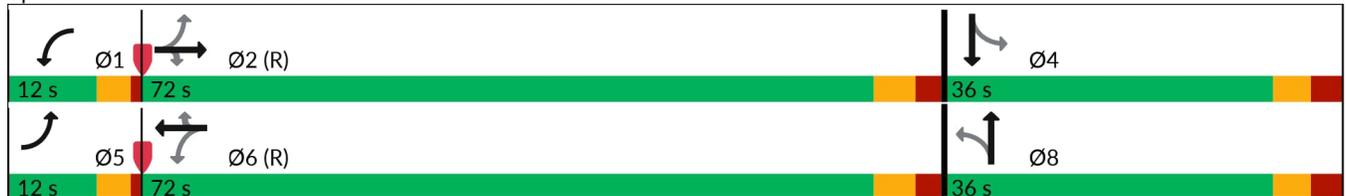
Actuated Cycle Length: 120

Offset: 113 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis
 1: Harman Gate/Preserve Dr & Dundas St W

Future Total (2033 Diversions+Opt)
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	95	1604	35	13	1138	136	26	9	43	184	20	179
Future Volume (vph)	95	1604	35	13	1138	136	26	9	43	184	20	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.86	
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	5036	1425	1745	4848	1506	1740	1613		1721	1605	
Fl _t Permitted	0.18	1.00	1.00	0.11	1.00	1.00	0.52	1.00		0.72	1.00	
Satd. Flow (perm)	319	5036	1425	205	4848	1506	951	1613		1309	1605	
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)	97	1637	36	13	1161	139	27	9	44	188	20	183
RTOR Reduction (vph)	0	0	15	0	0	62	0	33	0	0	131	0
Lane Group Flow (vph)	97	1637	21	13	1161	77	27	20	0	188	72	0
Confl. Peds. (#/hr)	5		4	4		5	4		4	4		4
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	6%	3%	9%	0%	7%	3%	0%	0%	2%	1%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.65	0.59	0.59	0.58	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	291	2983	844	153	2678	832	236	400		325	398	
v/s Ratio Prot	c0.02	c0.33		0.00	0.24			0.01				0.04
v/s Ratio Perm	0.20		0.01	0.05		0.05	0.03			c0.14		
v/c Ratio	0.33	0.55	0.03	0.08	0.43	0.09	0.11	0.05		0.58	0.18	
Uniform Delay, d ₁	9.0	14.8	10.1	11.7	15.8	12.7	34.9	34.3		39.6	35.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	0.7	0.7	0.1	0.2	0.5	0.2	1.0	0.2		7.3	1.0	
Delay (s)	9.7	15.5	10.2	11.9	16.3	12.9	35.9	34.6		46.9	36.5	
Level of Service	A	B	B	B	B	B	D	C		D	D	
Approach Delay (s/veh)		15.1			15.9			35.0			41.5	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			18.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			16.3		
Intersection Capacity Utilization			78.7%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

Queues

Future Total (2033 Diversions+Opt)

2: Sixth Line & Dundas St E

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	87	1524	191	115	954	208	189	210	253	255	101
Future Volume (vph)	87	1524	191	115	954	208	189	210	253	255	101
Lane Group Flow (vph)	88	1539	193	116	1087	210	191	212	256	258	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	31.0	31.0	14.0	31.0	11.5	37.0	37.0	11.5	37.0	37.0
Total Split (s)	14.0	64.0	64.0	14.0	64.0	12.0	50.0	50.0	12.0	50.0	50.0
Total Split (%)	10.0%	45.7%	45.7%	10.0%	45.7%	8.6%	35.7%	35.7%	8.6%	35.7%	35.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.41	0.73	0.26	0.79	0.55	0.58	0.33	0.37	0.60	0.45	0.19
Control Delay (s/veh)	23.5	37.0	6.5	60.9	31.7	37.0	38.8	12.9	37.9	41.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.5	37.0	6.5	60.9	31.7	37.0	38.8	12.9	37.9	41.6	7.0
Queue Length 50th (m)	13.5	138.4	4.9	18.1	90.4	41.8	43.9	12.4	51.6	62.3	0.0
Queue Length 95th (m)	23.7	157.3	20.7	#52.9	106.3	63.0	66.6	35.0	75.4	90.9	14.0
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	218	2106	742	147	1977	363	574	576	425	568	544
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.73	0.26	0.79	0.55	0.58	0.33	0.37	0.60	0.45	0.19

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 36 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

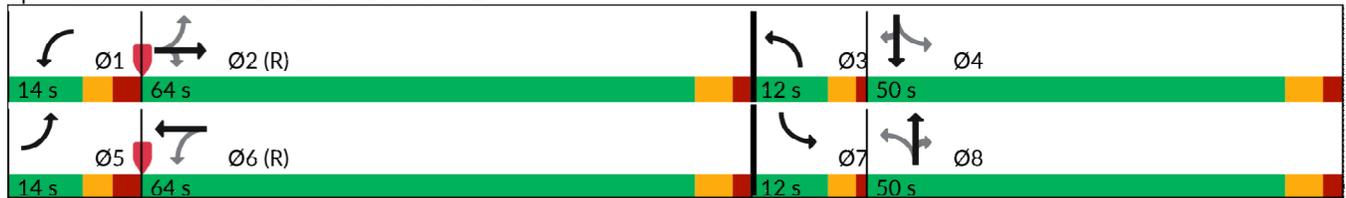
Natural Cycle: 95

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis
2: Sixth Line & Dundas St E

Future Total (2033 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (vph)	87	1524	191	115	954	122	208	189	210	253	255	101
Future Volume (vph)	87	1524	191	115	954	122	208	189	210	253	255	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1630	5085	1559	1678	4727		1676	1827	1497	1702	1810	1511
Flt Permitted	0.18	1.00	1.00	0.07	1.00		0.46	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	304	5085	1559	126	4727		816	1827	1497	1002	1810	1511
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	88	1539	193	116	964	123	210	191	212	256	258	102
RTOR Reduction (vph)	0	0	97	0	12	0	0	0	106	0	0	70
Lane Group Flow (vph)	88	1539	96	116	1075	0	210	191	106	256	258	32
Confl. Peds. (#/hr)	8		1	1		8	3		10	10		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	7%	2%	1%	4%	8%	4%	4%	4%	4%	2%	5%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	65.8	58.0	58.0	66.2	58.2		52.0	44.0	44.0	52.0	44.0	44.0
Effective Green, g (s)	65.8	58.0	58.0	66.2	58.2		52.0	44.0	44.0	52.0	44.0	44.0
Actuated g/C Ratio	0.47	0.41	0.41	0.47	0.42		0.37	0.31	0.31	0.37	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	216	2106	645	148	1965		352	574	470	412	568	474
v/s Ratio Prot	0.02	0.30		c0.04	0.23		0.03	0.10		c0.04	0.14	
v/s Ratio Perm	0.17		0.06	c0.33			0.19		0.07	c0.20		0.02
v/c Ratio	0.41	0.73	0.15	0.78	0.55		0.60	0.33	0.23	0.62	0.45	0.07
Uniform Delay, d1	22.1	34.4	25.6	27.1	30.9		35.3	36.8	35.4	35.5	38.4	33.6
Progression Factor	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	1.3	2.3	0.5	23.2	1.1		2.7	1.6	1.1	2.9	2.6	0.3
Delay (s)	23.3	36.7	26.1	50.3	32.0		38.1	38.3	36.6	38.5	41.0	33.9
Level of Service	C	D	C	D	C		D	D	D	D	D	C
Approach Delay (s/veh)		34.9			33.8			37.6			38.8	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			35.6			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			94.0%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	41	2	99	29	12	6	66	293	10	4	422	32
Future Vol, veh/h	41	2	99	29	12	6	66	293	10	4	422	32
Conflicting Peds, #/hr	2	0	0	0	0	2	7	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	4	0	0	0	0	0	0	5	0	0	5	0
Mvmt Flow	48	2	115	34	14	7	77	341	12	5	491	37

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	861	1034	271	758	1046	179	535	0	0	353	0	0
Stage 1	527	527	-	501	501	-	-	-	-	-	-	-
Stage 2	334	507	-	257	545	-	-	-	-	-	-	-
Critical Hdwy	7.58	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	246	234	733	300	230	839	1043	-	-	1217	-	-
Stage 1	497	532	-	526	546	-	-	-	-	-	-	-
Stage 2	648	543	-	731	522	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	216	214	729	235	210	838	1037	-	-	1217	-	-
Mov Cap-2 Maneuver	216	214	-	235	210	-	-	-	-	-	-	-
Stage 1	457	526	-	487	506	-	-	-	-	-	-	-
Stage 2	578	503	-	609	516	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Ctrl Dly, s/v	18.8		23.4			1.6			0.1		
HCM LOS	C		C								

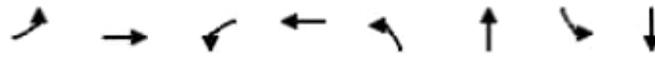
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1037	-	-	424	250	1217	-	-
HCM Lane V/C Ratio	0.074	-	-	0.389	0.219	0.004	-	-
HCM Ctrl Dly (s/v)	8.7	-	-	18.8	23.4	8	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q (veh)	0.2	-	-	1.8	0.8	0	-	-

Queues

Future Total (2033 Diversions+Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	105	69	27	66	10	232	98	276
Future Volume (vph)	105	69	27	66	10	232	98	276
Lane Group Flow (vph)	125	236	32	96	12	387	117	391
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.0	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	14.0	47.0	14.0	47.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	14.0%	47.0%	14.0%	47.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	None	C-Max	None	C-Max
v/c Ratio	0.31	0.41	0.11	0.17	0.02	0.27	0.22	0.22
Control Delay (s/veh)	28.0	17.1	25.0	22.1	9.7	15.9	11.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.0	17.1	25.0	22.1	9.7	15.9	11.1	12.8
Queue Length 50th (m)	19.4	21.8	5.0	12.7	1.0	21.6	10.7	19.5
Queue Length 95th (m)	32.7	39.9	12.1	23.5	3.3	30.5	17.9	33.2
Internal Link Dist (m)		84.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	402	582	285	580	598	1417	548	1765
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.41	0.11	0.17	0.02	0.27	0.21	0.22

Intersection Summary

Cycle Length: 100

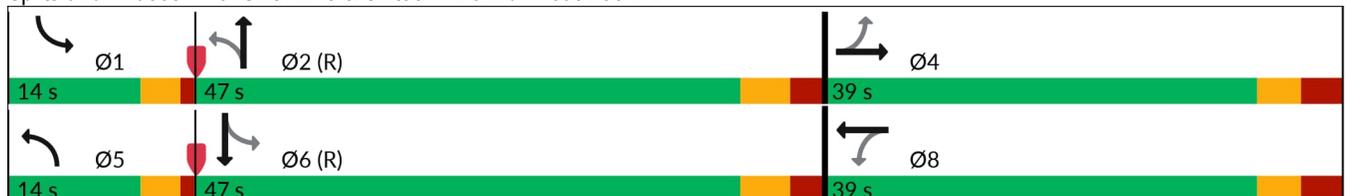
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Future Total (2033 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	69	129	27	66	14	10	232	93	98	276	52
Future Volume (vph)	105	69	129	27	66	14	10	232	93	98	276	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.90		1.00	0.97		1.00	0.96		1.00	0.98	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1579		1539	1757		1744	3252		1675	3328	
Fl _t Permitted	0.69	1.00		0.54	1.00		0.52	1.00		0.46	1.00	
Satd. Flow (perm)	1234	1579		877	1757		956	3252		817	3328	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	125	82	154	32	79	17	12	276	111	117	329	62
RTOR Reduction (vph)	0	67	0	0	7	0	0	42	0	0	13	0
Lane Group Flow (vph)	125	169	0	32	89	0	12	345	0	117	378	0
Confl. Peds. (#/hr)	5		5	5		5	1		3	3		1
Heavy Vehicles (%)	3%	10%	6%	13%	6%	0%	0%	4%	9%	4%	6%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Effective Green, g (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.44	0.42		0.55	0.50	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	402	514		285	572		428	1375		522	1647	
v/s Ratio Prot		c0.11			0.05		0.00	c0.11		c0.02	0.11	
v/s Ratio Perm	0.10			0.04			0.01			0.10		
v/c Ratio	0.31	0.33		0.11	0.15		0.03	0.25		0.22	0.23	
Uniform Delay, d ₁	25.3	25.4		23.6	23.9		16.0	18.6		11.1	14.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	2.0	1.7		0.8	0.6		0.0	0.4		0.2	0.3	
Delay (s)	27.3	27.1		24.4	24.5		16.0	19.1		11.3	14.7	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s/veh)		27.2			24.5			19.0			13.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			19.8				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			75.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c	Critical Lane Group											

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	5	85	127	12	6	13
Future Vol, veh/h	5	85	127	12	6	13
Conflicting Peds, #/hr	10	0	0	10	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	64	64	64	64	64	64
Heavy Vehicles, %	0	4	0	8	0	0
Mvmt Flow	8	133	198	19	9	20

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	227	0	-	0	367 219
Stage 1	-	-	-	-	218 -
Stage 2	-	-	-	-	149 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1353	-	-	-	637 826
Stage 1	-	-	-	-	823 -
Stage 2	-	-	-	-	884 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1342	-	-	-	628 819
Mov Cap-2 Maneuver	-	-	-	-	628 -
Stage 1	-	-	-	-	811 -
Stage 2	-	-	-	-	884 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.4	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1342	-	-	-	747
HCM Lane V/C Ratio	0.006	-	-	-	0.04
HCM Ctrl Dly (s/v)	7.7	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	
Traffic Vol, veh/h	0	74	0	369	534	16
Future Vol, veh/h	0	74	0	369	534	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	4	4	0
Mvmt Flow	0	86	0	429	621	19

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	320	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-
Pot Cap-1 Maneuver	0	682	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	682	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 682	-	-
HCM Lane V/C Ratio	- 0.126	-	-
HCM Ctrl Dly (s/v)	- 11	-	-
HCM Lane LOS	- B	-	-
HCM 95th %tile Q (veh)	- 0.4	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1831	1254	15	0	33
Future Vol, veh/h	0	1831	1254	15	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	2	7	0	0	0
Mvmt Flow	0	1868	1280	15	0	34

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	358
HCM Lane V/C Ratio	-	-	-	0.094
HCM Ctrl Dly (s/v)	-	-	-	16.1
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q (veh)	-	-	-	0.3

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	79	7	30	64	59	58
Future Vol, veh/h	79	7	30	64	59	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	92	8	35	74	69	67

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	100	0	240
Stage 1	-	-	-	-	96
Stage 2	-	-	-	-	144
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1505	-	753
Stage 1	-	-	-	-	933
Stage 2	-	-	-	-	888
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1505	-	735
Mov Cap-2 Maneuver	-	-	-	-	735
Stage 1	-	-	-	-	933
Stage 2	-	-	-	-	867

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.4	10.2
HCM LOS			B

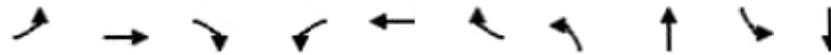
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	834	-	-	1505	-
HCM Lane V/C Ratio	0.163	-	-	0.023	-
HCM Ctrl Dly (s/v)	10.2	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q (veh)	0.6	-	-	0.1	-

Queues

Future Total (2033 Diversions+Opt)

1: Harman Gate/Preserve Dr & Dundas St W

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑↑↑	↗	↘	↑↑↑	↗	↘	↗	↘	↗
Traffic Volume (vph)	103	1492	37	26	1762	219	20	14	203	13
Future Volume (vph)	103	1492	37	26	1762	219	20	14	203	13
Lane Group Flow (vph)	108	1571	39	27	1855	231	21	30	214	128
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.3	40.3
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.60	0.53	0.04	0.12	0.66	0.24	0.07	0.07	0.65	0.26
Control Delay (s/veh)	30.5	15.8	1.2	8.0	20.4	2.3	35.6	22.1	51.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.5	15.8	1.2	8.0	20.4	2.3	35.6	22.1	51.0	9.9
Queue Length 50th (m)	8.7	89.4	0.0	2.1	116.0	0.0	4.2	3.0	48.5	2.7
Queue Length 95th (m)	28.0	103.7	2.2	5.3	133.1	11.4	11.4	11.4	77.1	18.5
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	184	2992	950	240	2806	963	285	416	329	489
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	0.59	0.53	0.04	0.11	0.66	0.24	0.07	0.07	0.65	0.26

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis

Future Total (2033 Diversions+Opt)

1: Harman Gate/Preserve Dr & Dundas St W

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	1492	37	26	1762	219	20	14	14	203	13	108
Future Volume (vph)	103	1492	37	26	1762	219	20	14	14	203	13	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	5036	1556	1745	5085	1557	1659	1631		1707	1626	
Flt Permitted	0.06	1.00	1.00	0.12	1.00	1.00	0.66	1.00		0.74	1.00	
Satd. Flow (perm)	116	5036	1556	218	5085	1557	1151	1631		1326	1626	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	108	1571	39	27	1855	231	21	15	15	214	14	114
RTOR Reduction (vph)	0	0	16	0	0	104	0	11	0	0	86	0
Lane Group Flow (vph)	108	1571	23	27	1855	127	21	19	0	214	42	0
Confl. Peds. (#/hr)	3		3	3		3	2		1	1		2
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	5%	7%	7%	2%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.4	69.7	69.7	70.4	66.2	66.2	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.4	69.7	69.7	70.4	66.2	66.2	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.65	0.58	0.58	0.59	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	179	2925	903	181	2805	858	285	405		329	403	
v/s Ratio Prot	c0.04	0.31		0.01	c0.36			0.01			0.03	
v/s Ratio Perm	0.35		0.01	0.08		0.08	0.02			c0.16		
v/c Ratio	0.60	0.54	0.03	0.15	0.66	0.15	0.07	0.05		0.65	0.10	
Uniform Delay, d1	16.1	15.3	10.7	11.3	19.0	13.1	34.5	34.3		40.4	34.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	0.7	0.1	0.4	1.2	0.4	0.5	0.2		9.6	0.5	
Delay (s)	21.7	16.0	10.7	11.7	20.2	13.5	35.0	34.5		50.0	35.3	
Level of Service	C	B	B	B	C	B	D	C		D	D	
Approach Delay (s/veh)		16.3			19.4			34.7			44.5	
Approach LOS		B			B			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			20.3				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.3			
Intersection Capacity Utilization			81.8%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

Queues

2: Sixth Line & Dundas St E

Future Total (2033 Diversions+Opt)

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	123	1363	200	125	1770	128	244	70	247	249	122
Future Volume (vph)	123	1363	200	125	1770	128	244	70	247	249	122
Lane Group Flow (vph)	129	1435	211	132	2102	135	257	74	260	262	128
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	31.0	31.0	13.0	31.0	11.0	37.0	37.0	11.0	37.0	37.0
Total Split (s)	14.0	71.0	71.0	14.0	71.0	16.0	39.0	39.0	16.0	39.0	39.0
Total Split (%)	10.0%	50.7%	50.7%	10.0%	50.7%	11.4%	27.9%	27.9%	11.4%	27.9%	27.9%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.87	0.61	0.25	0.70	0.90	0.43	0.57	0.17	0.81	0.58	0.27
Control Delay (s/veh)	74.2	29.5	3.4	36.7	40.9	35.4	53.2	4.1	56.2	52.9	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	29.5	3.4	36.7	40.9	35.4	53.2	4.1	56.2	52.9	8.4
Queue Length 50th (m)	21.9	115.2	0.0	17.6	204.7	27.2	66.7	0.0	56.9	68.8	0.0
Queue Length 95th (m)	#62.0	131.6	14.4	#39.0	228.5	44.2	97.0	7.0	#97.3	99.6	17.1
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	149	2339	834	189	2326	327	447	436	322	455	473
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.61	0.25	0.70	0.90	0.41	0.57	0.17	0.81	0.58	0.27

