

APPENDIX D.
Transportation Analysis

Final Report

Port Credit GO Station Southeast Area (Site 12) Master Plan Study - Transportation Analysis

Prepared for Metrolinx
by IBI Group

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1 Introduction

Transportation analysis was completed as part of the Port Credit GO Station Southeast Area (Site 12) Master Plan Study (herein referred to as the 'Master Plan Study'). This report documents the findings related to the traffic analysis, with the report structured as follows:

Section 2: Traffic Study and Analysis Assumptions – this discusses the study area, and the confirmed parameters such as modal split, trip distribution, and trip generation;

Section 3: Background Growth and Development – this section outlines the various developments that contribute to the future traffic volumes;

Section 4: 2031 Total Traffic Operations – the traffic results for the various development scenarios are presented in this section, based on the information from Sections 2 and 3; and

Section 5: Conclusions and Recommendations – based on the results presented in Section 4, a summary of the conclusions and recommendations are discussed in this section.

2 Study Scope and Analysis Assumptions

The City of Mississauga, Metrolinx, and IBI Group were all involved in the development of the scope of work for the transportation assessment and traffic impact analysis. The framework for the traffic study was established when the parties met on March 13, 2015. Subsequent memorandums and discussions confirmed the specific parameters and assumptions of the study, which are discussed in this section. Additional details can be found in **Appendix A**.

2.1 Port Credit GO Station Southeast Area Master Plan Study Area

The Master Plan Study Area is comprised of approximately 4.6 acres of land (1.86 hectares) located south of the Port Credit GO Station which were identified by the Port Credit Local Area Plan (PCLAP) as 'Site 12'. Policies of the PCLAP require a Master Plan be complete for the lands to provide further direction on appropriate land use, built form, transportation and heritage resources.

It was agreed with the City of Mississauga that the transportation assessment and traffic impact study for the Master Plan Study would include intersections within the area bound by:

- North: Rail tracks and Eaglewood Boulevard / Inglewood Drive;
- South: Lakeshore Road;
- East: Hurontario Street; and
- West: Stavebank Road.

The intersections included within the transportation assessment and traffic impact study area (herein referred to as 'the study area') are shown in Exhibit 1, along with the larger traffic influence area that was considered. The turning movement count dates for the intersections are detailed in Exhibit 2.

PORT CREDIT GO STATION SOUTHEAST AREA (SITE 12) MASTER PLAN STUDY -
TRANSPORTATION ANALYSIS

Exhibit 1: Transportation Impact Study Area and Traffic Influence Area

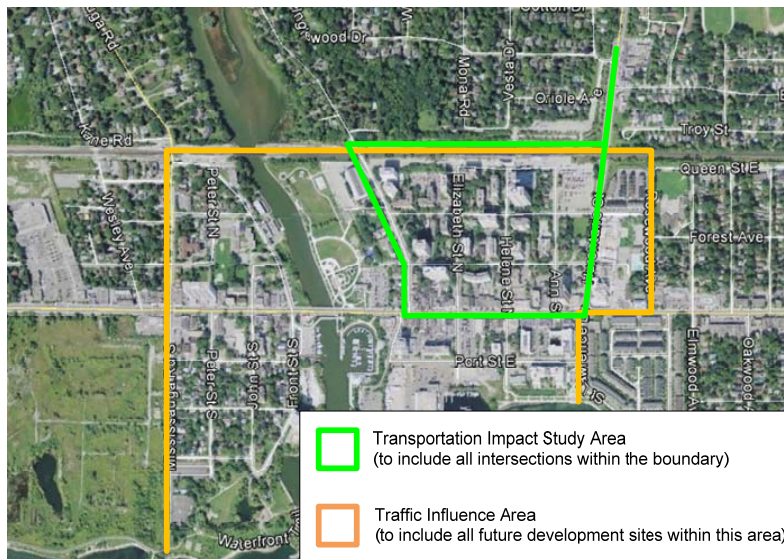


Exhibit 2: Study Area Intersections and Intersection Count Dates

STUDY AREA INTERSECTION	COUNT DATE
Stavebank Road & GO Parking Access	Wednesday, April 1, 2015
Stavebank Road & Park Street	Wednesday, April 1, 2015
Stavebank Road & High Street	Wednesday, April 1, 2015
Stavebank Road & Lakeshore Road	Wednesday, April 1, 2015
Bus Exit/Elizabeth Street & GO Parking Access/Queen Street	Thursday, October 30, 2014
Elizabeth Street & Park Street	Wednesday, April 1, 2015
Elizabeth Street & High Street	Wednesday, April 1, 2015
Elizabeth Street & Lakeshore Road	Thursday, October 30, 2014
Bus Entrance/Helene Street & Queen Street	Wednesday, April 1, 2015
Helene Street & Park Street	Wednesday, April 1, 2015
Helene Street & High Street	Wednesday, April 1, 2015
Helene Street & Lakeshore Road	Wednesday, April 1, 2015
GO Parking Access/Ann Street & Queen Street/GO Parking Access	Thursday, October 30, 2014
Ann Street & Park Street	Tuesday, December 2, 2014
Ann Street & High Street	Wednesday, April 1, 2015
Ann Street & Lakeshore Road	Thursday, October 30, 2014
Hurontario Street & Inglewood Drive/Private Access	Tuesday, April 16, 2013
Hurontario Street & Eaglewood Boulevard	Tuesday, November 23, 2010*
Hurontario Street & Park Street	Thursday, October 30, 2014
Hurontario Street & High Street	Wednesday, April 1, 2015
Lawrence Drive/Hurontario Street & Lakeshore Road	Wednesday, April 1, 2015