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 71 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis
2: Sixth Line & Dundas St E

Future Total (2033 Diversions+Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (vph)	123	1363	200	125	1770	227	128	244	70	247	249	122
Future Volume (vph)	123	1363	200	125	1770	227	128	244	70	247	249	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1711	5036	1553	1728	4986		1726	1900	1526	1726	1881	1554
Flt Permitted	0.06	1.00	1.00	0.11	1.00		0.40	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	111	5036	1553	195	4986		718	1900	1526	681	1881	1554
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	129	1435	211	132	1863	239	135	257	74	260	262	128
RTOR Reduction (vph)	0	0	113	0	12	0	0	0	57	0	0	97
Lane Group Flow (vph)	129	1435	98	132	2090	0	135	257	17	260	262	31
Confl. Peds. (#/hr)	6		3	3		6	4		3	3		4
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	3%	1%	1%	2%	2%	1%	0%	3%	1%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	73.0	65.0	65.0	73.0	65.0		44.1	33.0	33.0	45.9	33.9	33.9
Effective Green, g (s)	73.0	65.0	65.0	73.0	65.0		44.1	33.0	33.0	45.9	33.9	33.9
Actuated g/C Ratio	0.52	0.46	0.46	0.52	0.46		0.32	0.24	0.24	0.33	0.24	0.24
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	149	2338	721	189	2314		306	447	359	312	455	376
v/s Ratio Prot	c0.05	0.28		0.04	c0.42		0.03	0.14		c0.07	0.14	
v/s Ratio Perm	0.40		0.06	0.32			0.10		0.01	c0.20		0.02
v/c Ratio	0.87	0.61	0.14	0.70	0.90		0.44	0.57	0.05	0.83	0.58	0.08
Uniform Delay, d1	34.2	28.1	21.4	21.2	34.6		36.1	47.3	41.4	41.5	46.7	41.0
Progression Factor	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	37.4	1.2	0.4	10.7	6.3		1.0	5.3	0.3	17.1	5.2	0.4
Delay (s)	71.6	29.3	21.8	31.9	40.9		37.2	52.6	41.6	58.6	51.9	41.5
Level of Service	E	C	C	C	D		D	D	D	E	D	D
Approach Delay (s/veh)		31.5			40.4			46.4			52.5	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			39.4			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			104.0%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	40	5	56	17	7	3	144	383	28	10	456	26
Future Vol, veh/h	40	5	56	17	7	3	144	383	28	10	456	26
Conflicting Peds, #/hr	3	0	1	1	0	3	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	25
Mvmt Flow	42	5	58	18	7	3	150	399	29	10	475	27

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1017	1239	254	975	1238	217	504	0	0	428	0	0
Stage 1	511	511	-	714	714	-	-	-	-	-	-	-
Stage 2	506	728	-	261	524	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	195	177	752	209	177	794	1071	-	-	1142	-	-
Stage 1	519	540	-	393	438	-	-	-	-	-	-	-
Stage 2	522	432	-	727	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	165	150	750	166	150	792	1069	-	-	1142	-	-
Mov Cap-2 Maneuver	165	150	-	166	150	-	-	-	-	-	-	-
Stage 1	445	532	-	338	377	-	-	-	-	-	-	-
Stage 2	437	372	-	655	526	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	24.5		29.1		2.3		0.2	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1069	-	-	288	177	1142	-	-
HCM Lane V/C Ratio	0.14	-	-	0.365	0.159	0.009	-	-
HCM Ctrl Dly (s/v)	8.9	-	-	24.5	29.1	8.2	0	-
HCM Lane LOS	A	-	-	C	D	A	A	-
HCM 95th %tile Q (veh)	0.5	-	-	1.6	0.6	0	-	-

Queues

Future Total (2033 Diversions+Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	101	59	19	56	16	272	102	277
Future Volume (vph)	101	59	19	56	16	272	102	277
Lane Group Flow (vph)	106	190	20	73	17	417	107	355
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.5	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	16.0	47.0	14.0	45.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	16.0%	47.0%	14.0%	45.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.41	0.45	0.10	0.20	0.02	0.22	0.16	0.16
Control Delay (s/veh)	40.4	19.1	34.4	29.6	4.9	9.0	5.6	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.4	19.1	34.4	29.6	4.9	9.0	5.6	7.8
Queue Length 50th (m)	19.0	14.0	3.4	10.5	0.9	16.2	6.3	11.2
Queue Length 95th (m)	35.9	35.2	10.1	23.4	2.9	25.4	11.5	23.2
Internal Link Dist (m)		98.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	423	622	323	581	775	1914	682	2200
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.31	0.06	0.13	0.02	0.22	0.16	0.16

Intersection Summary

Cycle Length: 100

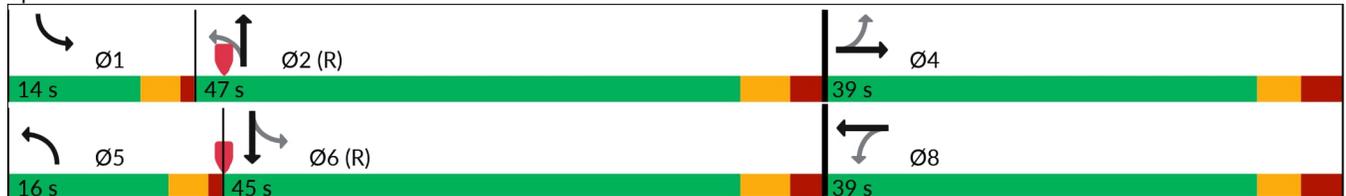
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Future Total (2033 Diversions+Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	59	122	19	56	13	16	272	124	102	277	60
Future Volume (vph)	101	59	122	19	56	13	16	272	124	102	277	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.90		1.00	0.97		1.00	0.95		1.00	0.97	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1739	1681		1742	1756		1742	3361		1728	3470	
Fl _t Permitted	0.71	1.00		0.54	1.00		0.54	1.00		0.47	1.00	
Satd. Flow (perm)	1299	1681		992	1756		989	3361		861	3470	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	106	62	128	20	59	14	17	286	131	107	292	63
RTOR Reduction (vph)	0	88	0	0	10	0	0	40	0	0	12	0
Lane Group Flow (vph)	106	102	0	20	63	0	17	377	0	107	343	0
Confl. Peds. (#/hr)	4		2	2		4	2					2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	4%	8%	0%	2%	1%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Effective Green, g (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.59	0.56		0.68	0.61	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	336		198	351		600	1875		647	2106	
v/s Ratio Prot		0.06			0.04		0.00	c0.11		c0.01	0.10	
v/s Ratio Perm	c0.08			0.02			0.02			0.10		
v/c Ratio	0.41	0.30		0.10	0.18		0.03	0.20		0.17	0.16	
Uniform Delay, d ₁	34.9	34.1		32.7	33.2		8.7	11.0		5.7	8.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	1.1	0.5		0.2	0.2		0.0	0.2		0.1	0.2	
Delay (s)	35.9	34.6		32.9	33.4		8.7	11.2		5.8	8.7	
Level of Service	D	C		C	C		A	B		A	A	
Approach Delay (s/veh)		35.1			33.3			11.1			8.1	
Approach LOS		D			C			B			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			17.1				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.25									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)				16.5	
Intersection Capacity Utilization			66.7%				ICU Level of Service				C	
Analysis Period (min)			15									

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	3	79	116	11	6	1
Future Vol, veh/h	3	79	116	11	6	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	2	3	0	0	100
Mvmt Flow	4	100	147	14	8	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	168	0	-	0	269
Stage 1	-	-	-	-	161
Stage 2	-	-	-	-	108
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1422	-	-	-	725
Stage 1	-	-	-	-	873
Stage 2	-	-	-	-	921
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1414	-	-	-	719
Mov Cap-2 Maneuver	-	-	-	-	719
Stage 1	-	-	-	-	866
Stage 2	-	-	-	-	921

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.3	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1414	-	-	-	713
HCM Lane V/C Ratio	0.003	-	-	-	0.012
HCM Ctrl Dly (s/v)	7.6	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕↕	↕↕	
Traffic Vol, veh/h	0	41	0	554	634	42
Future Vol, veh/h	0	41	0	554	634	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	43	0	577	660	44

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	352	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-
Pot Cap-1 Maneuver	0	650	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	650	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 650	-	-
HCM Lane V/C Ratio	- 0.066	-	-
HCM Ctrl Dly (s/v)	- 10.9	-	-
HCM Lane LOS	- B	-	-
HCM 95th %tile Q (veh)	- 0.2	-	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1730	1988	36	0	19
Future Vol, veh/h	0	1730	1988	36	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	1821	2093	38	0	20

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1066
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 7.1
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.9
Pot Cap-1 Maneuver	0	-	- 0 190
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 190
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	26.2
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	190
HCM Lane V/C Ratio	-	-	-	0.105
HCM Ctrl Dly (s/v)	-	-	-	26.2
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q (veh)	-	-	-	0.3

Intersection						
Int Delay, s/veh	4.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1			4	3	
Traffic Vol, veh/h	52	19	76	84	33	33
Future Vol, veh/h	52	19	76	84	33	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	4	0	0
Mvmt Flow	54	20	79	88	34	34

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	74	0	310 64
Stage 1	-	-	-	-	64 -
Stage 2	-	-	-	-	246 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1538	-	687 1006
Stage 1	-	-	-	-	964 -
Stage 2	-	-	-	-	800 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1538	-	650 1006
Mov Cap-2 Maneuver	-	-	-	-	650 -
Stage 1	-	-	-	-	964 -
Stage 2	-	-	-	-	757 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	3.5	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	790	-	-	1538	-
HCM Lane V/C Ratio	0.087	-	-	0.051	-
HCM Ctrl Dly (s/v)	10	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q (veh)	0.3	-	-	0.2	-

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:30	7:30	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5304	5170	5248	5383	5253	5269
Vehs Exited	5362	5189	5288	5423	5307	5313
Starting Vehs	294	263	301	297	287	286
Ending Vehs	236	244	261	257	233	239
Travel Distance (km)	9874	9557	9692	9939	9852	9783
Travel Time (hr)	266.0	255.1	259.9	267.8	270.7	263.9
Total Delay (hr)	73.6	68.6	70.8	73.9	78.0	73.0
Total Stops	5413	5331	5404	5582	5344	5417
Fuel Used (l)	767.0	742.6	753.8	777.4	773.1	762.8

Interval #0 Information Seeding

Start Time	7:30
End Time	8:00
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5304	5170	5248	5383	5253	5269
Vehs Exited	5362	5189	5288	5423	5307	5313
Starting Vehs	294	263	301	297	287	286
Ending Vehs	236	244	261	257	233	239
Travel Distance (km)	9874	9557	9692	9939	9852	9783
Travel Time (hr)	266.0	255.1	259.9	267.8	270.7	263.9
Total Delay (hr)	73.6	68.6	70.8	73.9	78.0	73.0
Total Stops	5413	5331	5404	5582	5344	5417
Fuel Used (l)	767.0	742.6	753.8	777.4	773.1	762.8

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail/Private Access Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Arterial Level of Service: EB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Harman Gate	1	10.9	43.2	0.5	38	38	11.1
Dundas St Access	8	4.0	43.5	0.6	46	46	4.1
Total		14.9	86.8	1.0	42	42	15.2

Arterial Level of Service: EB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Harman Gate	38	10.8	38	11.1	38	11.6	39
Dundas St Access	46	3.8	46	3.9	46	4.1	46
Total	42	14.6	42	15.0	42	15.8	43

Arterial Level of Service: WB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Preserve Dr	1	14.6	43.6	0.6	46	46	14.2
Total		14.6	43.6	0.6	46	46	14.2

Arterial Level of Service: WB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Preserve Dr	45	15.8	45	15.2	46	15.3	48
Total	45	15.8	45	15.2	46	15.3	48

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	33.1	94.9	82.7	62.1	15.4	13.6	84.3	84.8	91.0	23.7	24.1	18.0
Average Queue (m)	12.8	54.6	45.7	32.1	3.3	2.4	39.3	40.3	40.6	7.8	6.3	5.1
95th Queue (m)	25.2	92.8	81.0	60.2	11.6	8.6	82.1	83.2	84.8	18.9	18.4	13.4
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)												0
Queuing Penalty (veh)												0

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	63.6	105.0
Average Queue (m)	39.2	41.3
95th Queue (m)	69.4	101.9
Link Distance (m)		113.5
Upstream Blk Time (%)		6
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	22	7
Queuing Penalty (veh)	44	12

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	56.8	119.0	122.5	119.0	69.9	51.2	87.5	89.8	102.1	101.2	73.3	49.5
Average Queue (m)	17.1	78.6	80.7	78.3	16.7	21.8	56.4	56.2	54.4	42.5	33.7	22.0
95th Queue (m)	38.6	120.4	118.9	116.3	40.6	44.2	79.1	81.6	84.4	84.2	61.8	43.6
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)		0	0	0	0							
Queuing Penalty (veh)		1	1	1	0							
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)		2		8						3	0	
Queuing Penalty (veh)		2		15						6	0	

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	75.9	91.0	26.9
Average Queue (m)	49.1	50.0	8.6
95th Queue (m)	78.2	82.9	18.4
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		2	
Queuing Penalty (veh)		5	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	1	2	
Queuing Penalty (veh)	2	5	

Intersection: 4: Sixth Line & Kaitting Trail/Private Access

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	LT	TR
Maximum Queue (m)	29.8	19.6	15.6	1.2	3.1	16.4	5.3
Average Queue (m)	13.5	8.9	4.3	0.0	0.1	0.6	0.2
95th Queue (m)	23.2	17.0	11.8	0.8	1.3	6.7	2.7
Link Distance (m)	38.2	67.8		45.8	45.8	205.5	205.5
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (m)			25.0				
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	48.7	63.0	22.5	31.7	13.2	46.7	50.1	30.9	47.4	33.9
Average Queue (m)	18.5	25.3	5.7	12.0	1.9	15.3	21.5	12.8	20.6	12.2
95th Queue (m)	38.4	48.9	17.3	25.9	8.7	32.4	40.2	26.1	39.0	27.3
Link Distance (m)		93.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)		0								
Queuing Penalty (veh)		0								
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	12	18				0				
Queuing Penalty (veh)	24	19				0				

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	1.8	11.3
Average Queue (m)	0.1	3.5
95th Queue (m)	1.3	10.4
Link Distance (m)	529.2	103.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Sixth Line & Site Access

Movement	EB	SB
Directions Served	R	T
Maximum Queue (m)	18.4	32.0
Average Queue (m)	9.5	2.4
95th Queue (m)	15.6	15.4
Link Distance (m)	16.8	45.8
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB	EB	EB	SB
Directions Served	T	T	T	R
Maximum Queue (m)	7.4	18.8	5.9	15.7
Average Queue (m)	0.5	0.6	0.2	6.1
95th Queue (m)	4.7	6.5	2.5	13.7
Link Distance (m)	535.3	535.3	535.3	61.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	11.8	16.9
Average Queue (m)	0.9	10.4
95th Queue (m)	5.7	16.2
Link Distance (m)	38.2	33.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 137

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL SBTL	EBL	WBTL	NBTL	
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	93.4	31.0	7.6	87.0	31.0
g/C Ratio	0.70	0.23	0.04	0.65	0.23
Cycles Skipped (%)	11	10	40	11	10
Cycles @ Minimum (%)	0	0	20	0	0
Cycles Maxed Out (%)	89	90	30	89	90
Cycles with Peds (%)	11	10	0	14	7

Controller Summary

Average Cycle Length (s): 120.0
 Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL	NBL SBTL	EBL	WBTL	SBL	NBTL	
Maximum Green (s)	58.0	8.0	44.0	8.0	58.0	8.0	44.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	59.4	8.0	44.0	7.7	61.0	8.0	44.0
g/C Ratio	0.42	0.06	0.31	0.05	0.44	0.06	0.31
Cycles Skipped (%)	0	0	0	16	0	0	0
Cycles @ Minimum (%)	0	4	0	20	0	0	0
Cycles Maxed Out (%)	100	96	100	48	100	96	100
Cycles with Peds (%)	0	0	4	0	20	0	23

Controller Summary

Average Cycle Length (s): 140.0
 Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	10.0	40.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	46.6	32.6	7.3	53.6	32.6
g/C Ratio	0.47	0.33	0.01	0.54	0.33
Cycles Skipped (%)	0	0	89	0	0
Cycles @ Minimum (%)	0	0	9	0	0
Cycles Maxed Out (%)	100	100	0	100	100
Cycles with Peds (%)	9	11	0	3	8

Controller Summary

Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5665	5695	5773	5782	5696	5720
Vehs Exited	5660	5691	5743	5761	5680	5706
Starting Vehs	340	325	351	329	342	329
Ending Vehs	345	329	381	350	358	348
Travel Distance (km)	10913	11077	11133	11170	10995	11057
Travel Time (hr)	432.3	584.2	538.9	512.3	582.3	530.0
Total Delay (hr)	226.1	376.1	329.8	301.0	375.6	321.7
Total Stops	5774	5855	6344	5907	5980	5970
Fuel Used (l)	965.2	1102.6	1067.5	1047.5	1094.8	1055.5

Interval #0 Information Seeding

Start Time	4:00
End Time	4:30
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5665	5695	5773	5782	5696	5720
Vehs Exited	5660	5691	5743	5761	5680	5706
Starting Vehs	340	325	351	329	342	329
Ending Vehs	345	329	381	350	358	348
Travel Distance (km)	10913	11077	11133	11170	10995	11057
Travel Time (hr)	432.3	584.2	538.9	512.3	582.3	530.0
Total Delay (hr)	226.1	376.1	329.8	301.0	375.6	321.7
Total Stops	5774	5855	6344	5907	5980	5970
Fuel Used (l)	965.2	1102.6	1067.5	1047.5	1094.8	1055.5

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Arterial Level of Service: EB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Harman Gate	1	12.1	44.6	0.5	37	37	12.1
Dundas St Access	8	3.8	43.2	0.6	46	46	3.8
Total		15.9	87.8	1.0	42	42	15.9

Arterial Level of Service: EB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Harman Gate	38	11.6	37	11.8	37	12.7	37
Dundas St Access	47	3.8	47	3.6	46	4.1	46
Total	42	15.4	42	15.5	41	16.7	41

Arterial Level of Service: WB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Preserve Dr	1	19.6	48.7	0.6	41	41	19.6
Total		19.6	48.7	0.6	41	41	19.6

Arterial Level of Service: WB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Preserve Dr	42	18.8	41	19.6	41	19.7	40
Total	42	18.8	41	19.6	41	19.7	40

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	34.6	102.4	93.2	78.4	11.8	63.2	136.7	138.1	133.6	67.0	14.5	24.0
Average Queue (m)	15.1	52.8	41.6	30.7	3.1	6.1	50.0	52.0	51.5	12.7	3.5	4.5
95th Queue (m)	27.3	90.5	77.2	61.8	10.4	30.0	120.5	122.3	118.4	38.8	10.4	15.7
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)							1		1			1
Queuing Penalty (veh)							0		3			0

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	64.9	109.5
Average Queue (m)	44.9	31.7
95th Queue (m)	70.2	86.9
Link Distance (m)		113.5
Upstream Blk Time (%)		2
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	23	1
Queuing Penalty (veh)	28	1

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	72.5	101.6	108.5	107.1	34.0	93.1	184.1	193.2	200.0	46.5	88.2	31.9
Average Queue (m)	38.7	62.6	64.2	59.9	13.9	22.9	115.6	128.8	134.3	21.7	46.8	5.8
95th Queue (m)	71.6	102.0	100.3	97.3	25.9	55.4	165.2	179.7	187.0	38.9	79.3	19.0
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)				0								
Queuing Penalty (veh)				0								
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)		0		3			7				0	
Queuing Penalty (veh)		0		7			8				0	

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	75.9	95.3	28.8
Average Queue (m)	50.3	50.6	12.0
95th Queue (m)	81.7	89.7	25.5
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		6	
Queuing Penalty (veh)		21	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	7	4	
Queuing Penalty (veh)	17	10	

Intersection: 4: Sixth Line & Kaitting Trail

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	LT	TR
Maximum Queue (m)	26.3	17.0	22.0	2.5	26.6	8.2
Average Queue (m)	12.1	5.8	8.2	0.1	2.7	0.4
95th Queue (m)	21.3	14.2	17.4	1.2	16.0	3.6
Link Distance (m)	38.1	67.8		45.8	205.5	205.5
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			25.0			
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	48.9	111.9	95.7	200.7	9.5	23.5	35.6	23.8	24.1	20.0
Average Queue (m)	41.2	107.6	32.8	132.2	1.5	3.7	6.1	8.5	3.5	2.7
95th Queue (m)	62.4	111.3	78.1	244.8	6.8	15.6	22.4	19.5	15.7	11.9
Link Distance (m)		107.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)		97		21						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	89	69	9	77						
Queuing Penalty (veh)	161	70	6	15						

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	3.7	11.1
Average Queue (m)	0.2	2.0
95th Queue (m)	2.3	8.1
Link Distance (m)	529.2	103.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Sixth Line & Site Access

Movement	EB	SB	SB
Directions Served	R	T	TR
Maximum Queue (m)	15.8	44.0	10.5
Average Queue (m)	7.2	5.7	0.7
95th Queue (m)	15.7	29.0	7.7
Link Distance (m)	16.8	45.8	45.8
Upstream Blk Time (%)	4	2	
Queuing Penalty (veh)	0	5	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB	EB	WB	WB	SB
Directions Served	T	T	T	TR	R
Maximum Queue (m)	1.9	3.0	3.4	3.3	11.5
Average Queue (m)	0.1	0.1	0.1	0.1	4.4
95th Queue (m)	1.3	2.1	2.4	2.3	11.8
Link Distance (m)	535.3	535.3	123.4	123.4	61.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	13.2	18.7
Average Queue (m)	1.8	8.4
95th Queue (m)	8.4	14.6
Link Distance (m)	38.1	44.5
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 352

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL	SBTL	EBL	WBTL	NBTL
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	85.6	30.7	7.8	79.9	30.7
g/C Ratio	0.66	0.24	0.05	0.62	0.24
Cycles Skipped (%)	7	7	31	7	7
Cycles @ Minimum (%)	0	0	24	0	0
Cycles Maxed Out (%)	93	93	34	93	93
Cycles with Peds (%)	11	7	0	4	3

Controller Summary

Average Cycle Length (s): 120.0
 Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Maximum Green (s)	65.0	12.0	33.0	8.0	65.0	12.0	33.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	66.0	11.5	34.2	8.1	65.3	12.4	33.2
g/C Ratio	0.47	0.08	0.24	0.06	0.47	0.09	0.24
Cycles Skipped (%)	0	4	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	8	0	0	0
Cycles Maxed Out (%)	100	72	100	88	100	100	100
Cycles with Peds (%)	12	0	12	0	19	0	8

Controller Summary

Average Cycle Length (s): 140.0
 Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	12.0	38.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	None	None	C-Max	None
Avg. Green (s)	336.0	32.0	0.0	477.9	32.0
g/C Ratio	0.81	0.05	0.00	0.72	0.05
Cycles Skipped (%)	76	83	100	85	83
Cycles @ Minimum (%)	0	0	0	0	0
Cycles Maxed Out (%)	24	0	0	15	0
Cycles with Peds (%)	0	3	0	3	11

Controller Summary

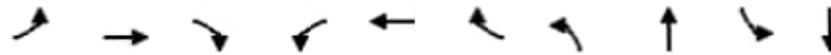
Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35

Queues

Future Total (2038 + Opt)

1: Harman Gate/Preserve Dr & Dundas St W

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↶	↑↑↑	↷	↶	↑↑↑	↷	↶	↷	↶	↷
Traffic Volume (vph)	95	1604	35	13	1138	136	26	9	184	20
Future Volume (vph)	95	1604	35	13	1138	136	26	9	184	20
Lane Group Flow (vph)	97	1637	36	13	1161	139	27	53	188	203
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.3	40.3
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.33	0.53	0.04	0.06	0.43	0.16	0.11	0.12	0.58	0.38
Control Delay (s/veh)	10.2	14.7	0.9	7.4	16.4	2.5	36.6	13.6	48.0	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.2	14.7	0.9	7.4	16.4	2.5	36.6	13.6	48.0	10.3
Queue Length 50th (m)	8.1	71.9	0.0	1.0	62.0	0.0	5.2	1.7	41.4	5.5
Queue Length 95th (m)	14.5	108.5	1.8	3.2	73.9	9.5	13.5	12.3	67.6	25.7
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	300	3114	897	233	2702	893	235	432	323	529
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	0.32	0.53	0.04	0.06	0.43	0.16	0.11	0.12	0.58	0.38

Intersection Summary

Cycle Length: 120

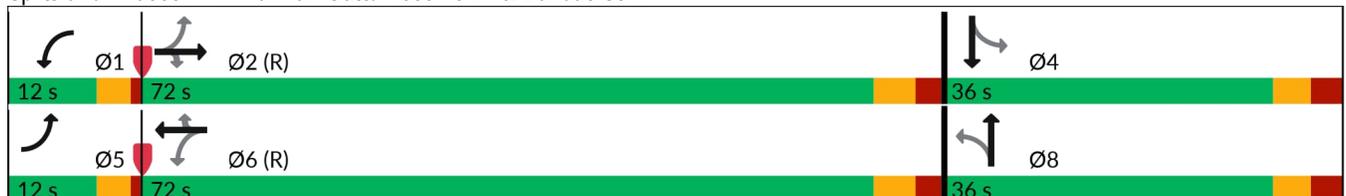
Actuated Cycle Length: 120

Offset: 113 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis

Future Total (2038 + Opt)

1: Harman Gate/Preserve Dr & Dundas St W

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	95	1604	35	13	1138	136	26	9	43	184	20	179
Future Volume (vph)	95	1604	35	13	1138	136	26	9	43	184	20	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.99	1.00	
Fr	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1661	5085	1425	1745	4893	1506	1740	1608		1715	1605	
Flt Permitted	0.18	1.00	1.00	0.11	1.00	1.00	0.52	1.00		0.72	1.00	
Satd. Flow (perm)	322	5085	1425	205	4893	1506	951	1608		1304	1605	
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)	97	1637	36	13	1161	139	27	9	44	188	20	183
RTOR Reduction (vph)	0	0	15	0	0	62	0	33	0	0	131	0
Lane Group Flow (vph)	97	1637	21	13	1161	77	27	20	0	188	72	0
Confl. Peds. (#/hr)	5		4	4		5	4		4	4		4
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	5%	2%	9%	0%	6%	3%	0%	0%	2%	1%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.65	0.59	0.59	0.58	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	293	3012	844	153	2703	832	236	399		323	398	
v/s Ratio Prot	c0.02	c0.32		0.00	0.24			0.01				0.04
v/s Ratio Perm	0.19		0.01	0.05		0.05	0.03			c0.14		
v/c Ratio	0.33	0.54	0.03	0.08	0.43	0.09	0.11	0.05		0.58	0.18	
Uniform Delay, d1	9.0	14.7	10.1	11.7	15.8	12.7	34.9	34.3		39.6	35.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.7	0.1	0.2	0.5	0.2	1.0	0.2		7.5	1.0	
Delay (s)	9.7	15.4	10.2	11.9	16.3	12.9	35.9	34.6		47.1	36.5	
Level of Service	A	B	B	B	B	B	D	C		D	D	
Approach Delay (s/veh)		15.0			15.9			35.0			41.6	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			18.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			16.3		
Intersection Capacity Utilization			78.7%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

Queues

Future Total (2038 + Opt)

2: Sixth Line & Dundas St E

AM Peak Hour

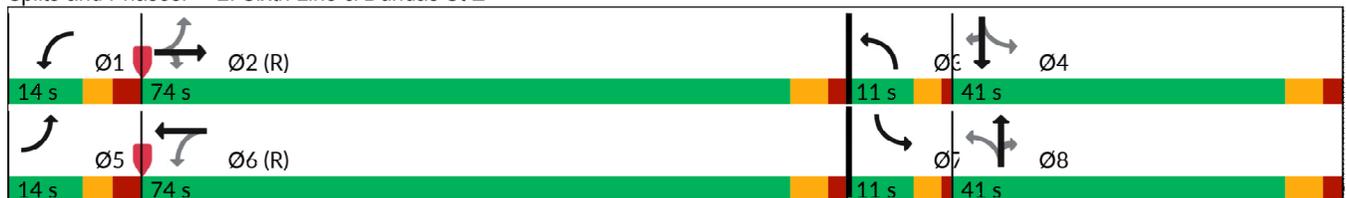


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↗	↘	↑↑↑	↘	↑	↗	↘	↑	↗
Traffic Volume (vph)	87	1524	191	115	954	208	189	210	253	255	101
Future Volume (vph)	87	1524	191	115	954	208	189	210	253	255	101
Lane Group Flow (vph)	88	1539	193	116	1087	210	191	212	256	258	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	31.0	31.0	14.0	31.0	11.5	37.0	37.0	11.5	37.0	37.0
Total Split (s)	14.0	74.0	74.0	14.0	74.0	11.0	41.0	41.0	11.0	41.0	41.0
Total Split (%)	10.0%	52.9%	52.9%	10.0%	52.9%	7.9%	29.3%	29.3%	7.9%	29.3%	29.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.34	0.62	0.23	0.66	0.47	0.78	0.41	0.45	0.77	0.57	0.22
Control Delay (s/veh)	16.6	27.9	3.5	35.1	24.1	59.5	47.2	19.9	56.3	51.5	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.6	27.9	3.5	35.1	24.1	59.5	47.2	19.9	56.3	51.5	8.6
Queue Length 50th (m)	11.2	120.2	0.8	14.8	77.6	47.2	47.9	18.9	57.9	68.0	0.0
Queue Length 95th (m)	19.7	136.6	14.1	#34.4	91.2	#81.1	72.6	45.0	#90.4	99.0	15.3
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	260	2474	854	176	2337	270	461	474	334	456	458
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.62	0.23	0.66	0.47	0.78	0.41	0.45	0.77	0.57	0.22

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 36 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis

Future Total (2038 + Opt)

2: Sixth Line & Dundas St E

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (vph)	87	1524	191	115	954	122	208	189	210	253	255	101
Future Volume (vph)	87	1524	191	115	954	122	208	189	210	253	255	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1646	5085	1559	1678	4772		1676	1845	1497	1720	1827	1526
Flt Permitted	0.20	1.00	1.00	0.09	1.00		0.40	1.00	1.00	0.52	1.00	1.00
Satd. Flow (perm)	343	5085	1559	166	4772		708	1845	1497	941	1827	1526
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	88	1539	193	116	964	123	210	191	212	256	258	102
RTOR Reduction (vph)	0	0	97	0	11	0	0	0	100	0	0	77
Lane Group Flow (vph)	88	1539	96	116	1076	0	210	191	112	256	258	26
Confl. Peds. (#/hr)	8		1	1		8	3		10	10		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	6%	2%	1%	4%	7%	3%	4%	3%	4%	1%	4%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	75.9	68.1	68.1	76.1	68.2		42.0	35.0	35.0	42.0	35.0	35.0
Effective Green, g (s)	75.9	68.1	68.1	76.1	68.2		42.0	35.0	35.0	42.0	35.0	35.0
Actuated g/C Ratio	0.54	0.49	0.49	0.54	0.49		0.30	0.25	0.25	0.30	0.25	0.25
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	258	2473	758	175	2324		260	461	374	321	456	381
v/s Ratio Prot	0.02	0.30		c0.04	0.23		c0.04	0.10		0.04	0.14	
v/s Ratio Perm	0.17		0.06	c0.32			c0.20		0.07	0.20		0.02
v/c Ratio	0.34	0.62	0.13	0.66	0.46		0.81	0.41	0.30	0.80	0.57	0.07
Uniform Delay, d1	16.4	26.5	19.7	20.1	23.8		45.8	43.9	42.6	45.3	45.9	40.0
Progression Factor	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	0.8	1.2	0.3	9.1	0.7		16.6	2.7	2.1	12.9	5.0	0.3
Delay (s)	17.2	27.7	20.0	29.2	24.4		62.4	46.7	44.6	58.1	50.9	40.4
Level of Service	B	C	C	C	C		E	D	D	E	D	D
Approach Delay (s/veh)		26.4			24.9			51.3			52.2	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			33.3			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			94.0%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: Sixth Line & Kaitting Trail/Private Access

Future Total (2038 + Opt)
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	2	68	29	12	6	66	293	10	4	422	32
Future Volume (Veh/h)	41	2	68	29	12	6	66	293	10	4	422	32
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	48	2	79	34	14	7	77	341	12	5	491	37
Pedestrians		7										2
Lane Width (m)		3.6										3.6
Walking Speed (m/s)		1.2										1.2
Percent Blockage		1										0
Right turn flare (veh)												
Median type								None				None
Median storage veh												
Upstream signal (m)								179				226
pX, platoon unblocked	0.98	0.98	0.98	0.98	0.98		0.98					
vC, conflicting volume	867	1034	271	837	1046	179	535			353		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	815	986	205	784	999	179	475			353		
tC, single (s)	7.6	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	99	90	86	94	99	93			100		
cM capacity (veh/h)	229	224	784	235	220	839	1065			1217		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	129	55	77	227	126	251	283					
Volume Left	48	34	77	0	0	5	0					
Volume Right	79	7	0	0	12	0	37					
cSH	404	254	1065	1700	1700	1217	1700					
Volume to Capacity	0.32	0.22	0.07	0.13	0.07	0.00*	0.17					
Queue Length 95th (m)	10.8	6.4	1.9	0.0	0.0	0.1	0.0					
Control Delay (s/veh)	18.0	23.1	8.6	0.0	0.0	0.2	0.0					
Lane LOS	C	C	A			A						
Approach Delay (s/veh)	18.0	23.1	1.5			0.1						
Approach LOS	C	C										
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			38.3%		ICU Level of Service				A			
Analysis Period (min)			15									

* Value less than 0.01.

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	41	2	68	29	12	6	66	293	10	4	422	32
Future Vol, veh/h	41	2	68	29	12	6	66	293	10	4	422	32
Conflicting Peds, #/hr	2	0	0	0	0	2	7	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	48	2	79	34	14	7	77	341	12	5	491	37

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	861	1034	271	758	1046	179	535	0	0	353	0	0
Stage 1	527	527	-	501	501	-	-	-	-	-	-	-
Stage 2	334	507	-	257	545	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	248	234	733	300	230	839	1043	-	-	1217	-	-
Stage 1	500	532	-	526	546	-	-	-	-	-	-	-
Stage 2	651	543	-	731	522	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	218	214	729	249	210	838	1037	-	-	1217	-	-
Mov Cap-2 Maneuver	218	214	-	249	210	-	-	-	-	-	-	-
Stage 1	460	526	-	487	506	-	-	-	-	-	-	-
Stage 2	580	503	-	645	516	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Ctrl Dly, s/v	19.2		22.5			1.6			0.1		
HCM LOS	C		C								

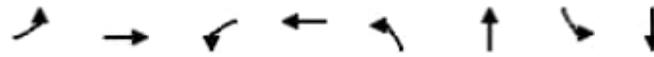
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1037	-	-	382	260	1217	-	-
HCM Lane V/C Ratio	0.074	-	-	0.338	0.21	0.004	-	-
HCM Ctrl Dly (s/v)	8.7	-	-	19.2	22.5	8	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q (veh)	0.2	-	-	1.5	0.8	0	-	-

Queues

Future Total (2038 + Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	105	69	27	66	10	232	98	276
Future Volume (vph)	105	69	27	66	10	232	98	276
Lane Group Flow (vph)	125	236	32	96	12	387	117	391
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.0	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	14.0	47.0	14.0	47.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	14.0%	47.0%	14.0%	47.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	None	C-Max	None	C-Max
v/c Ratio	0.31	0.40	0.11	0.17	0.02	0.27	0.22	0.22
Control Delay (s/veh)	28.0	17.0	25.0	22.1	9.7	15.9	11.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.0	17.0	25.0	22.1	9.7	15.9	11.1	12.8
Queue Length 50th (m)	19.4	21.8	5.0	12.7	1.0	21.4	10.7	19.3
Queue Length 95th (m)	32.7	39.8	12.1	23.5	3.3	30.3	17.9	32.9
Internal Link Dist (m)		84.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	402	585	285	580	598	1426	548	1782
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.40	0.11	0.17	0.02	0.27	0.21	0.22

Intersection Summary

Cycle Length: 100

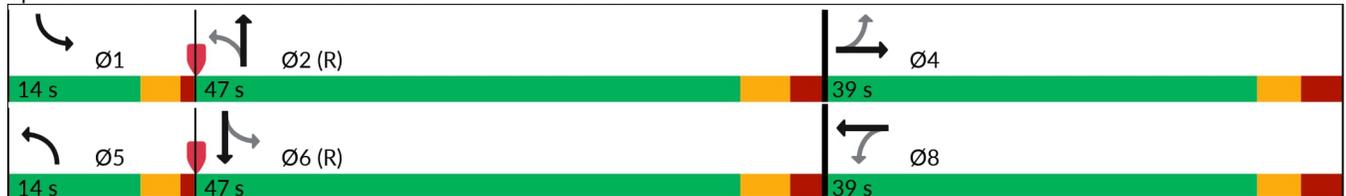
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Future Total (2038 + Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	69	129	27	66	14	10	232	93	98	276	52
Future Volume (vph)	105	69	129	27	66	14	10	232	93	98	276	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.90		1.00	0.97		1.00	0.96		1.00	0.98	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1588		1539	1757		1744	3274		1675	3360	
Fl _t Permitted	0.69	1.00		0.54	1.00		0.52	1.00		0.46	1.00	
Satd. Flow (perm)	1234	1588		877	1757		956	3274		817	3360	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	125	82	154	32	79	17	12	276	111	117	329	62
RTOR Reduction (vph)	0	67	0	0	7	0	0	42	0	0	13	0
Lane Group Flow (vph)	125	169	0	32	89	0	12	345	0	117	378	0
Confl. Peds. (#/hr)	5		5	5		5	1		3	3		1
Heavy Vehicles (%)	3%	10%	5%	13%	6%	0%	0%	3%	9%	4%	5%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Effective Green, g (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.44	0.42		0.55	0.50	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	402	517		285	572		428	1384		522	1663	
v/s Ratio Prot		c0.11			0.05		0.00	c0.11		c0.02	0.11	
v/s Ratio Perm	0.10			0.04			0.01			0.10		
v/c Ratio	0.31	0.33		0.11	0.15		0.03	0.25		0.22	0.23	
Uniform Delay, d ₁	25.3	25.4		23.6	23.9		16.0	18.6		11.1	14.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	2.0	1.7		0.8	0.6		0.0	0.4		0.2	0.3	
Delay (s)	27.3	27.1		24.4	24.5		16.0	19.0		11.3	14.7	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s/veh)		27.2			24.5			18.9			13.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			19.7				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			75.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 6: Kaitting Trail & Janice Dr

Future Total (2038 + Opt)
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		2	
Traffic Volume (veh/h)	5	85	127	12	6	13
Future Volume (Veh/h)	5	85	127	12	6	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	8	133	198	19	9	20
Pedestrians		1			10	
Lane Width (m)		3.6			3.3	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	227				367	219
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				367	219
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	1343				629	819
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	141	217	29			
Volume Left	8	0	9			
Volume Right	0	19	20			
cSH	1343	1700	749			
Volume to Capacity	0.00*	0.13	0.04			
Queue Length 95th (m)	0.1	0.0	1.0			
Control Delay (s/veh)	0.5	0.0	10.0			
Lane LOS	A		B			
Approach Delay (s/veh)	0.5	0.0	10.0			
Approach LOS			B			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			19.5%		ICU Level of Service	A
Analysis Period (min)			15			

* Value less than 0.01.