*The through volumes were found to be higher than those at the Inglewood Drive intersection (2013) and similar to those collected along Hurontario Street in 2014 and 2015. Therefore, it was determined that the volumes of the 2010 count were appropriate despite their age.

2.2 Horizon Years and Future Development Scenarios

The City of Mississauga identified several sites in the Community Node of Port Credit (as identified by the Mississauga Official Plan and PLCAP) that have potential for redevelopment. To align with these planning development assumptions, and to allow for the completion of the proposed Hurontario-Main LRT (HMLRT) and other long range assumptions, it was decided by the City of Mississauga that the horizon year for all of the traffic analysis should be 2031.

The traffic impact analysis examined the impact of different combinations of planned, proposed and potential future developments on 13 sites, which are illustrated in Exhibit 3. The owners of Sites 10 and 12 have zoning approvals for new developments, while the owners of Sites 1, 5, and 13 have proposed developments. The City has identified the remaining eight sites as locations where development may potentially occur by 2031.

Exhibit 3: Planned, Proposed and Potential Developments within the Port Credit Community Node (by 2031)



For the Master Plan Study, a concept plan was prepared by IBI Group to illustrate potential redevelopment of three of the four blocks which comprise the Master Plan Area (see Exhibit 4). The PCLAP does include lands at the southwest corner of Ann Street and Park Street within the Site 12 Master Plan Area, however this block is currently designated as 'Utility' and the landowners have not expressed interest in redesignating or redeveloping the lands. As such, no new development was assumed or tested for these lands.

Exhibit 4: Illustrative Development Concept Plan for the Port Credit GO Station Southeast Area