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	5	85	127	12	6	13
Future Vol, veh/h	5	85	127	12	6	13
Conflicting Peds, #/hr	10	0	0	10	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	64	64	64	64	64	64
Heavy Vehicles, %	0	3	0	8	0	0
Mvmt Flow	8	133	198	19	9	20

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	227	0	-	0	367 219
Stage 1	-	-	-	-	218 -
Stage 2	-	-	-	-	149 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1353	-	-	-	637 826
Stage 1	-	-	-	-	823 -
Stage 2	-	-	-	-	884 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1342	-	-	-	628 819
Mov Cap-2 Maneuver	-	-	-	-	628 -
Stage 1	-	-	-	-	811 -
Stage 2	-	-	-	-	884 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.4	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1342	-	-	-	747
HCM Lane V/C Ratio	0.006	-	-	-	0.04
HCM Ctrl Dly (s/v)	7.7	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.1

HCM Unsignalized Intersection Capacity Analysis
 7: Sixth Line & Site Access

Future Total (2038 + Opt)
 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	105	0	369	503	16
Future Volume (Veh/h)	0	105	0	369	503	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	122	0	429	585	19
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				114	292	
pX, platoon unblocked						
vC, conflicting volume	809	302	604			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	809	302	604			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	83	100			
cM capacity (veh/h)	322	700	984			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	122	215	215	390	214	
Volume Left	0	0	0	0	0	
Volume Right	122	0	0	0	19	
cSH	700	1700	1700	1700	1700	
Volume to Capacity	0.17	0.13	0.13	0.23	0.13	
Queue Length 95th (m)	5.0	0.0	0.0	0.0	0.0	
Control Delay (s/veh)	11.2	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s/veh)	11.2	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay	1.2					
Intersection Capacity Utilization	27.6%			ICU Level of Service	A	
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	
Traffic Vol, veh/h	0	105	0	369	503	16
Future Vol, veh/h	0	105	0	369	503	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	3	4	0
Mvmt Flow	0	122	0	429	585	19

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	302	-	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-
Pot Cap-1 Maneuver	0	700	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	700	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 700	-	-
HCM Lane V/C Ratio	- 0.174	-	-
HCM Ctrl Dly (s/v)	- 11.2	-	-
HCM Lane LOS	- B	-	-
HCM 95th %tile Q (veh)	- 0.6	-	-

HCM Unsignalized Intersection Capacity Analysis
 8: Dundas St W/Dundas St E & Dundas St Access

Future Total (2038 + Opt)
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		↑↑↑	↑↑↑			↑	
Traffic Volume (veh/h)	0	1831	1254	15	0	33	
Future Volume (Veh/h)	0	1831	1254	15	0	33	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Hourly flow rate (vph)	0	1868	1280	15	0	34	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh							
Upstream signal (m)			146				
pX, platoon unblocked	0.87				0.87	0.87	
vC, conflicting volume	1295				1910	434	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	800				1510	0	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	96	
cM capacity (veh/h)	721				98	945	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	623	623	623	512	512	271	34
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	15	34
cSH	1700	1700	1700	1700	1700	1700	945
Volume to Capacity	0.37	0.37	0.37	0.30	0.30	0.16	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	0.0	9.0
Lane LOS							A
Approach Delay (s/veh)	0.0			0.0			9.0
Approach LOS							A
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			38.7%		ICU Level of Service		A
Analysis Period (min)			15				

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1831	1254	15	0	33
Future Vol, veh/h	0	1831	1254	15	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	2	7	0	0	0
Mvmt Flow	0	1868	1280	15	0	34

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	358
HCM Lane V/C Ratio	-	-	-	0.094
HCM Ctrl Dly (s/v)	-	-	-	16.1
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q (veh)	-	-	-	0.3

HCM Unsignalized Intersection Capacity Analysis
 9: Kaitting Trail Access & Kaitting Trail

Future Total (2038 + Opt)
 AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	79	7	30	64	59	27
Future Volume (Veh/h)	79	7	30	64	59	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	92	8	35	74	69	31
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			100			240 96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			100			240 96
tC, single (s)			4.1			6.4 6.2
tC, 2 stage (s)						
tF (s)			2.2			3.5 3.3
p0 queue free %			98			91 97
cM capacity (veh/h)			1505			735 966
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	100	109	100			
Volume Left	0	35	69			
Volume Right	8	0	31			
cSH	1700	1505	794			
Volume to Capacity	0.06	0.02	0.13			
Queue Length 95th (m)	0.0	0.6	3.4			
Control Delay (s/veh)	0.0	2.5	10.2			
Lane LOS			A			B
Approach Delay (s/veh)	0.0	2.5	10.2			
Approach LOS				B		
Intersection Summary						
Average Delay			4.2			
Intersection Capacity Utilization			23.3%	ICU Level of Service	A	
Analysis Period (min)			15			

Intersection						
Int Delay, s/veh	4.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	79	7	30	64	59	27
Future Vol, veh/h	79	7	30	64	59	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	92	8	35	74	69	31

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	100	0	240
Stage 1	-	-	-	-	96
Stage 2	-	-	-	-	144
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1505	-	753
Stage 1	-	-	-	-	933
Stage 2	-	-	-	-	888
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1505	-	735
Mov Cap-2 Maneuver	-	-	-	-	735
Stage 1	-	-	-	-	933
Stage 2	-	-	-	-	867

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.4	10.2
HCM LOS			B

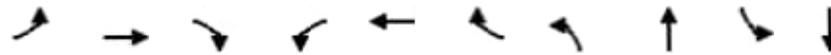
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	795	-	-	1505	-
HCM Lane V/C Ratio	0.126	-	-	0.023	-
HCM Ctrl Dly (s/v)	10.2	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q (veh)	0.4	-	-	0.1	-

Queues

Future Total (2038 + Opt)

1: Harman Gate/Preserve Dr & Dundas St W

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑↑↑	↗	↘	↑↑↑	↗	↘	↗	↘	↗
Traffic Volume (vph)	103	1560	37	26	1762	219	20	14	203	13
Future Volume (vph)	103	1560	37	26	1762	219	20	14	203	13
Lane Group Flow (vph)	108	1642	39	27	1855	231	21	30	214	128
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.3	40.3
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.60	0.54	0.04	0.13	0.65	0.24	0.07	0.07	0.65	0.26
Control Delay (s/veh)	30.5	16.1	1.2	8.2	20.3	2.3	35.6	22.1	51.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.5	16.1	1.2	8.2	20.3	2.3	35.6	22.1	51.0	9.9
Queue Length 50th (m)	8.7	94.4	0.0	2.1	114.5	0.0	4.2	3.0	48.5	2.7
Queue Length 95th (m)	28.0	108.9	2.2	5.3	131.1	11.4	11.4	11.4	77.1	18.5
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	184	3021	950	227	2835	963	285	416	329	489
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	0.59	0.54	0.04	0.12	0.65	0.24	0.07	0.07	0.65	0.26

Intersection Summary

Cycle Length: 120

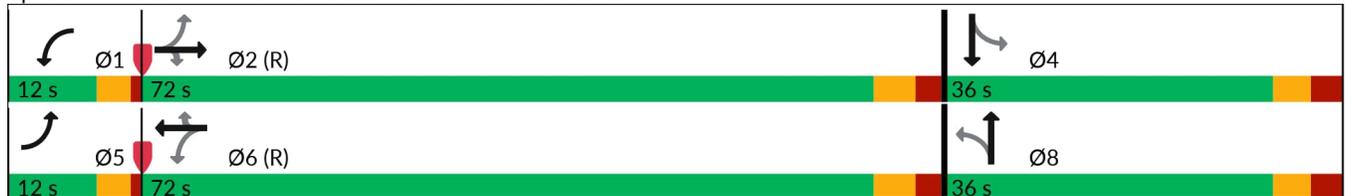
Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis

Future Total (2038 + Opt)

1: Harman Gate/Preserve Dr & Dundas St W

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (vph)	103	1560	37	26	1762	219	20	14	14	203	13	108
Future Volume (vph)	103	1560	37	26	1762	219	20	14	14	203	13	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	5085	1556	1745	5136	1557	1659	1631		1707	1626	
Flt Permitted	0.06	1.00	1.00	0.11	1.00	1.00	0.66	1.00		0.74	1.00	
Satd. Flow (perm)	116	5085	1556	195	5136	1557	1151	1631		1326	1626	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	108	1642	39	27	1855	231	21	15	15	214	14	114
RTOR Reduction (vph)	0	0	16	0	0	104	0	11	0	0	86	0
Lane Group Flow (vph)	108	1642	23	27	1855	127	21	19	0	214	42	0
Confl. Peds. (#/hr)	3		3	3		3	2		1	1		2
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	5%	7%	7%	2%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.4	69.7	69.7	70.4	66.2	66.2	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.4	69.7	69.7	70.4	66.2	66.2	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.65	0.58	0.58	0.59	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	179	2953	903	168	2833	858	285	405		329	403	
v/s Ratio Prot	c0.04	0.32		0.01	c0.36			0.01			0.03	
v/s Ratio Perm	0.35		0.01	0.09		0.08	0.02			c0.16		
v/c Ratio	0.60	0.56	0.03	0.16	0.65	0.15	0.07	0.05		0.65	0.10	
Uniform Delay, d1	16.1	15.6	10.7	11.6	18.9	13.1	34.5	34.3		40.4	34.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	0.8	0.1	0.5	1.2	0.4	0.5	0.2		9.6	0.5	
Delay (s)	21.7	16.3	10.7	12.0	20.1	13.5	35.0	34.5		50.0	35.3	
Level of Service	C	B	B	B	C	B	D	C		D	D	
Approach Delay (s/veh)		16.5			19.3			34.7			44.5	
Approach LOS		B			B			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			20.3			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.3			
Intersection Capacity Utilization			81.8%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

Queues

Future Total (2038 + Opt)

2: Sixth Line & Dundas St E

PM Peak Hour

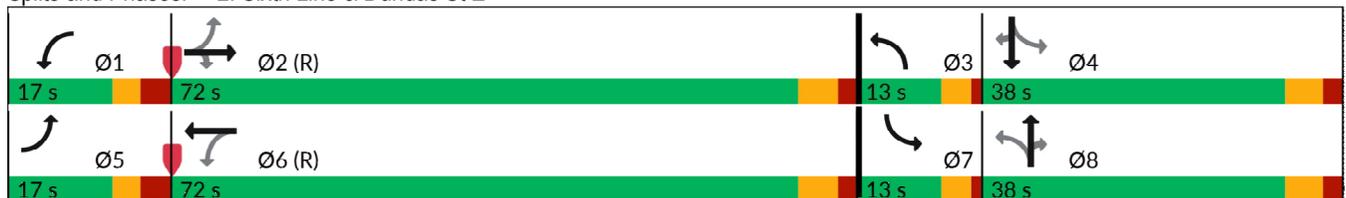


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	123	1426	200	125	1770	128	244	70	247	258	122
Future Volume (vph)	123	1426	200	125	1770	128	244	70	247	258	122
Lane Group Flow (vph)	129	1501	211	132	2102	135	257	74	260	272	128
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	31.0	31.0	13.0	31.0	11.0	37.0	37.0	11.0	37.0	37.0
Total Split (s)	17.0	72.0	72.0	17.0	72.0	13.0	38.0	38.0	13.0	38.0	38.0
Total Split (%)	12.1%	51.4%	51.4%	12.1%	51.4%	9.3%	27.1%	27.1%	9.3%	27.1%	27.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.74	0.62	0.25	0.64	0.87	0.51	0.59	0.17	0.94	0.63	0.28
Control Delay (s/veh)	53.7	28.5	3.7	31.0	37.2	41.7	54.7	4.2	81.3	55.9	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.7	28.5	3.7	31.0	37.2	41.7	54.7	4.2	81.3	55.9	8.6
Queue Length 50th (m)	21.1	119.4	0.9	16.3	199.0	28.5	67.4	0.0	59.1	72.0	0.0
Queue Length 95th (m)	#50.7	137.8	15.3	33.5	221.8	46.3	98.0	7.1	#114.8	103.9	17.2
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	187	2420	852	222	2422	265	434	426	278	435	454
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.62	0.25	0.59	0.87	0.51	0.59	0.17	0.94	0.63	0.28

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 71 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis

Future Total (2038 + Opt)

2: Sixth Line & Dundas St E

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (vph)	123	1426	200	125	1770	227	128	244	70	247	258	122
Future Volume (vph)	123	1426	200	125	1770	227	128	244	70	247	258	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1728	5036	1553	1728	5035		1726	1900	1526	1743	1900	1554
Flt Permitted	0.06	1.00	1.00	0.10	1.00		0.35	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	108	5036	1553	182	5035		635	1900	1526	687	1900	1554
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	129	1501	211	132	1863	239	135	257	74	260	272	128
RTOR Reduction (vph)	0	0	106	0	11	0	0	0	57	0	0	99
Lane Group Flow (vph)	129	1501	105	132	2091	0	135	257	17	260	272	29
Confl. Peds. (#/hr)	6		3	3		6	4		3	3		4
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	1%	3%	1%	1%	1%	1%	1%	0%	3%	0%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	77.3	67.3	67.3	76.7	67.0		40.9	32.0	32.0	41.1	32.1	32.1
Effective Green, g (s)	77.3	67.3	67.3	76.7	67.0		40.9	32.0	32.0	41.1	32.1	32.1
Actuated g/C Ratio	0.55	0.48	0.48	0.55	0.48		0.29	0.23	0.23	0.29	0.23	0.23
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	175	2420	746	206	2409		254	434	348	269	435	356
v/s Ratio Prot	c0.05	0.30		0.04	c0.42		0.03	0.14		c0.06	0.14	
v/s Ratio Perm	0.35		0.07	0.31			0.12		0.01	c0.22		0.02
v/c Ratio	0.74	0.62	0.14	0.64	0.87		0.53	0.59	0.05	0.97	0.63	0.08
Uniform Delay, d1	33.0	26.9	20.2	19.8	32.6		38.8	48.2	42.1	48.2	48.5	42.4
Progression Factor	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	14.9	1.2	0.4	6.6	4.6		2.1	5.8	0.3	45.2	6.6	0.5
Delay (s)	47.9	28.1	20.6	26.4	37.1		40.9	54.0	42.4	93.4	55.2	42.8
Level of Service	D	C	C	C	D		D	D	D	F	E	D
Approach Delay (s/veh)		28.6			36.5			48.4			67.8	
Approach LOS		C			D			D			E	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			38.7			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			104.0%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: Sixth Line & Kaitting Trail

Future Total (2038 + Opt)
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	5	38	17	7	3	144	383	28	10	472	26
Future Volume (Veh/h)	40	5	38	17	7	3	144	383	28	10	472	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	42	5	40	18	7	3	150	399	29	10	492	27
Pedestrians		2						1			3	
Lane Width (m)		3.6						3.5			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								179			226	
pX, platoon unblocked												
vC, conflicting volume	1037	1256	263	1023	1255	217	521			428		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1037	1256	263	1023	1255	217	521			428		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	74	97	95	89	95	100	86			99		
cM capacity (veh/h)	159	147	740	157	147	792	1054			1142		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	87	28	150	266	162	256	273					
Volume Left	42	18	150	0	0	10	0					
Volume Right	40	3	0	0	29	0	27					
cSH	247	169	1054	1700	1700	1142	1700					
Volume to Capacity	0.35	0.17	0.14	0.16	0.10	0.00*	0.16					
Queue Length 95th (m)	12.1	4.6	4.0	0.0	0.0	0.2	0.0					
Control Delay (s/veh)	27.2	30.6	9.0	0.0	0.0	0.4	0.0					
Lane LOS	D	D	A			A						
Approach Delay (s/veh)	27.2	30.6	2.3			0.2						
Approach LOS	D	D										
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			41.2%		ICU Level of Service				A			
Analysis Period (min)			15									

* Value less than 0.01.

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	40	5	38	17	7	3	144	383	28	10	472	26
Future Vol, veh/h	40	5	38	17	7	3	144	383	28	10	472	26
Conflicting Peds, #/hr	3	0	1	1	0	3	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	24
Mvmt Flow	42	5	40	18	7	3	150	399	29	10	492	27

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1034	1256	263	984	1255	217	521	0	0	428	0	0
Stage 1	528	528	-	714	714	-	-	-	-	-	-	-
Stage 2	506	728	-	270	541	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	189	173	742	206	173	794	1056	-	-	1142	-	-
Stage 1	507	531	-	393	438	-	-	-	-	-	-	-
Stage 2	522	432	-	718	524	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	159	146	740	167	146	792	1054	-	-	1142	-	-
Mov Cap-2 Maneuver	159	146	-	167	146	-	-	-	-	-	-	-
Stage 1	434	524	-	337	376	-	-	-	-	-	-	-
Stage 2	436	371	-	664	517	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	27.4		29.3		2.3		0.2	
HCM LOS	D		D					

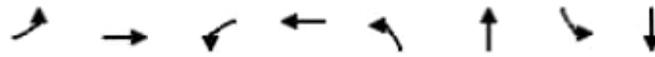
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1054	-	-	246	176	1142	-	-
HCM Lane V/C Ratio	0.142	-	-	0.351	0.16	0.009	-	-
HCM Ctrl Dly (s/v)	9	-	-	27.4	29.3	8.2	0	-
HCM Lane LOS	A	-	-	D	D	A	A	-
HCM 95th %tile Q (veh)	0.5	-	-	1.5	0.6	0	-	-

Queues

Future Total (2038 + Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	101	59	19	56	16	272	102	277
Future Volume (vph)	101	59	19	56	16	272	102	277
Lane Group Flow (vph)	106	190	20	73	17	417	107	355
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.5	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	16.0	47.0	14.0	45.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	16.0%	47.0%	14.0%	45.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.41	0.45	0.10	0.20	0.02	0.22	0.16	0.16
Control Delay (s/veh)	40.4	19.1	34.4	29.6	4.9	9.0	5.6	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.4	19.1	34.4	29.6	4.9	9.0	5.6	7.8
Queue Length 50th (m)	19.0	14.0	3.4	10.5	0.9	16.1	6.3	11.1
Queue Length 95th (m)	35.9	35.2	10.1	23.4	2.9	25.2	11.5	23.0
Internal Link Dist (m)		98.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	423	622	323	581	775	1927	682	2217
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.31	0.06	0.13	0.02	0.22	0.16	0.16

Intersection Summary

Cycle Length: 100

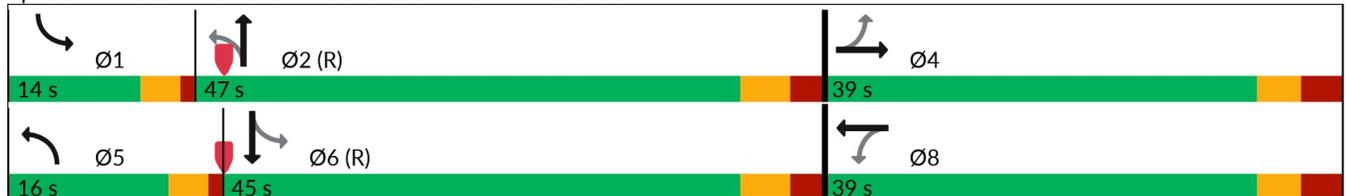
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

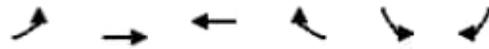
Future Total (2038 + Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	59	122	19	56	13	16	272	124	102	277	60
Future Volume (vph)	101	59	122	19	56	13	16	272	124	102	277	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frnt	1.00	0.90		1.00	0.97		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1739	1681		1742	1756		1742	3384		1728	3499	
Flt Permitted	0.71	1.00		0.54	1.00		0.54	1.00		0.47	1.00	
Satd. Flow (perm)	1299	1681		992	1756		989	3384		861	3499	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	106	62	128	20	59	14	17	286	131	107	292	63
RTOR Reduction (vph)	0	88	0	0	10	0	0	40	0	0	12	0
Lane Group Flow (vph)	106	102	0	20	63	0	17	377	0	107	343	0
Confl. Peds. (#/hr)	4		2	2		4	2					2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	4%	8%	0%	1%	1%	1%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Effective Green, g (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.59	0.56		0.68	0.61	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	336		198	351		600	1888		647	2123	
v/s Ratio Prot		0.06			0.04		0.00	c0.11		c0.01	0.10	
v/s Ratio Perm	c0.08			0.02			0.02			0.10		
v/c Ratio	0.41	0.30		0.10	0.18		0.03	0.20		0.17	0.16	
Uniform Delay, d1	34.9	34.1		32.7	33.2		8.7	11.0		5.7	8.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.5		0.2	0.2		0.0	0.2		0.1	0.2	
Delay (s)	35.9	34.6		32.9	33.4		8.7	11.2		5.8	8.7	
Level of Service	D	C		C	C		A	B		A	A	
Approach Delay (s/veh)		35.1			33.3			11.1			8.1	
Approach LOS		D			C			B			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			17.1				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.25									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)				16.5	
Intersection Capacity Utilization			66.7%				ICU Level of Service				C	
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 6: Kaitting Trail & Janice Dr

Future Total (2038 + Opt)
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Volume (veh/h)	3	79	116	11	6	1
Future Volume (Veh/h)	3	79	116	11	6	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	4	100	147	14	8	1
Pedestrians					7	
Lane Width (m)					3.3	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168				269	161
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168				269	161
tC, single (s)	4.1				6.4	7.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	4.2
p0 queue free %	100				99	100
cM capacity (veh/h)	1414				719	678
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	104	161	9			
Volume Left	4	0	8			
Volume Right	0	14	1			
cSH	1414	1700	714			
Volume to Capacity	0.00*	0.09	0.01			
Queue Length 95th (m)	0.1	0.0	0.3			
Control Delay (s/veh)	0.3	0.0	10.1			
Lane LOS	A		B			
Approach Delay (s/veh)	0.3	0.0	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			18.2%		ICU Level of Service	A
Analysis Period (min)			15			

* Value less than 0.01.

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	3	79	116	11	6	1
Future Vol, veh/h	3	79	116	11	6	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	1	2	0	0	100
Mvmt Flow	4	100	147	14	8	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	168	0	-	0	269
Stage 1	-	-	-	-	161
Stage 2	-	-	-	-	108
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1422	-	-	-	725
Stage 1	-	-	-	-	873
Stage 2	-	-	-	-	921
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1414	-	-	-	719
Mov Cap-2 Maneuver	-	-	-	-	719
Stage 1	-	-	-	-	866
Stage 2	-	-	-	-	921

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.3	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1414	-	-	-	713
HCM Lane V/C Ratio	0.003	-	-	-	0.012
HCM Ctrl Dly (s/v)	7.6	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0

HCM Unsignalized Intersection Capacity Analysis
 7: Sixth Line & Site Access

Future Total (2038 + Opt)
 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	59	0	554	639	42
Future Volume (Veh/h)	0	59	0	554	639	42
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	61	0	577	666	44
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				114	292	
pX, platoon unblocked						
vC, conflicting volume	977	355	710			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	977	355	710			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	100			
cM capacity (veh/h)	252	647	899			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	61	289	289	444	266	
Volume Left	0	0	0	0	0	
Volume Right	61	0	0	0	44	
cSH	647	1700	1700	1700	1700	
Volume to Capacity	0.09	0.17	0.17	0.26	0.16	
Queue Length 95th (m)	2.5	0.0	0.0	0.0	0.0	
Control Delay (s/veh)	11.1	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s/veh)	11.1	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay	0.5					
Intersection Capacity Utilization	29.3%			ICU Level of Service	A	
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	
Traffic Vol, veh/h	0	59	0	554	639	42
Future Vol, veh/h	0	59	0	554	639	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	61	0	577	666	44

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	355	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-
Pot Cap-1 Maneuver	0	647	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	647	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 647	-	-
HCM Lane V/C Ratio	- 0.095	-	-
HCM Ctrl Dly (s/v)	- 11.1	-	-
HCM Lane LOS	- B	-	-
HCM 95th %tile Q (veh)	- 0.3	-	-

HCM Unsignalized Intersection Capacity Analysis
 8: Dundas St W/Dundas St E & Dundas St Access

Future Total (2038 + Opt)
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		↑↑↑	↑↑↑			↑	
Traffic Volume (veh/h)	0	1808	1988	36	0	19	
Future Volume (Veh/h)	0	1808	1988	36	0	19	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	0	1903	2093	38	0	20	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage (veh)							
Upstream signal (m)	146						
pX, platoon unblocked	0.63				0.63	0.63	
vC, conflicting volume	2131				2746	717	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	757				1730	0	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	97	
cM capacity (veh/h)	546				51	691	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	634	634	634	837	837	457	20
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	38	20
cSH	1700	1700	1700	1700	1700	1700	691
Volume to Capacity	0.37	0.37	0.37	0.49	0.49	0.27	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	0.0	10.4
Lane LOS							B
Approach Delay (s/veh)	0.0			0.0			10.4
Approach LOS							B
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			49.2%	ICU Level of Service		A	
Analysis Period (min)			15				

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1808	1988	36	0	19
Future Vol, veh/h	0	1808	1988	36	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	1903	2093	38	0	20

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1066
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 7.1
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.9
Pot Cap-1 Maneuver	0	-	- 0 190
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 190
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	26.2
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	190
HCM Lane V/C Ratio	-	-	-	0.105
HCM Ctrl Dly (s/v)	-	-	-	26.2
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q (veh)	-	-	-	0.3

HCM Unsignalized Intersection Capacity Analysis
 9: Kaitting Trail Access & Kaitting Trail

Future Total (2038 + Opt)
 PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	52	19	76	84	33	15
Future Volume (Veh/h)	52	19	76	84	33	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	54	20	79	88	34	16
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			74	310		64
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			74	310		64
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			95	95		98
cM capacity (veh/h)			1538	651		1006
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	74	167	50			
Volume Left	0	79	34			
Volume Right	20	0	16			
cSH	1700	1538	734			
Volume to Capacity	0.04	0.05	0.07			
Queue Length 95th (m)	0.0	1.3	1.7			
Control Delay (s/veh)	0.0	3.7	10.3			
Lane LOS			A		B	
Approach Delay (s/veh)	0.0	3.7	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization			25.3%		ICU Level of Service A	
Analysis Period (min)			15			

Intersection						
Int Delay, s/veh	3.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	52	19	76	84	33	15
Future Vol, veh/h	52	19	76	84	33	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	4	0	0
Mvmt Flow	54	20	79	88	34	16

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	74	0	310 64
Stage 1	-	-	-	-	64 -
Stage 2	-	-	-	-	246 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1538	-	687 1006
Stage 1	-	-	-	-	964 -
Stage 2	-	-	-	-	800 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1538	-	650 1006
Mov Cap-2 Maneuver	-	-	-	-	650 -
Stage 1	-	-	-	-	964 -
Stage 2	-	-	-	-	757 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	3.5	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	731	-	-	1538	-
HCM Lane V/C Ratio	0.068	-	-	0.051	-
HCM Ctrl Dly (s/v)	10.3	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q (veh)	0.2	-	-	0.2	-

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:30	7:30	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5315	5289	5291	5359	5208	5293
Vehs Exited	5270	5318	5329	5374	5175	5293
Starting Vehs	277	268	281	273	258	268
Ending Vehs	322	239	243	258	291	266
Travel Distance (km)	9799	9792	9771	9908	9624	9779
Travel Time (hr)	307.9	280.0	267.2	273.5	272.0	280.1
Total Delay (hr)	116.1	88.2	77.0	80.4	83.4	89.0
Total Stops	5550	5489	5287	5314	5461	5420
Fuel Used (l)	803.3	782.2	763.2	776.8	759.5	777.0

Interval #0 Information Seeding

Start Time	7:30
End Time	8:00
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5315	5289	5291	5359	5208	5293
Vehs Exited	5270	5318	5329	5374	5175	5293
Starting Vehs	277	268	281	273	258	268
Ending Vehs	322	239	243	258	291	266
Travel Distance (km)	9799	9792	9771	9908	9624	9779
Travel Time (hr)	307.9	280.0	267.2	273.5	272.0	280.1
Total Delay (hr)	116.1	88.2	77.0	80.4	83.4	89.0
Total Stops	5550	5489	5287	5314	5461	5420
Fuel Used (l)	803.3	782.2	763.2	776.8	759.5	777.0

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail/Private Access Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Arterial Level of Service: EB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Harman Gate	1	11.3	43.7	0.5	38	38	11.3
Dundas St Access	8	3.9	43.8	0.6	46	46	4.0
Total		15.2	87.4	1.0	42	42	15.2

Arterial Level of Service: EB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Harman Gate	37	11.8	38	11.3	39	10.5	38
Dundas St Access	46	3.9	46	3.8	46	3.8	46
Total	42	15.7	42	15.1	42	14.3	42

Arterial Level of Service: WB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Preserve Dr	1	14.1	42.6	0.6	47	47	13.5
Total		14.1	42.6	0.6	47	47	13.5

Arterial Level of Service: WB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Preserve Dr	47	14.6	47	14.2	48	13.8	47
Total	47	14.6	47	14.2	48	13.8	47

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	36.3	96.9	81.5	68.4	16.2	12.0	87.4	89.1	88.8	27.2	20.5	18.0
Average Queue (m)	14.3	58.6	46.5	32.1	2.9	2.6	38.3	38.6	37.6	8.7	5.0	4.4
95th Queue (m)	27.8	94.1	79.6	60.4	10.6	8.6	79.4	76.8	75.7	21.7	14.6	12.3
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)												0
Queuing Penalty (veh)												0

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	64.9	116.0
Average Queue (m)	41.6	37.3
95th Queue (m)	70.8	92.9
Link Distance (m)		113.5
Upstream Blk Time (%)		3
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	24	3
Queuing Penalty (veh)	47	6

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	30.6	115.7	115.6	116.6	40.8	42.8	78.1	75.4	76.4	152.6	209.4	140.8
Average Queue (m)	13.3	69.5	73.1	69.7	12.6	18.8	45.9	47.1	45.6	91.7	102.4	72.1
95th Queue (m)	27.3	111.3	112.5	108.5	26.0	36.2	67.6	69.8	70.9	170.1	329.9	293.4
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)		0	0	0							8	3
Queuing Penalty (veh)		0	0	0							0	0
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)		1		6						36	1	
Queuing Penalty (veh)		1		11						67	2	

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	75.9	99.6	27.2
Average Queue (m)	63.2	70.7	10.1
95th Queue (m)	90.1	113.2	20.7
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		17	
Queuing Penalty (veh)		53	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	19	11	
Queuing Penalty (veh)	49	28	

Intersection: 4: Sixth Line & Kaitting Trail/Private Access

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	LT	TR
Maximum Queue (m)	33.3	19.5	17.9	2.6	1.2	32.9	12.1
Average Queue (m)	13.4	8.5	5.5	0.1	0.0	5.1	0.6
95th Queue (m)	24.9	16.4	12.9	1.8	0.9	24.5	5.8
Link Distance (m)	38.2	67.8		45.8	45.8	205.5	205.5
Upstream Blk Time (%)	1						
Queuing Penalty (veh)	1						
Storage Bay Dist (m)			25.0				
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	47.1	58.0	22.4	32.1	9.4	43.7	49.9	28.2	45.1	35.0
Average Queue (m)	18.2	23.4	5.3	11.6	1.6	14.6	20.7	12.3	19.6	12.6
95th Queue (m)	36.3	45.4	15.5	25.2	6.9	30.7	39.2	23.9	37.4	27.3
Link Distance (m)		93.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	11	17					0			
Queuing Penalty (veh)	22	18					0			

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	3.7	7.6	8.2
Average Queue (m)	0.2	0.3	4.4
95th Queue (m)	2.3	3.7	11.0
Link Distance (m)	529.2	24.2	103.4
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Sixth Line & Site Access

Movement	EB	SB
Directions Served	R	T
Maximum Queue (m)	21.4	43.3
Average Queue (m)	14.4	16.3
95th Queue (m)	23.6	49.0
Link Distance (m)	16.8	45.8
Upstream Blk Time (%)	28	4
Queuing Penalty (veh)	0	11
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB	EB	EB	WB	SB
Directions Served	T	T	T	TR	R
Maximum Queue (m)	3.1	7.9	8.5	1.1	11.7
Average Queue (m)	0.1	0.3	0.3	0.0	6.3
95th Queue (m)	2.2	4.3	3.2	0.8	13.1
Link Distance (m)	535.3	535.3	535.3	123.4	61.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	6.2	10.5	23.6
Average Queue (m)	0.3	0.5	10.4
95th Queue (m)	3.5	4.3	18.8
Link Distance (m)	24.2	38.2	33.4
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 318

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL SBTL	EBL WBTL	NBTL		
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	94.3	30.7	7.9	87.3	30.7
g/C Ratio	0.70	0.23	0.04	0.65	0.23
Cycles Skipped (%)	11	10	32	11	10
Cycles @ Minimum (%)	0	0	25	0	0
Cycles Maxed Out (%)	89	90	32	89	90
Cycles with Peds (%)	7	14	0	11	7

Controller Summary

Average Cycle Length (s): 120.0
 Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL NBL	SBTL	EBL WBTL	SBL	NBTL		
Maximum Green (s)	68.0	7.0	35.0	8.0	68.0	7.0	35.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	70.5	7.0	35.0	8.0	72.0	7.0	35.0
g/C Ratio	0.50	0.05	0.25	0.04	0.51	0.05	0.25
Cycles Skipped (%)	0	0	0	28	0	0	0
Cycles @ Minimum (%)	0	100	0	20	0	100	0
Cycles Maxed Out (%)	100	100	100	48	100	100	100
Cycles with Peds (%)	0	0	8	0	24	0	23

Controller Summary

Average Cycle Length (s): 140.0
 Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	10.0	40.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	46.0	32.6	7.2	53.7	32.6
g/C Ratio	0.46	0.33	0.01	0.54	0.33
Cycles Skipped (%)	0	0	89	0	0
Cycles @ Minimum (%)	0	0	9	0	0
Cycles Maxed Out (%)	100	100	0	100	100
Cycles with Peds (%)	3	11	0	0	14

Controller Summary

Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5847	5706	5797	5898	5848	5815
Vehs Exited	5869	5679	5755	5887	5758	5789
Starting Vehs	352	308	345	337	314	331
Ending Vehs	330	335	387	348	404	357
Travel Distance (km)	11164	10906	11105	11328	11089	11118
Travel Time (hr)	540.8	450.4	555.4	508.9	536.2	518.3
Total Delay (hr)	330.4	244.6	346.8	295.7	327.2	308.9
Total Stops	5930	5710	6091	6177	5790	5936
Fuel Used (l)	1072.5	982.2	1079.4	1048.2	1064.2	1049.3

Interval #0 Information Seeding

Start Time	4:00
End Time	4:30
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5847	5706	5797	5898	5848	5815
Vehs Exited	5869	5679	5755	5887	5758	5789
Starting Vehs	352	308	345	337	314	331
Ending Vehs	330	335	387	348	404	357
Travel Distance (km)	11164	10906	11105	11328	11089	11118
Travel Time (hr)	540.8	450.4	555.4	508.9	536.2	518.3
Total Delay (hr)	330.4	244.6	346.8	295.7	327.2	308.9
Total Stops	5930	5710	6091	6177	5790	5936
Fuel Used (l)	1072.5	982.2	1079.4	1048.2	1064.2	1049.3

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Arterial Level of Service: EB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Harman Gate	1	12.4	44.9	0.5	37	37	12.5
Dundas St Access	8	3.9	43.1	0.6	46	46	4.0
Total		16.3	88.0	1.0	42	41	16.5

Arterial Level of Service: EB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Harman Gate	37	12.7	37	12.5	37	12.5	37
Dundas St Access	47	3.9	46	3.8	47	3.9	47
Total	42	16.6	41	16.3	42	16.4	42

Arterial Level of Service: WB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Preserve Dr	1	18.5	47.4	0.6	42	41	19.7
Total		18.5	47.4	0.6	42	41	19.7

Arterial Level of Service: WB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Preserve Dr	42	18.7	43	17.5	42	18.9	43
Total	42	18.7	43	17.5	42	18.9	43

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	38.3	97.9	86.9	67.0	11.7	19.2	136.1	136.0	125.7	46.8	14.1	24.6
Average Queue (m)	15.7	56.0	47.9	32.1	2.9	4.9	48.2	51.0	49.1	12.2	3.9	5.2
95th Queue (m)	31.2	90.7	80.0	60.6	9.8	13.3	113.4	116.7	110.3	29.7	11.5	16.9
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)							1		0			0
Queuing Penalty (veh)							0		1			0

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	64.9	108.8
Average Queue (m)	46.1	30.7
95th Queue (m)	70.1	81.2
Link Distance (m)		113.5
Upstream Blk Time (%)		1
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	21	2
Queuing Penalty (veh)	26	4

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	49.7	117.3	118.0	112.7	47.3	46.0	159.8	172.7	182.8	54.1	88.5	30.2
Average Queue (m)	23.0	64.0	66.4	62.5	14.3	20.1	98.8	112.2	116.9	25.3	47.1	6.9
95th Queue (m)	41.3	104.3	105.9	101.2	32.6	38.6	137.6	157.2	167.8	47.3	78.0	19.8
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)		0	0	0	0							
Queuing Penalty (veh)		1	0	0	0							
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)		1		5			2				0	
Queuing Penalty (veh)		1		9			2				0	