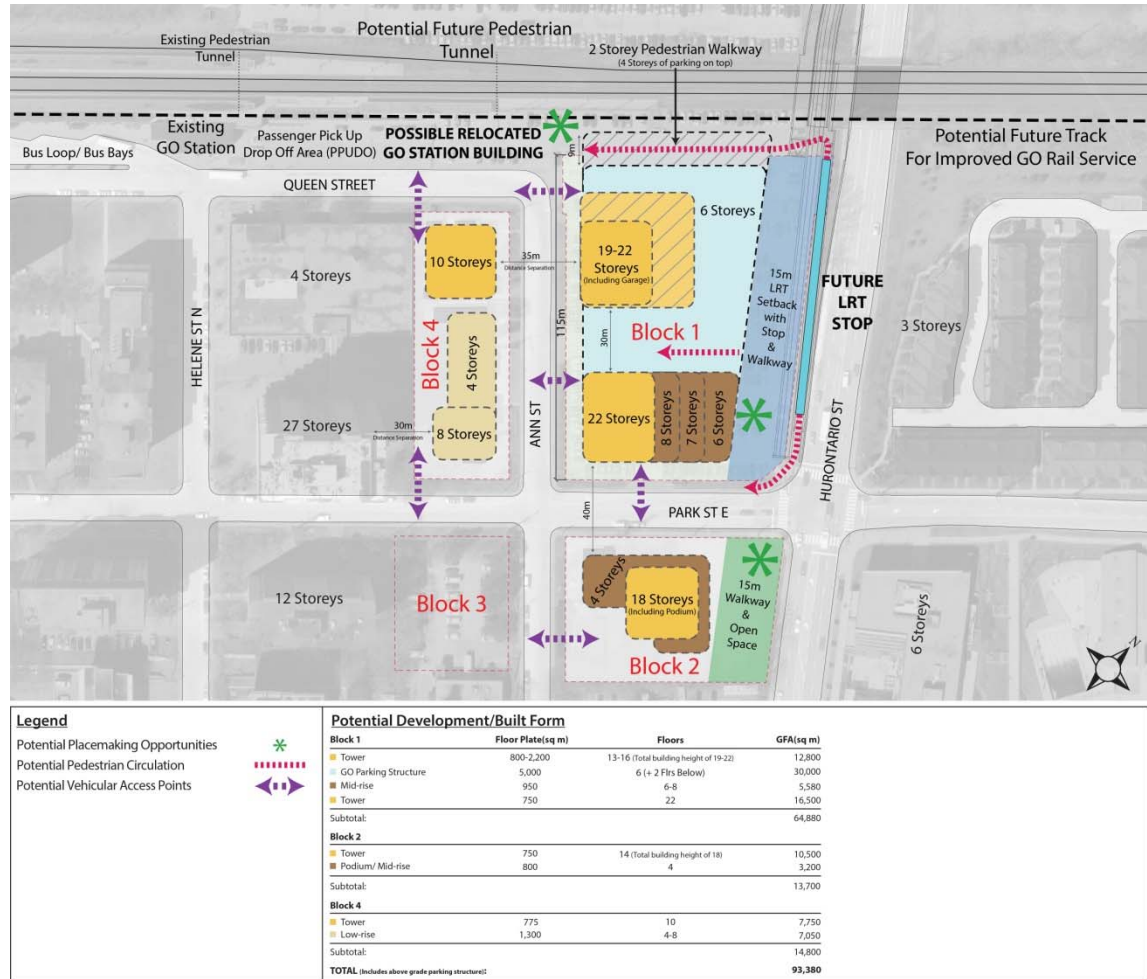


Exhibit 5 provides a table of the development assumptions for all 13 sites used for traffic analysis purposes. Additional details can be found in **Appendix B**.

To avoid unfairly attributing future congestion and intersection problems solely to the Metrolinx site (Site 1), which accounts for a small percentage of overall cumulative traffic growth, it was agreed that the study would analyze traffic results for the following background scenarios:

- Scenario A: Development on sites 5-13;
- Scenario B: Development on sites 2-4 and 5-13;
- Scenario C: Development on sites 1 and 5-13; and
- Scenario D: Development on all 13 sites.

Due to the lack of actual development applications, as well as the collaboration needed between adjacent landowners, the 2031 traffic analysis represents a worst case scenario, should the lands develop as assumed. This is also contingent upon the lands developing as assumed. For the purposes of testing potential traffic impacts (“worst case scenario”), a substantial amount of office development/use was assumed for Site 1. The development assumptions for Site 1 are explained in greater detail in Section 3.

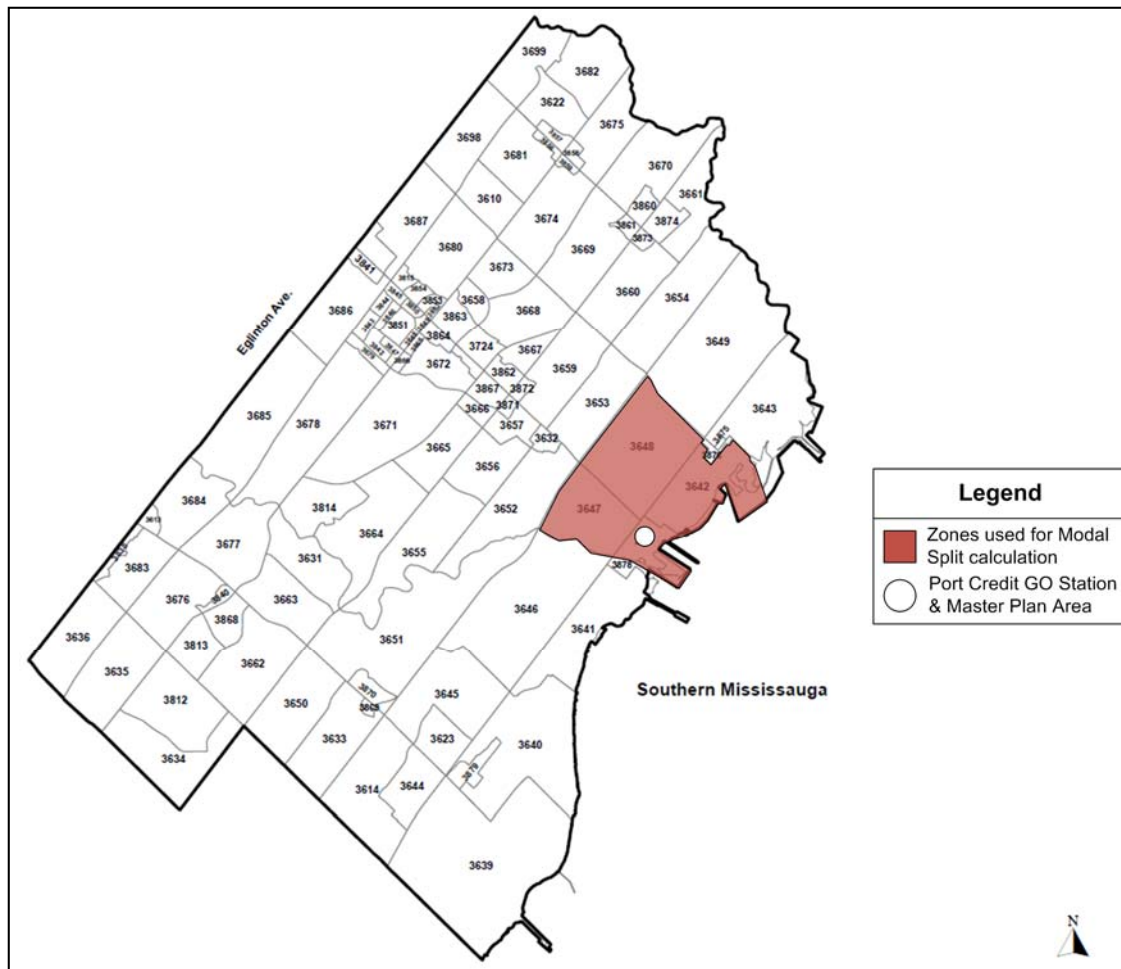
Exhibit 5: Table of Identified, Planned, Proposed and Potential Developments within the Port Credit Community Node (to be complete by 2031)