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	75.9	100.5	27.8
Average Queue (m)	63.3	78.0	11.4
95th Queue (m)	94.7	121.4	22.5
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		37	
Queuing Penalty (veh)		128	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	38	21	
Queuing Penalty (veh)	99	53	

Intersection: 4: Sixth Line & Kaitting Trail

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	LT	TR
Maximum Queue (m)	30.5	14.7	23.8	9.3	3.8	44.5	23.6
Average Queue (m)	12.6	5.6	8.1	0.3	0.1	9.9	1.4
95th Queue (m)	24.9	13.7	18.8	5.7	2.0	38.0	15.1
Link Distance (m)	38.1	67.8		45.8	45.8	205.5	205.5
Upstream Blk Time (%)	1		0				
Queuing Penalty (veh)	1		0				
Storage Bay Dist (m)			25.0				
Storage Blk Time (%)			1				
Queuing Penalty (veh)			1				

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	48.9	111.9	95.8	201.0	10.6	30.4	40.2	23.8	23.9	25.6
Average Queue (m)	40.2	107.1	26.4	117.0	1.7	3.4	7.0	8.4	2.8	2.4
95th Queue (m)	62.1	111.1	66.4	236.1	7.2	15.7	25.6	19.0	13.4	13.1
Link Distance (m)		107.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)		97		14						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	86	57	4	67						
Queuing Penalty (veh)	155	58	3	13						

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	5.6	13.0
Average Queue (m)	0.2	2.0
95th Queue (m)	4.0	8.4
Link Distance (m)	529.2	103.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Sixth Line & Site Access

Movement	EB	SB	SB
Directions Served	R	T	TR
Maximum Queue (m)	21.3	46.4	34.1
Average Queue (m)	12.7	26.2	3.2
95th Queue (m)	22.4	61.7	20.3
Link Distance (m)	16.8	45.8	45.8
Upstream Blk Time (%)	42	12	0
Queuing Penalty (veh)	0	31	1
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB	EB	SB
Directions Served	T	T	R
Maximum Queue (m)	9.7	11.9	13.4
Average Queue (m)	0.3	0.4	5.2
95th Queue (m)	4.3	5.6	12.7
Link Distance (m)	535.3	535.3	61.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	5.5	11.9	14.5
Average Queue (m)	0.3	1.8	7.6
95th Queue (m)	5.0	8.3	14.2
Link Distance (m)	24.4	38.1	44.5
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 588

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL SBTL	EBL WBTL	NBTL		
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	83.6	30.2	7.7	78.2	30.2
g/C Ratio	0.65	0.23	0.04	0.61	0.23
Cycles Skipped (%)	7	7	31	7	7
Cycles @ Minimum (%)	0	0	21	0	0
Cycles Maxed Out (%)	93	93	38	93	93
Cycles with Peds (%)	7	7	0	10	3

Controller Summary

Average Cycle Length (s): 120.0
 Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL NBL	SBTL	EBL WBTL	SBL	NBTL		
Maximum Green (s)	66.0	9.0	32.0	11.0	66.0	9.0	32.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	69.2	9.1	32.3	10.4	68.4	9.0	32.0
g/C Ratio	0.49	0.07	0.23	0.07	0.49	0.06	0.23
Cycles Skipped (%)	0	0	0	8	0	0	0
Cycles @ Minimum (%)	0	0	0	4	0	0	0
Cycles Maxed Out (%)	100	88	100	52	100	96	100
Cycles with Peds (%)	8	0	16	0	23	0	12

Controller Summary

Average Cycle Length (s): 140.0
 Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	12.0	38.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	None	None	C-Max	None
Avg. Green (s)	276.2	33.3	9.2	460.8	33.3
g/C Ratio	0.73	0.05	0.01	0.68	0.05
Cycles Skipped (%)	74	85	94	85	85
Cycles @ Minimum (%)	0	0	6	0	0
Cycles Maxed Out (%)	26	0	0	15	0
Cycles with Peds (%)	0	6	0	3	6

Controller Summary

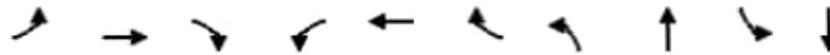
Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35

Queues

Future Total (2038 Diversions+Opt)

1: Harman Gate/Preserve Dr & Dundas St W

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↶	↑↑↑	↷	↶	↑↑↑	↷	↶	↷	↶	↷
Traffic Volume (vph)	95	1604	35	13	1138	136	26	9	184	20
Future Volume (vph)	95	1604	35	13	1138	136	26	9	184	20
Lane Group Flow (vph)	97	1637	36	13	1161	139	27	53	188	203
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.2	40.2
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.33	0.53	0.04	0.06	0.43	0.16	0.11	0.12	0.58	0.38
Control Delay (s/veh)	10.2	14.8	0.9	7.4	16.5	2.5	36.6	13.6	47.9	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.2	14.8	0.9	7.4	16.5	2.5	36.6	13.6	47.9	10.3
Queue Length 50th (m)	8.1	72.7	0.0	1.0	62.7	0.0	5.2	1.7	41.4	5.5
Queue Length 95th (m)	14.6	109.8	1.8	3.2	74.6	9.5	13.5	12.3	67.5	25.7
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	297	3084	897	233	2676	893	235	433	324	529
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	0.33	0.53	0.04	0.06	0.43	0.16	0.11	0.12	0.58	0.38

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 113 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis

Future Total (2038 Diversions+Opt)

1: Harman Gate/Preserve Dr & Dundas St W

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (vph)	95	1604	35	13	1138	136	26	9	43	184	20	179
Future Volume (vph)	95	1604	35	13	1138	136	26	9	43	184	20	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.86	
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	5036	1425	1745	4848	1506	1740	1613		1721	1605	
Fl _t Permitted	0.18	1.00	1.00	0.11	1.00	1.00	0.52	1.00		0.72	1.00	
Satd. Flow (perm)	319	5036	1425	205	4848	1506	951	1613		1309	1605	
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)	97	1637	36	13	1161	139	27	9	44	188	20	183
RTOR Reduction (vph)	0	0	15	0	0	62	0	33	0	0	131	0
Lane Group Flow (vph)	97	1637	21	13	1161	77	27	20	0	188	72	0
Confl. Peds. (#/hr)	5		4	4		5	4		4	4		4
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	6%	3%	9%	0%	7%	3%	0%	0%	2%	1%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.9	71.1	71.1	69.1	66.3	66.3	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.65	0.59	0.59	0.58	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	291	2983	844	153	2678	832	236	400		325	398	
v/s Ratio Prot	c0.02	c0.33		0.00	0.24			0.01				0.04
v/s Ratio Perm	0.20		0.01	0.05		0.05	0.03			c0.14		
v/c Ratio	0.33	0.55	0.03	0.08	0.43	0.09	0.11	0.05		0.58	0.18	
Uniform Delay, d ₁	9.0	14.8	10.1	11.7	15.8	12.7	34.9	34.3		39.6	35.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	0.7	0.7	0.1	0.2	0.5	0.2	1.0	0.2		7.3	1.0	
Delay (s)	9.7	15.5	10.2	11.9	16.3	12.9	35.9	34.6		46.9	36.5	
Level of Service	A	B	B	B	B	B	D	C		D	D	
Approach Delay (s/veh)		15.1			15.9			35.0			41.5	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			18.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			16.3		
Intersection Capacity Utilization			78.7%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

Queues

2: Sixth Line & Dundas St E

Future Total (2038 Diversions+Opt)

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	87	1524	191	115	954	208	189	210	253	255	101
Future Volume (vph)	87	1524	191	115	954	208	189	210	253	255	101
Lane Group Flow (vph)	88	1539	193	116	1087	210	191	212	256	258	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	31.0	31.0	14.0	31.0	11.5	37.0	37.0	11.5	37.0	37.0
Total Split (s)	14.0	64.0	64.0	14.0	64.0	12.0	50.0	50.0	12.0	50.0	50.0
Total Split (%)	10.0%	45.7%	45.7%	10.0%	45.7%	8.6%	35.7%	35.7%	8.6%	35.7%	35.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.41	0.73	0.26	0.79	0.55	0.58	0.33	0.37	0.60	0.45	0.19
Control Delay (s/veh)	23.5	37.0	6.5	60.9	31.7	37.0	38.8	12.9	37.9	41.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.5	37.0	6.5	60.9	31.7	37.0	38.8	12.9	37.9	41.6	7.0
Queue Length 50th (m)	13.5	138.4	4.9	18.1	90.4	41.8	43.9	12.4	51.6	62.3	0.0
Queue Length 95th (m)	23.7	157.3	20.7	#52.9	106.3	63.0	66.6	35.0	75.4	90.9	14.0
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	218	2106	742	147	1977	363	574	576	425	568	544
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.73	0.26	0.79	0.55	0.58	0.33	0.37	0.60	0.45	0.19

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 36 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

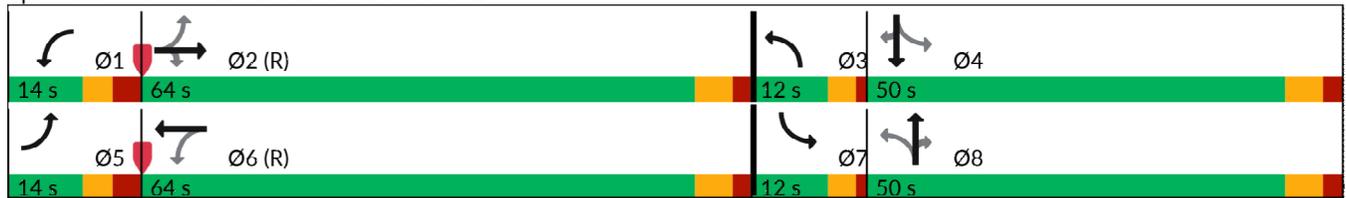
Natural Cycle: 95

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis
2: Sixth Line & Dundas St E

Future Total (2038 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (vph)	87	1524	191	115	954	122	208	189	210	253	255	101
Future Volume (vph)	87	1524	191	115	954	122	208	189	210	253	255	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Fr	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1630	5085	1559	1678	4727		1676	1827	1497	1702	1810	1511
Flt Permitted	0.18	1.00	1.00	0.07	1.00		0.46	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	304	5085	1559	126	4727		816	1827	1497	1002	1810	1511
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	88	1539	193	116	964	123	210	191	212	256	258	102
RTOR Reduction (vph)	0	0	97	0	12	0	0	0	106	0	0	70
Lane Group Flow (vph)	88	1539	96	116	1075	0	210	191	106	256	258	32
Confl. Peds. (#/hr)	8		1	1		8	3		10	10		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	7%	2%	1%	4%	8%	4%	4%	4%	4%	2%	5%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	65.8	58.0	58.0	66.2	58.2		52.0	44.0	44.0	52.0	44.0	44.0
Effective Green, g (s)	65.8	58.0	58.0	66.2	58.2		52.0	44.0	44.0	52.0	44.0	44.0
Actuated g/C Ratio	0.47	0.41	0.41	0.47	0.42		0.37	0.31	0.31	0.37	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	216	2106	645	148	1965		352	574	470	412	568	474
v/s Ratio Prot	0.02	0.30		c0.04	0.23		0.03	0.10		c0.04	0.14	
v/s Ratio Perm	0.17		0.06	c0.33			0.19		0.07	c0.20		0.02
v/c Ratio	0.41	0.73	0.15	0.78	0.55		0.60	0.33	0.23	0.62	0.45	0.07
Uniform Delay, d1	22.1	34.4	25.6	27.1	30.9		35.3	36.8	35.4	35.5	38.4	33.6
Progression Factor	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	1.3	2.3	0.5	23.2	1.1		2.7	1.6	1.1	2.9	2.6	0.3
Delay (s)	23.3	36.7	26.1	50.3	32.0		38.1	38.3	36.6	38.5	41.0	33.9
Level of Service	C	D	C	D	C		D	D	D	D	D	C
Approach Delay (s/veh)		34.9			33.8			37.6			38.8	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			35.6			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			94.0%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	41	2	99	29	12	6	66	293	10	4	422	32
Future Vol, veh/h	41	2	99	29	12	6	66	293	10	4	422	32
Conflicting Peds, #/hr	2	0	0	0	0	2	7	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	4	0	0	0	0	0	0	5	0	0	5	0
Mvmt Flow	48	2	115	34	14	7	77	341	12	5	491	37

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	861	1034	271	758	1046	179	535	0	0	353	0	0
Stage 1	527	527	-	501	501	-	-	-	-	-	-	-
Stage 2	334	507	-	257	545	-	-	-	-	-	-	-
Critical Hdwy	7.58	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	246	234	733	300	230	839	1043	-	-	1217	-	-
Stage 1	497	532	-	526	546	-	-	-	-	-	-	-
Stage 2	648	543	-	731	522	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	216	214	729	235	210	838	1037	-	-	1217	-	-
Mov Cap-2 Maneuver	216	214	-	235	210	-	-	-	-	-	-	-
Stage 1	457	526	-	487	506	-	-	-	-	-	-	-
Stage 2	578	503	-	609	516	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Ctrl Dly, s/v	18.8		23.4			1.6			0.1		
HCM LOS	C		C								

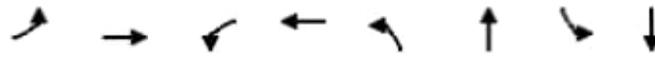
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1037	-	-	424	250	1217	-	-
HCM Lane V/C Ratio	0.074	-	-	0.389	0.219	0.004	-	-
HCM Ctrl Dly (s/v)	8.7	-	-	18.8	23.4	8	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q (veh)	0.2	-	-	1.8	0.8	0	-	-

Queues

Future Total (2038 Diversions+Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	105	69	27	66	10	232	98	276
Future Volume (vph)	105	69	27	66	10	232	98	276
Lane Group Flow (vph)	125	236	32	96	12	387	117	391
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.0	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	14.0	47.0	14.0	47.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	14.0%	47.0%	14.0%	47.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	None	C-Max	None	C-Max
v/c Ratio	0.31	0.41	0.11	0.17	0.02	0.27	0.22	0.22
Control Delay (s/veh)	28.0	17.1	25.0	22.1	9.7	15.9	11.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.0	17.1	25.0	22.1	9.7	15.9	11.1	12.8
Queue Length 50th (m)	19.4	21.8	5.0	12.7	1.0	21.6	10.7	19.5
Queue Length 95th (m)	32.7	39.9	12.1	23.5	3.3	30.5	17.9	33.2
Internal Link Dist (m)		84.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	402	582	285	580	598	1417	548	1765
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.41	0.11	0.17	0.02	0.27	0.21	0.22

Intersection Summary

Cycle Length: 100

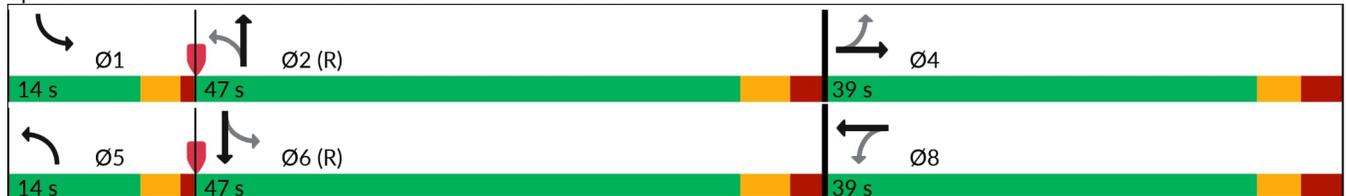
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Future Total (2038 Diversions+Opt)
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	69	129	27	66	14	10	232	93	98	276	52
Future Volume (vph)	105	69	129	27	66	14	10	232	93	98	276	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.90		1.00	0.97		1.00	0.96		1.00	0.98	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1579		1539	1757		1744	3252		1675	3328	
Fl _t Permitted	0.69	1.00		0.54	1.00		0.52	1.00		0.46	1.00	
Satd. Flow (perm)	1234	1579		877	1757		956	3252		817	3328	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	125	82	154	32	79	17	12	276	111	117	329	62
RTOR Reduction (vph)	0	67	0	0	7	0	0	42	0	0	13	0
Lane Group Flow (vph)	125	169	0	32	89	0	12	345	0	117	378	0
Confl. Peds. (#/hr)	5		5	5		5	1		3	3		1
Heavy Vehicles (%)	3%	10%	6%	13%	6%	0%	0%	4%	9%	4%	6%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Effective Green, g (s)	32.6	32.6		32.6	32.6		43.7	42.3		54.9	49.5	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.44	0.42		0.55	0.50	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	402	514		285	572		428	1375		522	1647	
v/s Ratio Prot		c0.11			0.05		0.00	c0.11		c0.02	0.11	
v/s Ratio Perm	0.10			0.04			0.01			0.10		
v/c Ratio	0.31	0.33		0.11	0.15		0.03	0.25		0.22	0.23	
Uniform Delay, d ₁	25.3	25.4		23.6	23.9		16.0	18.6		11.1	14.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	2.0	1.7		0.8	0.6		0.0	0.4		0.2	0.3	
Delay (s)	27.3	27.1		24.4	24.5		16.0	19.1		11.3	14.7	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s/veh)		27.2			24.5			19.0			13.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			19.8				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)				16.5	
Intersection Capacity Utilization			75.4%				ICU Level of Service				D	
Analysis Period (min)			15									
c	Critical Lane Group											

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	5	85	127	12	6	13
Future Vol, veh/h	5	85	127	12	6	13
Conflicting Peds, #/hr	10	0	0	10	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	64	64	64	64	64	64
Heavy Vehicles, %	0	4	0	8	0	0
Mvmt Flow	8	133	198	19	9	20

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	227	0	-	0	367 219
Stage 1	-	-	-	-	218 -
Stage 2	-	-	-	-	149 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1353	-	-	-	637 826
Stage 1	-	-	-	-	823 -
Stage 2	-	-	-	-	884 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1342	-	-	-	628 819
Mov Cap-2 Maneuver	-	-	-	-	628 -
Stage 1	-	-	-	-	811 -
Stage 2	-	-	-	-	884 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.4	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1342	-	-	-	747
HCM Lane V/C Ratio	0.006	-	-	-	0.04
HCM Ctrl Dly (s/v)	7.7	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	
Traffic Vol, veh/h	0	74	0	369	534	16
Future Vol, veh/h	0	74	0	369	534	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	4	4	0
Mvmt Flow	0	86	0	429	621	19

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	320	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-
Pot Cap-1 Maneuver	0	682	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	682	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 682	-	-
HCM Lane V/C Ratio	- 0.126	-	-
HCM Ctrl Dly (s/v)	- 11	-	-
HCM Lane LOS	- B	-	-
HCM 95th %tile Q (veh)	- 0.4	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1831	1254	15	0	33
Future Vol, veh/h	0	1831	1254	15	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	2	7	0	0	0
Mvmt Flow	0	1868	1280	15	0	34

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	358
HCM Lane V/C Ratio	-	-	-	0.094
HCM Ctrl Dly (s/v)	-	-	-	16.1
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q (veh)	-	-	-	0.3

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	79	7	30	64	59	58
Future Vol, veh/h	79	7	30	64	59	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	92	8	35	74	69	67

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	100	0	240
Stage 1	-	-	-	-	96
Stage 2	-	-	-	-	144
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1505	-	753
Stage 1	-	-	-	-	933
Stage 2	-	-	-	-	888
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1505	-	735
Mov Cap-2 Maneuver	-	-	-	-	735
Stage 1	-	-	-	-	933
Stage 2	-	-	-	-	867