SITE	DEVELOPMENT
1	225 residential units; 1,250 sq.m retail; 13,200 sq.m office & 400 net new parking spaces
2	112 residential units & 200 sq.m retail
3	No new development, continuation of Bell Canada utility operations
4	149 residential units & 500 sq.m retail
5	66 residential units & 180 sq.m retail
6	60 residential units & 180 sq.m retail
7	66 residential units
8	66 residential units
9	20 residential units & 180 sq.m retail
10	56 residential units; 1,905 sq.m retail & 2,301 sq.m office
11	110 residential units & 900 sq.m retail
12	583 sq.m bank; 670 sq.m restaurant & 2,109 sq.m office
13	750 residential units & 3,150 sq.m retail; 3000 sq.m office; 1,764 sq.m marine & 1,973 sq.m live-work *
<p>Note: Based on planned (approved) development applications, active development proposals, estimates provided by the City of Mississauga in March 2015 for potential redevelopment Sites (6 – 9 and 11) and estimates prepared by IBI Group for Sites 1-4. An updated redevelopment proposal for Site 5 no longer includes retail.</p> <p>*For the purposes of testing potential traffic growth, it was assumed that approximately half of the proposed redevelopment for site 13 (Canada Lands/Inspiration Port Credit) would be built by 2031.</p>	

2.3 Modal Split

The modal split for the study area was determined using trip information from the study area (red zones in Exhibit 6) surrounding the Port Credit GO Station. The areas surrounding the GO Station were chosen to dilute the impact of the GO Station, which would likely result in a modal split with a representatively high proportion of non-auto trips.

Exhibit 6: Zones Used for the Modal Split



The total existing number of trips to and from the study area by primary mode of transport was then determined. The modal splits used for analysis, summarized in Exhibit 7, were calculated by dividing the number of auto driver trips by the total number of trips. The numbers were rounded down to be conservative. The raw 2011 Transportation Trip Study (TTS) data used is available in **Appendix C**.

Exhibit 7: Existing Modal Split

Peak Period	Primary Mode of Travel
	Auto Driver
AM	65%
PM	75%

Metrolinx and MMM Group prepared a document entitled *Hurontario / Main Street Corridor Master Plan* in October 2010. This report examined the existing transit mode share between the Queen Elizabeth Way (QEW) and Port Credit GO Station, which was found to be approximately 20% in both directions. With an LRT in 2031, it is estimated this transit mode share could increase to over 50%, with another projection estimating a mode share as high as 67% for southbound transit.

From the 2011 TTS information presented in Exhibit 7, the non-auto mode share is approximately 35% for trips in the AM peak hour and 25% in the PM peak hour. Given the increased transit options expected to be implemented by 2031, including the HMLRT line, the non-auto mode share is expected to increase. This is confirmed by the traffic estimates found in the October 2010 report completed by Metrolinx and MMM Group. Based on a review of the information, it is appropriate to use a non-auto mode share of 50% for future trips in the AM peak hour, and 45% in the PM peak hour (to recognize the existing higher auto share in the PM), as shown in Exhibit 8. This assumption was confirmed with the City of Mississauga.

Exhibit 8: 2031 Modal Split / Non-Auto Trip Reduction

Peak Period	Primary Mode of Travel in 2031	Non-Auto Trip Reduction Proposed for Trip Generation in 2031
	Auto Driver	
AM	50%	50%
PM	55%	45%

It should be noted that the proposed improvements to the Lakeshore West rail line, to provide 15-minute all-day service, will likely result in a further increase in the non-auto mode share, but has not been factored into the Master Plan transportation analysis (data has not yet been produced by Metrolinx).

2.4 Trip Generation

At the request of the City of Mississauga, IBI Group undertook trip generation surveys at two proxy sites. These locations were:

- 15 Elizabeth Street in Mississauga (near Port Credit GO Station); and
- 3865 Lake Shore Boulevard West in Toronto (near Long Branch GO Station).

The results of the other surveys are outlined below.

15 Elizabeth Street (Residential Development)

The trip generation survey took place on June 3, 2015 from 7:00-9:00 AM and 4:30-6:30 PM. The number of auto inbound/outbound trips is summarized in Exhibit 9.

Exhibit 9: Inbound/Outbound Auto Trips at 15 Elizabeth Street

Peak Hour	# of Units	Inbound (trips)	Trip Rate (trips/unit)	Outbound (trips)	Trip Rate (trips/unit)	Total (trips)	Trip Rate (trips/unit)
AM	54	1	0.02	9	0.17	10	0.19
PM		9	0.17	5	0.09	14	0.26

*Source: City of Mississauga planning staff

As shown in Exhibit 9, there are 10 auto trips during the AM peak hour and 15 auto trips during the PM peak hour. Given that there are 54 units at 15 Elizabeth Street, this equates to an auto trip rate of 0.19 in the AM peak hour and 0.26 in the PM peak hour.

3865 Lake Shore Boulevard West (Residential and Small Commercial/Professional Services Development)

The trip generation survey took place on May 21, 2015 from 7:00-9:00 AM and 4:30-6:30 PM. The amount of inbound/outbound auto trips associated with the residential component of the site are summarized in Exhibit 10. The commercial/professional services component of the site is a small medical clinic that does not have any parking spaces on the site. Surveyors monitored the parking spaces to ensure that any commercial/professional services trips were discounted against the residential trip rate calculation.

Exhibit 10: Inbound/Outbound Auto Trips at 3865 Lake Shore Boulevard West

Peak Hour	# of Units	Inbound (trips)	Trip Rate (trips/unit)	Outbound (trips)	Trip Rate (trips/unit)	Total (trips)	Trip Rate (trips/unit)
AM	185*	7	0.04	40	0.21	47	0.25
PM		41	0.22	22	0.12	63	0.34

*Source: <http://www.condominium.ca/3865-lake-shore-blvd-w>

As shown in Exhibit 10, there are 47 auto trips during the AM peak hour and 63 auto trips during the PM peak hour. Given that there are 185 units at 3865 Lake Shore Boulevard West, this equates to an auto trip rate of 0.25 trips/unit in the AM peak hour and 0.34 trips/unit in the PM peak hour.

Institute of Transportation Engineers (ITE) Trip Generation Manual

A comparison was undertaken between the two surveyed auto trip rates, and the equivalent trip rates in the Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition publication. This comparison, which can be found in Exhibit 11, shows that the auto trip rates for the two proxy sites are far lower than those assumed by the ITE Trip Generation manual.

Exhibit 11: Trip Generation Survey Comparison with ITE Trip Generation Manual

Peak Hour	# of Units	Source	Inbound Auto Trip Rate (trips/unit)	Outbound Auto Trip Rate (trips/unit)	Total Auto Trip Rate (trips/unit)
AM	54	Survey - 15 Elizabeth St	0.02	0.17	0.19
		ITE	0.10	0.48	0.58
		Survey - 3865 Lake Shore Blvd	0.04	0.21	0.25
		ITE	0.08	0.38	0.46
PM	185	Survey - 15 Elizabeth St	0.17	0.09	0.26
		ITE	0.45	0.22	0.67
		Survey - 3865 Lake Shore Blvd	0.22	0.12	0.34
		ITE	0.36	0.18	0.54

*ITE source was the fitted curve equation, not the rate, as this was more conservative. This is why it was different for the 2 sites, as the curve is non-linear

Summary

Given the location and nature of the two proxy surveys, it is inherent that any trip reduction due to transit and other non-auto modes will be captured in the surveyed rate. This is because vehicle trips were surveyed, as opposed to people trips (due to the logistics of undertaking such a survey at these sites).

A review of the surveyed and ITE trip rates in Exhibit 11 shows that the ITE trip rates are higher than the surveyed trip rates. Additionally, the site in Port Credit had a lower auto trip rate than the site in Long Branch in Toronto. This is unexpected, given the slightly higher non-auto mode share in Port Credit (as per a comparison of TTS data).

Based on the results of the trip generation surveys, and the modal split in the areas surrounding the two survey sites, a trip generation rate similar to the trip survey rates was used, but closer to that found in Port Credit. It is not recommended to use the exact surveyed trip rate in Port Credit, rather something near the middle of the two surveyed rates due to the:

- Small sample size (one survey date); and
- Building age (the 15 Elizabeth Street building is older than the 3865 Lake Shore Boulevard W building).