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.4	10.2
HCM LOS			B

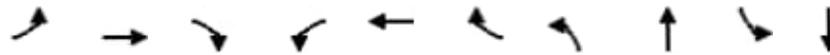
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	834	-	-	1505	-
HCM Lane V/C Ratio	0.163	-	-	0.023	-
HCM Ctrl Dly (s/v)	10.2	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q (veh)	0.6	-	-	0.1	-

Queues

Future Total (2038 Diversions+Opt)

1: Harman Gate/Preserve Dr & Dundas St W

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑↑↑	↗	↘	↑↑↑	↗	↘	↗	↘	↗
Traffic Volume (vph)	103	1560	37	26	1762	219	20	14	203	13
Future Volume (vph)	103	1560	37	26	1762	219	20	14	203	13
Lane Group Flow (vph)	108	1642	39	27	1855	231	21	30	214	128
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.5	41.1	41.1	11.0	41.1	41.1	40.2	40.2	40.3	40.3
Total Split (s)	12.0	72.0	72.0	12.0	72.0	72.0	36.0	36.0	36.0	36.0
Total Split (%)	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.9	2.9	2.9	2.9
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)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
v/c Ratio	0.60	0.55	0.04	0.13	0.66	0.24	0.07	0.07	0.65	0.26
Control Delay (s/veh)	30.5	16.2	1.2	8.2	20.4	2.3	35.6	22.1	51.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.5	16.2	1.2	8.2	20.4	2.3	35.6	22.1	51.0	9.9
Queue Length 50th (m)	8.7	95.3	0.0	2.1	116.0	0.0	4.2	3.0	48.5	2.7
Queue Length 95th (m)	28.0	110.2	2.2	5.3	133.1	11.4	11.4	11.4	77.1	18.5
Internal Link Dist (m)		434.4			531.7			233.6		111.4
Turn Bay Length (m)	135.0		115.0	115.0		115.0	35.0		40.0	
Base Capacity (vph)	184	2992	950	227	2806	963	285	416	329	489
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	0.59	0.55	0.04	0.12	0.66	0.24	0.07	0.07	0.65	0.26

Intersection Summary

Cycle Length: 120

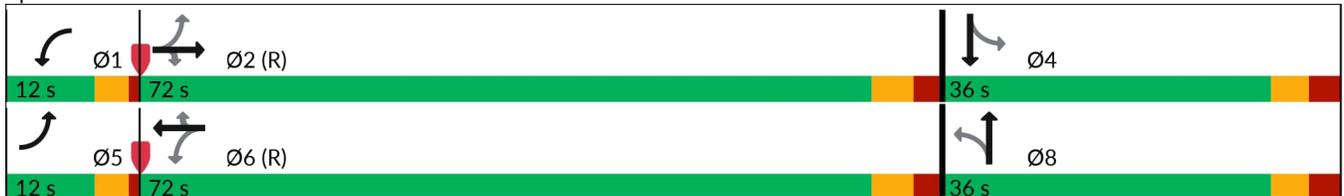
Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 1: Harman Gate/Preserve Dr & Dundas St W



HCM Signalized Intersection Capacity Analysis
 1: Harman Gate/Preserve Dr & Dundas St W

Future Total (2038 Diversions+Opt)
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	103	1560	37	26	1762	219	20	14	14	203	13	108
Future Volume (vph)	103	1560	37	26	1762	219	20	14	14	203	13	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	5036	1556	1745	5085	1557	1659	1631		1707	1626	
Flt Permitted	0.06	1.00	1.00	0.11	1.00	1.00	0.66	1.00		0.74	1.00	
Satd. Flow (perm)	116	5036	1556	195	5085	1557	1151	1631		1326	1626	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	108	1642	39	27	1855	231	21	15	15	214	14	114
RTOR Reduction (vph)	0	0	16	0	0	104	0	11	0	0	86	0
Lane Group Flow (vph)	108	1642	23	27	1855	127	21	19	0	214	42	0
Confl. Peds. (#/hr)	3		3	3		3	2		1	1		2
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	5%	7%	7%	2%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	77.4	69.7	69.7	70.4	66.2	66.2	29.8	29.8		29.8	29.8	
Effective Green, g (s)	77.4	69.7	69.7	70.4	66.2	66.2	29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.65	0.58	0.58	0.59	0.55	0.55	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	6.2	6.2		6.2	6.2	
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)	179	2925	903	168	2805	858	285	405		329	403	
v/s Ratio Prot	c0.04	0.33		0.01	c0.36			0.01			0.03	
v/s Ratio Perm	0.35		0.01	0.09		0.08	0.02			c0.16		
v/c Ratio	0.60	0.56	0.03	0.16	0.66	0.15	0.07	0.05		0.65	0.10	
Uniform Delay, d1	16.1	15.6	10.7	11.6	19.0	13.1	34.5	34.3		40.4	34.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	0.8	0.1	0.5	1.2	0.4	0.5	0.2		9.6	0.5	
Delay (s)	21.7	16.4	10.7	12.0	20.2	13.5	35.0	34.5		50.0	35.3	
Level of Service	C	B	B	B	C	B	D	C		D	D	
Approach Delay (s/veh)		16.6			19.4			34.7			44.5	
Approach LOS		B			B			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			20.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.3			
Intersection Capacity Utilization			81.8%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

Queues

2: Sixth Line & Dundas St E

Future Total (2038 Diversions+Opt)

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	123	1426	200	125	1770	128	244	70	247	258	122
Future Volume (vph)	123	1426	200	125	1770	128	244	70	247	258	122
Lane Group Flow (vph)	129	1501	211	132	2102	135	257	74	260	272	128
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8		7	4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	31.0	31.0	13.0	31.0	11.0	37.0	37.0	11.0	37.0	37.0
Total Split (s)	14.0	71.0	71.0	14.0	71.0	16.0	39.0	39.0	16.0	39.0	39.0
Total Split (%)	10.0%	50.7%	50.7%	10.0%	50.7%	11.4%	27.9%	27.9%	11.4%	27.9%	27.9%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
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
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	Max	None	Max	Max
v/c Ratio	0.87	0.64	0.25	0.74	0.90	0.44	0.57	0.17	0.81	0.60	0.27
Control Delay (s/veh)	74.2	30.2	3.9	42.9	40.9	35.7	53.2	4.1	56.2	53.7	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	30.2	3.9	42.9	40.9	35.7	53.2	4.1	56.2	53.7	8.4
Queue Length 50th (m)	21.9	122.7	1.3	17.6	204.7	27.2	66.7	0.0	56.9	71.9	0.0
Queue Length 95th (m)	#62.0	139.7	15.8	#45.4	228.5	44.2	97.0	7.0	#97.3	103.9	17.1
Internal Link Dist (m)		122.2			1210.7		440.8			89.7	
Turn Bay Length (m)	107.0		80.0	120.0		90.0			76.0		
Base Capacity (vph)	149	2338	829	179	2326	319	447	436	322	455	473
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.64	0.25	0.74	0.90	0.42	0.57	0.17	0.81	0.60	0.27

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 71 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Sixth Line & Dundas St E



HCM Signalized Intersection Capacity Analysis
2: Sixth Line & Dundas St E

Future Total (2038 Diversions+Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (vph)	123	1426	200	125	1770	227	128	244	70	247	258	122
Future Volume (vph)	123	1426	200	125	1770	227	128	244	70	247	258	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1711	5036	1553	1728	4986		1726	1900	1526	1726	1881	1554
Fl _t Permitted	0.06	1.00	1.00	0.09	1.00		0.38	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	111	5036	1553	172	4986		685	1900	1526	681	1881	1554
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	129	1501	211	132	1863	239	135	257	74	260	272	128
RTOR Reduction (vph)	0	0	109	0	12	0	0	0	57	0	0	97
Lane Group Flow (vph)	129	1501	102	132	2090	0	135	257	17	260	272	31
Confl. Peds. (#/hr)	6		3	3		6	4		3	3		4
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	3%	1%	1%	2%	2%	1%	0%	3%	1%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	73.0	65.0	65.0	73.0	65.0		44.1	33.0	33.0	45.9	33.9	33.9
Effective Green, g (s)	73.0	65.0	65.0	73.0	65.0		44.1	33.0	33.0	45.9	33.9	33.9
Actuated g/C Ratio	0.52	0.46	0.46	0.52	0.46		0.32	0.24	0.24	0.33	0.24	0.24
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
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
Lane Grp Cap (vph)	149	2338	721	178	2314		298	447	359	312	455	376
v/s Ratio Prot	c0.05	0.30		0.04	c0.42		0.04	0.14		c0.07	0.14	
v/s Ratio Perm	0.40		0.07	0.34			0.11		0.01	c0.20		0.02
v/c Ratio	0.87	0.64	0.14	0.74	0.90		0.45	0.57	0.05	0.83	0.60	0.08
Uniform Delay, d ₁	34.2	28.6	21.5	22.1	34.6		36.2	47.3	41.4	41.5	47.0	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	37.4	1.4	0.4	15.3	6.3		1.1	5.3	0.3	17.1	5.7	0.4
Delay (s)	71.6	30.0	21.9	37.4	40.9		37.3	52.6	41.6	58.6	52.7	41.5
Level of Service	E	C	C	D	D		D	D	D	E	D	D
Approach Delay (s/veh)		32.0			40.7			46.4			52.8	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			39.7			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			104.0%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	40	5	56	17	7	3	144	383	28	10	472	26
Future Vol, veh/h	40	5	56	17	7	3	144	383	28	10	472	26
Conflicting Peds, #/hr	3	0	1	1	0	3	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	25	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	25
Mvmt Flow	42	5	58	18	7	3	150	399	29	10	492	27

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1034	1256	263	984	1255	217	521	0	0	428	0	0
Stage 1	528	528	-	714	714	-	-	-	-	-	-	-
Stage 2	506	728	-	270	541	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	189	173	742	206	173	794	1056	-	-	1142	-	-
Stage 1	507	531	-	393	438	-	-	-	-	-	-	-
Stage 2	522	432	-	718	524	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	159	146	740	163	146	792	1054	-	-	1142	-	-
Mov Cap-2 Maneuver	159	146	-	163	146	-	-	-	-	-	-	-
Stage 1	434	524	-	337	376	-	-	-	-	-	-	-
Stage 2	436	371	-	646	517	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	25.5		29.8		2.3		0.2	
HCM LOS	D		D					

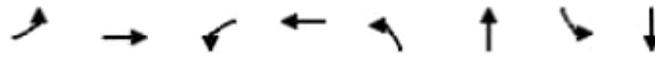
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1054	-	-	279	173	1142	-	-
HCM Lane V/C Ratio	0.142	-	-	0.377	0.163	0.009	-	-
HCM Ctrl Dly (s/v)	9	-	-	25.5	29.8	8.2	0	-
HCM Lane LOS	A	-	-	D	D	A	A	-
HCM 95th %tile Q (veh)	0.5	-	-	1.7	0.6	0	-	-

Queues

Future Total (2038 Diversions+Opt)

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

PM Peak Hour

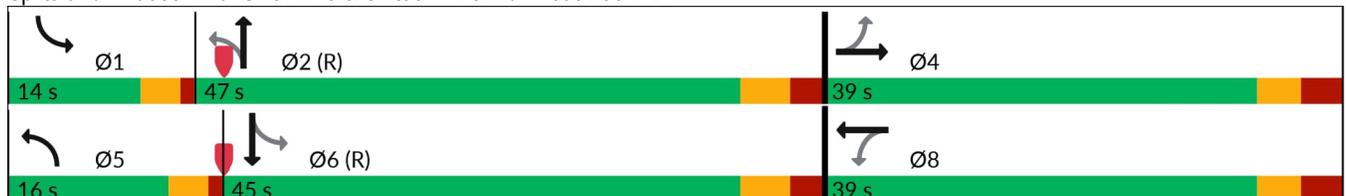


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	101	59	19	56	16	272	102	277
Future Volume (vph)	101	59	19	56	16	272	102	277
Lane Group Flow (vph)	106	190	20	73	17	417	107	355
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	20.0	20.0	20.0	20.0	7.0	35.0	7.0	35.0
Minimum Split (s)	38.4	38.4	38.4	38.4	11.5	41.1	11.5	41.1
Total Split (s)	39.0	39.0	39.0	39.0	16.0	47.0	14.0	45.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	16.0%	47.0%	14.0%	45.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.0	3.7	3.0	3.7
All-Red Time (s)	3.1	3.1	3.1	3.1	1.0	2.4	1.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	4.0	6.1	4.0	6.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.41	0.45	0.10	0.20	0.02	0.22	0.16	0.16
Control Delay (s/veh)	40.4	19.1	34.4	29.6	4.9	9.0	5.6	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.4	19.1	34.4	29.6	4.9	9.0	5.6	7.8
Queue Length 50th (m)	19.0	14.0	3.4	10.5	0.9	16.2	6.3	11.2
Queue Length 95th (m)	35.9	35.2	10.1	23.4	2.9	25.4	11.5	23.2
Internal Link Dist (m)		98.3		207.1		202.5		1327.3
Turn Bay Length (m)	17.0		54.0		60.0		75.0	
Base Capacity (vph)	423	622	323	581	775	1914	682	2200
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.31	0.06	0.13	0.02	0.22	0.16	0.16

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated

Splits and Phases: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr



HCM Signalized Intersection Capacity Analysis
5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Future Total (2038 Diversions+Opt)
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	59	122	19	56	13	16	272	124	102	277	60
Future Volume (vph)	101	59	122	19	56	13	16	272	124	102	277	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.90		1.00	0.97		1.00	0.95		1.00	0.97	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1739	1681		1742	1756		1742	3361		1728	3470	
Fl _t Permitted	0.71	1.00		0.54	1.00		0.54	1.00		0.47	1.00	
Satd. Flow (perm)	1299	1681		992	1756		989	3361		861	3470	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	106	62	128	20	59	14	17	286	131	107	292	63
RTOR Reduction (vph)	0	88	0	0	10	0	0	40	0	0	12	0
Lane Group Flow (vph)	106	102	0	20	63	0	17	377	0	107	343	0
Confl. Peds. (#/hr)	4		2	2		4	2					2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	4%	8%	0%	2%	1%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Effective Green, g (s)	20.0	20.0		20.0	20.0		58.6	55.8		67.5	60.7	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.59	0.56		0.68	0.61	
Clearance Time (s)	6.4	6.4		6.4	6.4		4.0	6.1		4.0	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	336		198	351		600	1875		647	2106	
v/s Ratio Prot		0.06			0.04		0.00	c0.11		c0.01	0.10	
v/s Ratio Perm	c0.08			0.02			0.02			0.10		
v/c Ratio	0.41	0.30		0.10	0.18		0.03	0.20		0.17	0.16	
Uniform Delay, d ₁	34.9	34.1		32.7	33.2		8.7	11.0		5.7	8.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	1.1	0.5		0.2	0.2		0.0	0.2		0.1	0.2	
Delay (s)	35.9	34.6		32.9	33.4		8.7	11.2		5.8	8.7	
Level of Service	D	C		C	C		A	B		A	A	
Approach Delay (s/veh)		35.1			33.3			11.1			8.1	
Approach LOS		D			C			B			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			17.1									B
HCM 2000 Volume to Capacity ratio			0.25									
Actuated Cycle Length (s)			100.0							16.5		
Intersection Capacity Utilization			66.7%									C
Analysis Period (min)			15									

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	3	79	116	11	6	1
Future Vol, veh/h	3	79	116	11	6	1
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	2	3	0	0	100
Mvmt Flow	4	100	147	14	8	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	168	0	-	0	269
Stage 1	-	-	-	-	161
Stage 2	-	-	-	-	108
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1422	-	-	-	725
Stage 1	-	-	-	-	873
Stage 2	-	-	-	-	921
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1414	-	-	-	719
Mov Cap-2 Maneuver	-	-	-	-	719
Stage 1	-	-	-	-	866
Stage 2	-	-	-	-	921

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.3	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1414	-	-	-	713
HCM Lane V/C Ratio	0.003	-	-	-	0.012
HCM Ctrl Dly (s/v)	7.6	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	
Traffic Vol, veh/h	0	41	0	554	657	42
Future Vol, veh/h	0	41	0	554	657	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	43	0	577	684	44

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	364	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-
Pot Cap-1 Maneuver	0	639	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	639	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 639	-	-
HCM Lane V/C Ratio	- 0.067	-	-
HCM Ctrl Dly (s/v)	- 11	-	-
HCM Lane LOS	- B	-	-
HCM 95th %tile Q (veh)	- 0.2	-	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	1808	1988	36	0	19
Future Vol, veh/h	0	1808	1988	36	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	1903	2093	38	0	20

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1066
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 7.1
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.9
Pot Cap-1 Maneuver	0	-	- 0 190
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 190
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	26.2
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	190
HCM Lane V/C Ratio	-	-	-	0.105
HCM Ctrl Dly (s/v)	-	-	-	26.2
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q (veh)	-	-	-	0.3

Intersection						
Int Delay, s/veh	4.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1			4	3	
Traffic Vol, veh/h	52	19	76	84	33	33
Future Vol, veh/h	52	19	76	84	33	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	4	0	0
Mvmt Flow	54	20	79	88	34	34

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	74	0	310 64
Stage 1	-	-	-	-	64 -
Stage 2	-	-	-	-	246 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1538	-	687 1006
Stage 1	-	-	-	-	964 -
Stage 2	-	-	-	-	800 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1538	-	650 1006
Mov Cap-2 Maneuver	-	-	-	-	650 -
Stage 1	-	-	-	-	964 -
Stage 2	-	-	-	-	757 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	3.5	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	790	-	-	1538	-
HCM Lane V/C Ratio	0.087	-	-	0.051	-
HCM Ctrl Dly (s/v)	10	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q (veh)	0.3	-	-	0.2	-

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:30	7:30	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5304	5170	5248	5383	5253	5269
Vehs Exited	5362	5189	5288	5423	5307	5313
Starting Vehs	294	263	301	297	287	286
Ending Vehs	236	244	261	257	233	239
Travel Distance (km)	9874	9557	9692	9939	9852	9783
Travel Time (hr)	266.0	255.1	259.9	267.8	270.7	263.9
Total Delay (hr)	73.6	68.6	70.8	73.9	78.0	73.0
Total Stops	5413	5331	5404	5582	5344	5417
Fuel Used (l)	767.0	742.6	753.8	777.4	773.1	762.8

Interval #0 Information Seeding

Start Time	7:30
End Time	8:00
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5304	5170	5248	5383	5253	5269
Vehs Exited	5362	5189	5288	5423	5307	5313
Starting Vehs	294	263	301	297	287	286
Ending Vehs	236	244	261	257	233	239
Travel Distance (km)	9874	9557	9692	9939	9852	9783
Travel Time (hr)	266.0	255.1	259.9	267.8	270.7	263.9
Total Delay (hr)	73.6	68.6	70.8	73.9	78.0	73.0
Total Stops	5413	5331	5404	5582	5344	5417
Fuel Used (l)	767.0	742.6	753.8	777.4	773.1	762.8

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail/Private Access Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	33.1	94.9	82.7	62.1	15.4	13.6	84.3	84.8	91.0	23.7	24.1	18.0
Average Queue (m)	12.8	54.6	45.7	32.1	3.3	2.4	39.3	40.3	40.6	7.8	6.3	5.1
95th Queue (m)	25.2	92.8	81.0	60.2	11.6	8.6	82.1	83.2	84.8	18.9	18.4	13.4
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)												0
Queuing Penalty (veh)												0