Exhibit 12 summarizes the following:

- Recommended existing trip generation rates, which could be used for short term analysis or any analysis should the modal split not be achieved; and
- Recommended 2031 trip generation rates, which includes a conservative 10% trip reduction to the recommended existing trip generation rates (which shows that the auto driver mode share could drop up to 20% by 2031). This reduction accounts for the increased non-auto mode share from the time of surveys (2015) to the study horizon (2031), as discussed in the discussion on mode share.

Exhibit 12: Recommended Existing and 2031 Auto Trip Generation Rate

Peak Hour	Inbound Auto Trip Rate (trips/unit)	Outbound Auto Trip Rate (trips/unit)	Total Auto Trip Rate (trips/unit)
Existing AM	0.03	0.19	0.22
2031 AM (includes increased non-auto mode share)	0.03	0.17	0.20
Existing PM	0.19	0.10	0.29
2031 PM (includes increased non-auto mode share)	0.17	0.09	0.26

The 2031 horizon year analysis will consider residential trip rates to be 0.20 trips per unit in the AM peak hour and 0.26 trips per unit in the PM peak hour, as shown in Exhibit 12 and confirmed with the City of Mississauga.

Interaction Trips

A 5% interaction trip reduction was applied to sites that contain retail, restaurant, or financial uses on the same site as an office or residential land use. A trip reduction was not applied to these uses for adjacent sites.

GO Station Parking Structure

The trip generation for the additional GO Station parking spaces are based on the observed trip generation rates for the existing GO Station parking lots at Port Credit. These rates were calculated based on the October 14th, 2014 survey of the parking lot driveways. The survey took

into account the north and south lots, but not the west lot between Stavebank Road and Elizabeth Street, due to the distance from the proposed parking structure. Exhibit 13 summarizes the observed GO parking trip generation.

Exhibit 13: Observed GO Parking Trip Generation

	TRIP GEN ENTERING		TRIP GEN EXITING		Total		
	# Trips	Trip Gen	# Trips	Trip Gen	# Trips	# Spaces	Trip Gen (trips / space)
AM	484	0.67	58	0.08	542	725	0.75
PM	65	0.09	245	0.34	310	725	0.43

As shown in Exhibit 13, the existing trip generation rate for the GO Station is 0.75 trips per parking space in the AM peak hour, and 0.43 trips per parking space in the PM peak hour. This rate is expected to be comparable to the future parking spaces. Using the observed GO Station parking trip generation, the trips for the additional 400 parking spaces were calculated and are summarized in Exhibit 14.

Exhibit 14: Trips for Additional GO Parking Spaces

	# New Peak Hour Trips	
	Inbound	Outbound
AM	268	32
PM	36	136

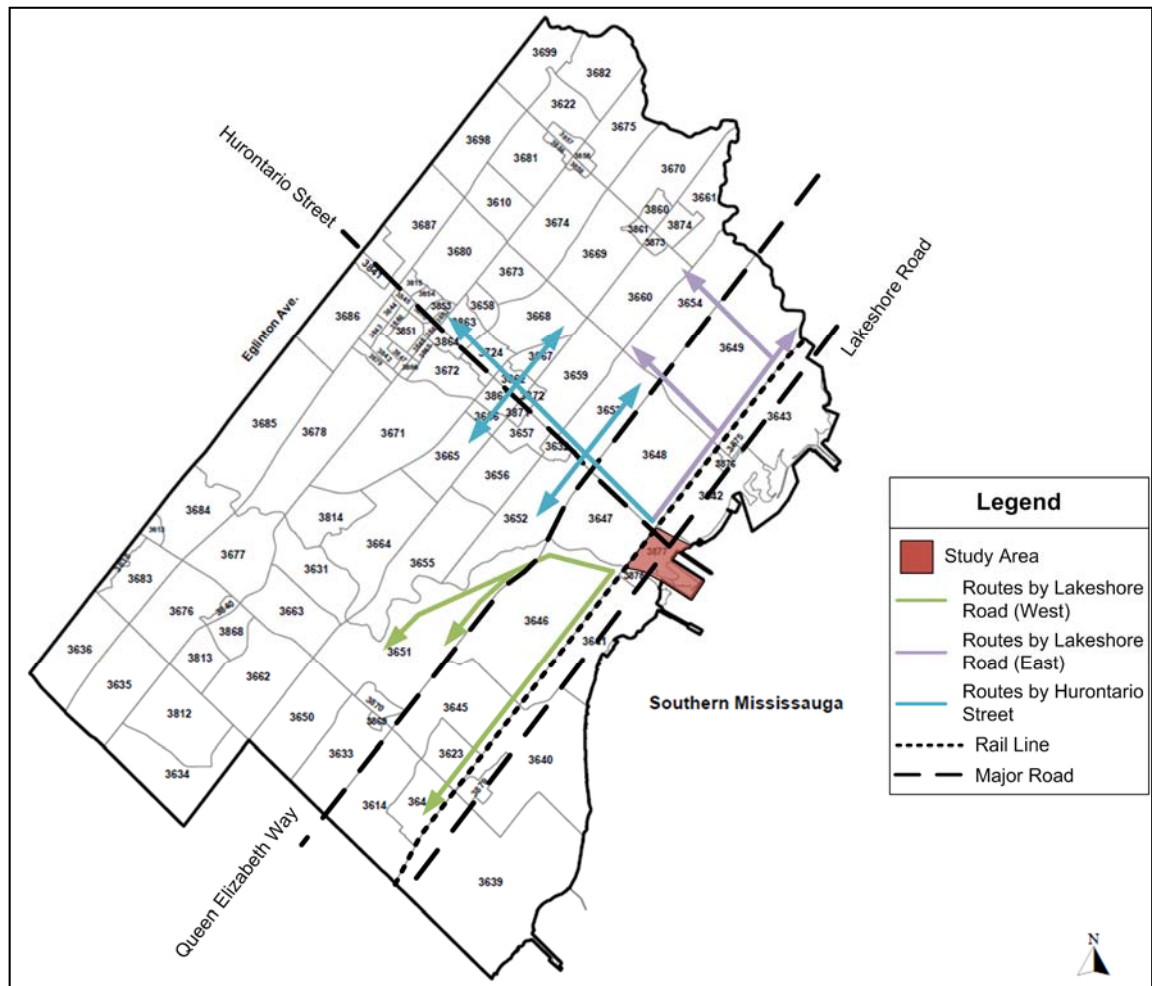
2.5 Trip Distribution

Trip distributions for the AM and PM peak periods were calculated for the following land uses: retail (includes financial), office, and residential. The study area (depicted in red in Exhibit 15) is within zone¹ 3877. When extracting data from the 2011 TTS for residential and office land uses, it was assumed that:

- For traffic with destinations west of the study area, development traffic could take Lakeshore Road (to access West Mississauga, Mississauga Road, and Queen Elizabeth Way) or Hurontario Street (to Queen Elizabeth Way);
 - The traffic accessing the Queen Elizabeth Way via Hurontario Street and Lakeshore Road / Mississauga Road would be split evenly;
- For traffic with destinations east of the study area but within Mississauga, development traffic could take Lakeshore Road (to Cawthra Road or Dixie Road) or Hurontario Street (to an east-west arterial e.g. Eglinton Avenue). It was assumed that the traffic using Hurontario Street and Lakeshore Road / Cawthra Road / Dixie Road would be split evenly;
- For traffic with destinations east of the study area outside of Mississauga, development traffic would travel north on Hurontario Street to access the QEW; and
- All traffic with destinations north of the study area would travel north on Hurontario Street.

¹ University of Toronto. (2009). 2006 Traffic Zone Boundaries – Zone Numbers and Detailed Definitions. Retrieved June 1st, 2015 from: http://www.dmg.utoronto.ca/pdf/reports/2006to2010/znbdy2006/boundary2006_A.pdf