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	63.6	105.0
Average Queue (m)	39.2	41.3
95th Queue (m)	69.4	101.9
Link Distance (m)		113.5
Upstream Blk Time (%)		6
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	22	7
Queuing Penalty (veh)	44	12

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	56.8	119.0	122.5	119.0	69.9	51.2	87.5	89.8	102.1	101.2	73.3	49.5
Average Queue (m)	17.1	78.6	80.7	78.3	16.7	21.8	56.4	56.2	54.4	42.5	33.7	22.0
95th Queue (m)	38.6	120.4	118.9	116.3	40.6	44.2	79.1	81.6	84.4	84.2	61.8	43.6
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)		0	0	0	0							
Queuing Penalty (veh)		1	1	1	0							
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)		2		8						3	0	
Queuing Penalty (veh)		2		15						6	0	

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	75.9	91.0	26.9
Average Queue (m)	49.1	50.0	8.6
95th Queue (m)	78.2	82.9	18.4
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		2	
Queuing Penalty (veh)		5	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	1	2	
Queuing Penalty (veh)	2	5	

Intersection: 4: Sixth Line & Kaitting Trail/Private Access

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	LT	TR
Maximum Queue (m)	29.8	19.6	15.6	1.2	3.1	16.4	5.3
Average Queue (m)	13.5	8.9	4.3	0.0	0.1	0.6	0.2
95th Queue (m)	23.2	17.0	11.8	0.8	1.3	6.7	2.7
Link Distance (m)	38.2	67.8		45.8	45.8	205.5	205.5
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (m)			25.0				
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	48.7	63.0	22.5	31.7	13.2	46.7	50.1	30.9	47.4	33.9
Average Queue (m)	18.5	25.3	5.7	12.0	1.9	15.3	21.5	12.8	20.6	12.2
95th Queue (m)	38.4	48.9	17.3	25.9	8.7	32.4	40.2	26.1	39.0	27.3
Link Distance (m)		93.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)		0								
Queuing Penalty (veh)		0								
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	12	18				0				
Queuing Penalty (veh)	24	19				0				

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	1.8	11.3
Average Queue (m)	0.1	3.5
95th Queue (m)	1.3	10.4
Link Distance (m)	529.2	103.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Sixth Line & Site Access

Movement	EB	SB
Directions Served	R	T
Maximum Queue (m)	18.4	32.0
Average Queue (m)	9.5	2.4
95th Queue (m)	15.6	15.4
Link Distance (m)	16.8	45.8
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB	EB	EB	SB
Directions Served	T	T	T	R
Maximum Queue (m)	7.4	18.8	5.9	15.7
Average Queue (m)	0.5	0.6	0.2	6.1
95th Queue (m)	4.7	6.5	2.5	13.7
Link Distance (m)	535.3	535.3	535.3	61.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	11.8	16.9
Average Queue (m)	0.9	10.4
95th Queue (m)	5.7	16.2
Link Distance (m)	38.2	33.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 137

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL SBTL	EBL	WBTL	NBTL	
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	93.4	31.0	7.6	87.0	31.0
g/C Ratio	0.70	0.23	0.04	0.65	0.23
Cycles Skipped (%)	11	10	40	11	10
Cycles @ Minimum (%)	0	0	20	0	0
Cycles Maxed Out (%)	89	90	30	89	90
Cycles with Peds (%)	11	10	0	14	7

Controller Summary

Average Cycle Length (s): 120.0
Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL	NBL SBTL	EBL	WBTL	SBL	NBTL	
Maximum Green (s)	58.0	8.0	44.0	8.0	58.0	8.0	44.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	59.4	8.0	44.0	7.7	61.0	8.0	44.0
g/C Ratio	0.42	0.06	0.31	0.05	0.44	0.06	0.31
Cycles Skipped (%)	0	0	0	16	0	0	0
Cycles @ Minimum (%)	0	4	0	20	0	0	0
Cycles Maxed Out (%)	100	96	100	48	100	96	100
Cycles with Peds (%)	0	0	4	0	20	0	23

Controller Summary

Average Cycle Length (s): 140.0
Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	10.0	40.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	46.6	32.6	7.3	53.6	32.6
g/C Ratio	0.47	0.33	0.01	0.54	0.33
Cycles Skipped (%)	0	0	89	0	0
Cycles @ Minimum (%)	0	0	9	0	0
Cycles Maxed Out (%)	100	100	0	100	100
Cycles with Peds (%)	9	11	0	3	8

Controller Summary

Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5760	5846	5649	5851	5782	5779
Vehs Exited	5782	5861	5690	5865	5800	5799
Starting Vehs	384	325	402	363	350	361
Ending Vehs	362	310	361	349	332	340
Travel Distance (km)	11173	11336	10955	11291	11252	11201
Travel Time (hr)	511.0	481.5	582.0	528.9	508.9	522.5
Total Delay (hr)	300.2	268.4	375.7	315.5	296.8	311.3
Total Stops	5846	6346	5816	6119	5918	6009
Fuel Used (l)	1043.8	1029.7	1090.6	1069.4	1050.3	1056.8

Interval #0 Information Seeding

Start Time	4:00
End Time	4:30
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5760	5846	5649	5851	5782	5779
Vehs Exited	5782	5861	5690	5865	5800	5799
Starting Vehs	384	325	402	363	350	361
Ending Vehs	362	310	361	349	332	340
Travel Distance (km)	11173	11336	10955	11291	11252	11201
Travel Time (hr)	511.0	481.5	582.0	528.9	508.9	522.5
Total Delay (hr)	300.2	268.4	375.7	315.5	296.8	311.3
Total Stops	5846	6346	5816	6119	5918	6009
Fuel Used (l)	1043.8	1029.7	1090.6	1069.4	1050.3	1056.8

1: Harman Gate/Preserve Dr & Dundas St W Performance by movement

2: Sixth Line & Dundas St E Performance by movement

4: Sixth Line & Kaitting Trail Performance by movement

5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr Performance by movement

6: Kaitting Trail & Janice Dr Performance by movement

7: Sixth Line & Site Access Performance by movement

8: Dundas St W/Dundas St E & Dundas St Access Performance by movement

9: Kaitting Trail Access & Kaitting Trail Performance by movement

Total Network Performance

Arterial Level of Service: EB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Harman Gate	1	12.8	45.3	0.5	37	36	13.5
Dundas St Access	8	4.0	43.3	0.6	46	46	4.0
Total		16.8	88.6	1.0	41	41	17.5

Arterial Level of Service: EB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Harman Gate	37	12.9	38	11.6	37	12.8	36
Dundas St Access	46	3.8	46	3.9	46	4.3	46
Total	41	16.7	42	15.6	41	17.1	41

Arterial Level of Service: WB Dundas St W

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed	Run 1 Speed	Run 1 Delay
Preserve Dr	1	19.1	48.2	0.6	42	43	16.9
Total		19.1	48.2	0.6	42	43	16.9

Arterial Level of Service: WB Dundas St W

Cross Street	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed	Run 4 Delay	Run 5 Speed
Preserve Dr	40	21.0	42	18.8	41	19.8	42
Total	40	21.0	42	18.8	41	19.8	42

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	36.2	112.2	100.5	71.1	17.2	17.5	138.6	143.8	134.6	81.1	22.3	21.2
Average Queue (m)	15.2	57.9	48.8	34.6	3.2	4.9	49.5	52.3	50.2	13.1	4.7	3.9
95th Queue (m)	29.5	98.2	85.9	64.1	12.2	13.4	120.3	124.0	116.0	39.7	14.7	12.5
Link Distance (m)		446.6	446.6	446.6			535.3	535.3	535.3			235.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	135.0				115.0	115.0				115.0	35.0	
Storage Blk Time (%)		0					1		1			
Queuing Penalty (veh)		0					0		3			

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (m)	64.9	109.3
Average Queue (m)	44.2	32.0
95th Queue (m)	68.3	83.2
Link Distance (m)		113.5
Upstream Blk Time (%)		2
Queuing Penalty (veh)		0
Storage Bay Dist (m)	40.0	
Storage Blk Time (%)	21	2
Queuing Penalty (veh)	25	4

Intersection: 2: Sixth Line & Dundas St E

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	T	R
Maximum Queue (m)	77.0	113.6	118.9	113.0	47.7	105.0	178.3	177.6	186.3	46.8	86.4	32.4
Average Queue (m)	33.9	68.8	70.7	67.9	14.9	23.2	113.8	122.6	125.8	22.9	47.8	6.2
95th Queue (m)	63.1	109.8	110.8	108.5	33.2	61.3	163.0	171.5	177.2	41.6	80.1	19.1
Link Distance (m)		123.4	123.4	123.4			1218.8	1218.8	1218.8		442.8	442.8
Upstream Blk Time (%)	0	0	0		0							
Queuing Penalty (veh)	0	0	1		0							
Storage Bay Dist (m)	107.0				80.0	120.0				90.0		
Storage Blk Time (%)	0	1		7			6					0
Queuing Penalty (veh)	0	1		13			7					0

Intersection: 2: Sixth Line & Dundas St E

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (m)	75.9	94.1	32.6
Average Queue (m)	48.1	50.8	12.4
95th Queue (m)	79.7	88.8	25.8
Link Distance (m)		86.4	86.4
Upstream Blk Time (%)		4	
Queuing Penalty (veh)		13	
Storage Bay Dist (m)	76.0		
Storage Blk Time (%)	3	4	
Queuing Penalty (veh)	9	10	

Intersection: 4: Sixth Line & Kaitting Trail

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	LT	TR
Maximum Queue (m)	23.9	10.3	21.2	1.4	3.8	16.2	3.0
Average Queue (m)	11.2	5.7	7.8	0.0	0.1	1.5	0.1
95th Queue (m)	19.9	12.7	17.3	1.0	1.4	10.9	1.9
Link Distance (m)	38.1	67.8		45.8	45.8	205.5	205.5
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			25.0				
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	48.9	115.5	95.8	209.9	10.5	26.2	34.0	20.9	31.7	27.6
Average Queue (m)	46.4	107.0	26.3	127.0	1.4	3.1	6.0	7.5	3.7	2.3
95th Queue (m)	57.2	112.3	75.5	240.7	6.8	14.4	22.7	17.5	17.8	12.6
Link Distance (m)		107.3		216.3		205.5	205.5		1339.8	1339.8
Upstream Blk Time (%)		98		19						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (m)	17.0		54.0		60.0			75.0		
Storage Blk Time (%)	96	39	4	75						
Queuing Penalty (veh)	174	39	3	14						

Intersection: 6: Kaitting Trail & Janice Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	1.8	13.1
Average Queue (m)	0.1	1.9
95th Queue (m)	1.3	8.1
Link Distance (m)	529.2	103.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Sixth Line & Site Access

Movement	EB	SB	SB
Directions Served	R	T	TR
Maximum Queue (m)	15.8	28.0	7.3
Average Queue (m)	7.5	3.3	0.2
95th Queue (m)	14.7	18.9	3.9
Link Distance (m)	16.8	45.8	45.8
Upstream Blk Time (%)	2	1	
Queuing Penalty (veh)	0	1	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Dundas St W/Dundas St E & Dundas St Access

Movement	EB	EB	EB	WB	SB
Directions Served	T	T	T	TR	R
Maximum Queue (m)	7.5	10.0	3.6	2.1	13.0
Average Queue (m)	0.3	0.3	0.2	0.1	4.3
95th Queue (m)	5.3	4.4	2.6	1.5	12.0
Link Distance (m)	535.3	535.3	535.3	123.4	61.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Kaitting Trail Access & Kaitting Trail

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	14.6	16.9
Average Queue (m)	1.7	9.1
95th Queue (m)	8.3	15.3
Link Distance (m)	38.1	44.5
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 319

Intersection: 1: Harman Gate/Preserve Dr & Dundas St W

Phase	2	4	5	6	8
Movement(s) Served	EBTL SBTL	EBL	WBTL	NBTL	
Maximum Green (s)	65.9	29.8	8.0	65.9	29.8
Minimum Green (s)	20.0	10.0	7.0	20.0	10.0
Recall	C-Max	Max	None	C-Max	Max
Avg. Green (s)	83.7	30.1	7.9	78.0	30.1
g/C Ratio	0.65	0.23	0.05	0.60	0.23
Cycles Skipped (%)	7	7	31	7	7
Cycles @ Minimum (%)	0	0	24	0	0
Cycles Maxed Out (%)	93	93	38	93	93
Cycles with Peds (%)	7	7	0	7	3

Controller Summary

Average Cycle Length (s): 120.0
 Number of Complete Cycles : 29

Intersection: 2: Sixth Line & Dundas St E

Phase	2	3	4	5	6	7	8
Movement(s) Served	EBTL	NBL SBTL	EBL	WBTL	SBL	NBTL	
Maximum Green (s)	65.0	12.0	33.0	8.0	65.0	12.0	33.0
Minimum Green (s)	24.0	7.0	7.0	7.0	24.0	7.0	7.0
Recall	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	67.2	11.7	33.8	8.0	65.5	11.9	33.1
g/C Ratio	0.48	0.08	0.24	0.06	0.47	0.09	0.24
Cycles Skipped (%)	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	4	0	0	0
Cycles Maxed Out (%)	100	75	100	88	100	96	100
Cycles with Peds (%)	8	0	8	0	19	0	8

Controller Summary

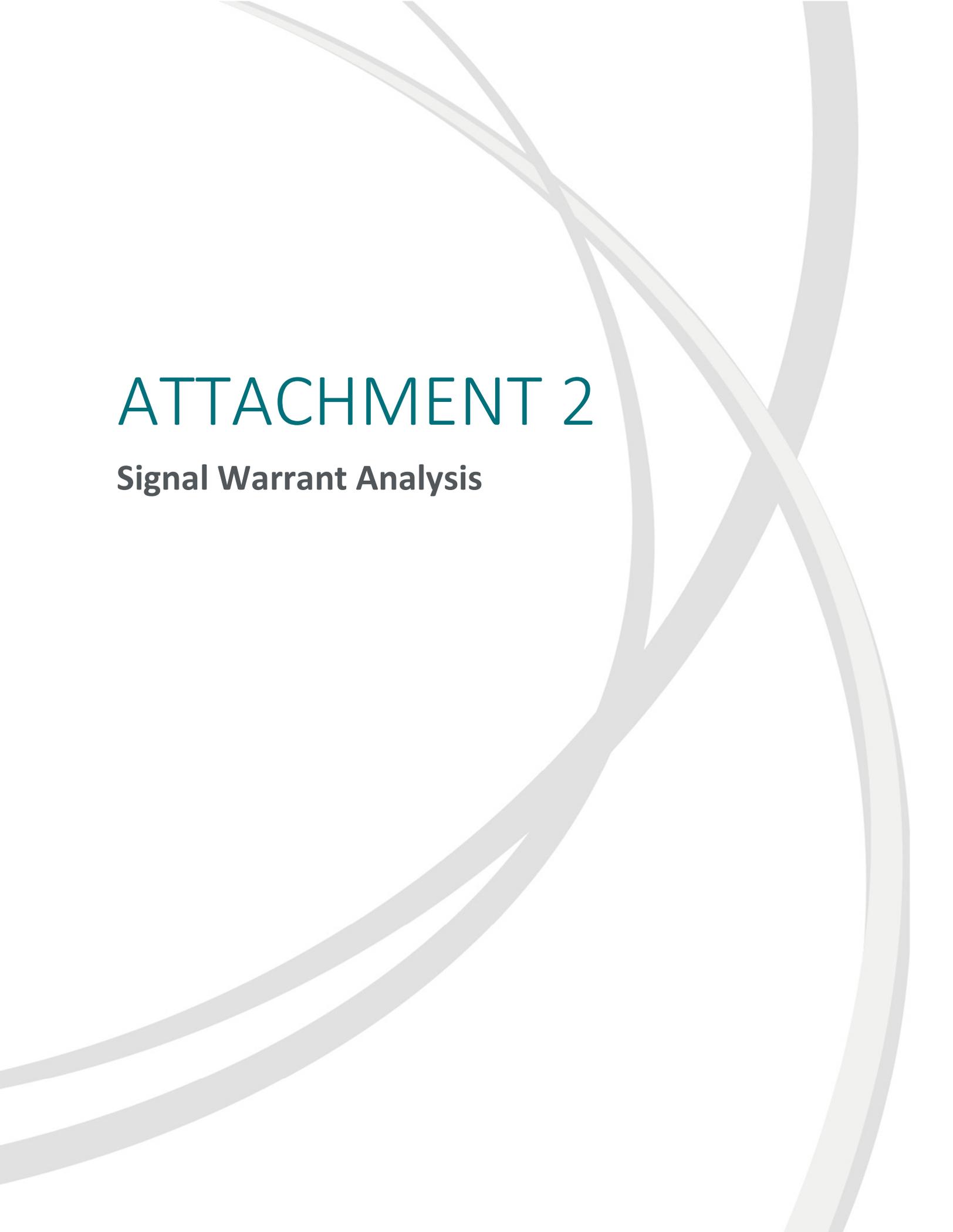
Average Cycle Length (s): 140.0
 Number of Complete Cycles : 25

Intersection: 5: Sixth Line & Sixteen Mile Dr/Wheat Boom Dr

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	40.9	32.6	12.0	38.9	32.6
Minimum Green (s)	35.0	20.0	7.0	35.0	20.0
Recall	C-Max	None	None	C-Max	None
Avg. Green (s)	414.7	35.8	11.4	719.1	35.8
g/C Ratio	0.88	0.05	0.00	0.87	0.05
Cycles Skipped (%)	79	85	97	88	85
Cycles @ Minimum (%)	0	0	3	0	0
Cycles Maxed Out (%)	21	0	0	12	0
Cycles with Peds (%)	0	3	0	3	12

Controller Summary

Average Cycle Length (s): 100.0
 Number of Complete Cycles : 35



ATTACHMENT 2

Signal Warrant Analysis

M.T.O. MINIMUM REQUIREMENTS FOR INSTALLATION OF TRAFFIC SIGNAL

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

INTERSECTION: Sixth Line at Kaitting Trail
 HORIZON / DESCRIPTION: Future Total (2038 w Diversions)

Number of lanes on main road: ≥2
 Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
 Number of approach legs: 4
 Number of existing roads: 2 (all approach legs exist)
 Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
 Justification 2: if both Justification 2A and 2B are 100% fulfilled.
 Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A.	Base volume requirement:	900	Value	Percent Met
	Requirement after 120% expansion:	1080	551.75	51%
B.	Base volume requirement (minor street):	170	Value	Percent Met
	Requirement after 120% expansion:	204	79.25	39%

Justification 2: Delay to Cross Traffic

A.	Base volume requirement (major street):	900	Value	Percent Met
	Requirement after 120% expansion:	1080	472.5	44%
B.	Base volume requirement (crossing major):	75	Value	Percent Met
	Requirement after 120% expansion:	90	38	42%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	66	144	210	52.5
NBT	293	383	676	169
NBR	10	28	38	9.5
SBL	4	10	14	3.5
SBT	422	472	894	223.5
SBR	32	26	58	14.5
EBL	41	40	81	20.25
EBT	2	5	7	1.75
EBR	99	56	155	38.75
WBL	29	17	46	11.5
WBT	12	7	19	4.75
WBR	6	3	9	2.25
Peds	2	4	6	1.5

Pedestrians crossing major road