Exhibit 15: Study Area and Travel Routes



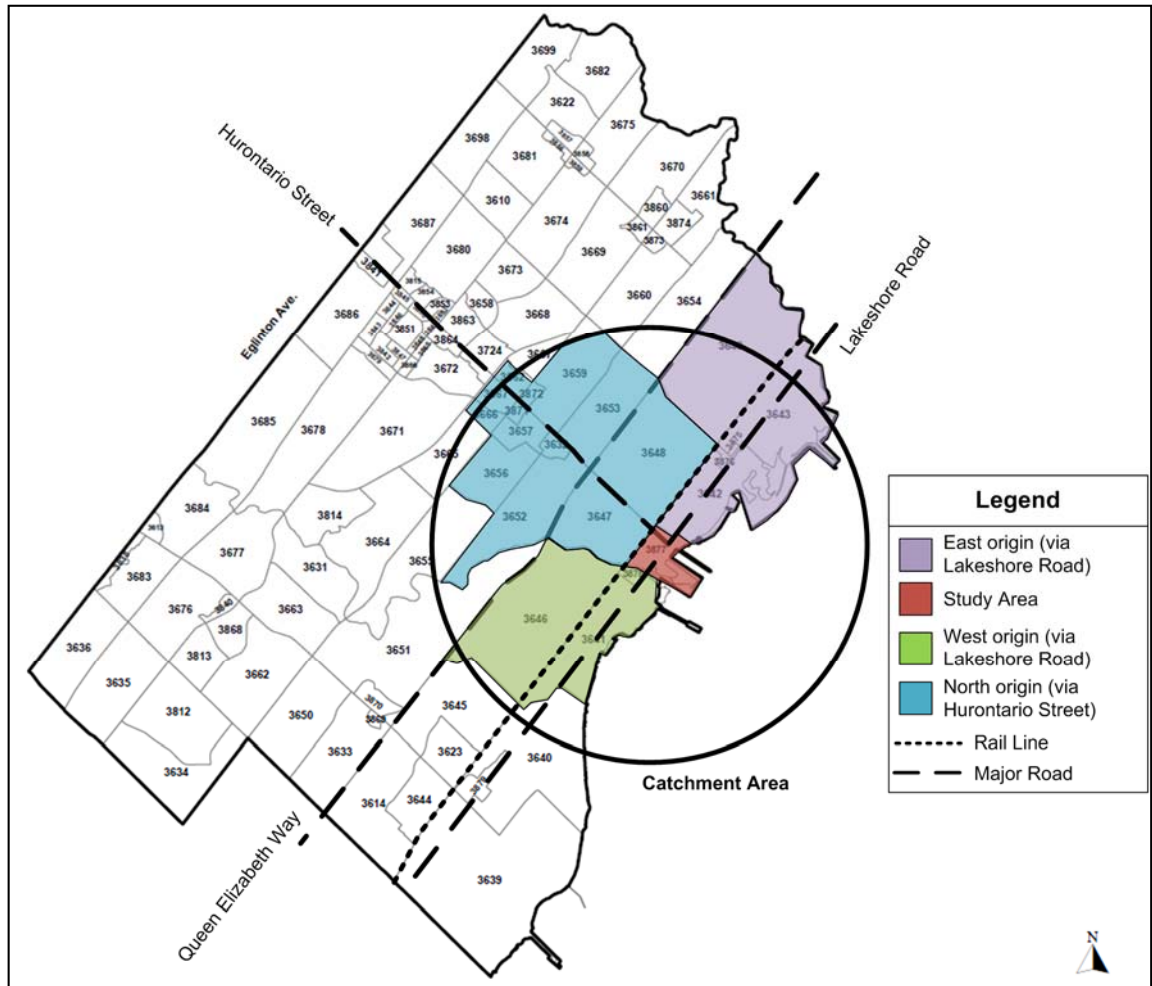
Trip distributions for residential and office land uses were calculated by taking a weighted average of the trip distributions for the inbound and outbound trips in each peak period. The resulting trip distributions are summarized in Exhibit 16, and were rounded to the nearest 5%.

Exhibit 16: Residential and Office Land Use Trip Distribution

Land Use	Peak Period	Lakeshore West	Lakeshore East	Hurontario Street
Residential	AM	20%	10%	70%
	PM	15%	10%	75%
Office	AM	25%	5%	70%
	PM	25%	5%	70%

The trip distributions for retail and financial land uses were determined based on the population distribution within a catchment area around the study area (approximately 4 km in radius), illustrated in Exhibit 17.

Exhibit 17: Retail and Financial Land Use Catchment Area



The population distribution, and subsequently the trip distribution, for retail and financial land uses are summarized in Exhibit 18. Trip distributions were rounded to the nearest 5%.

Exhibit 18: Retail and Financial Land Use Trip Distribution

	West	East	North
Retail Trip Distribution	20%	20%	60%

The trip distributions presented in Exhibit 16 and Exhibit 18 were confirmed with the City of Mississauga.

2.6 Planned Capital Road Improvements

The City of Mississauga noted that the only planned capital road works project that it is aware of within the Transportation Impact Study Area is the realignment of the Stavebank Road and Lakeshore Road East intersection, which is to become a standard four-legged intersection.

2.7 Hurontario-Main Light Rapid Transit (HMLRT)

Another study parameter is that the HMLRT, which recently received full provincial funding, is operational for the 2031 traffic horizon analysis year. According to the HMLRT Environmental Project Report (2013), the path of the HMLRT impacts three existing intersections within the study area:

- 1) Hurontario Street / Inglewood Drive: The east leg of Inglewood Drive will be removed as a result of the removal of the Old River Road bridge. This intersection is no longer an intersection per se, as the remaining east leg is a driveway providing ingress and egress to a plaza. As a result, the control type at this location will also be downgraded from a signalized one to a stop-controlled for the westbound leg.

Additional changes to this intersection include:

- The removal of the northbound left turning lane;
- The removal of the southbound right turning lane; and
- The conversion of the southbound left turning lane to a shared through-left lane.

- 2) Hurontario Street / Eaglewood Boulevard: With the removal of the Old River Road bridge at Inglewood Drive, a new bridge and eastbound leg will be installed at Eaglewood Boulevard to provide access between Oriole Avenue and Hurontario Street. This leg will consist of one left-through-right shared approach lane and one receiving lane. The control type of this intersection will also be converted from stop-controlled to signalized.

Additional changes to this intersection include:

- The conversion of the northbound through lane to a shared through-left lane;
- The removal of the southbound left turning lane;
- The conversion of the southbound inside through lane to a shared through-left lane;
- The conversion of the southbound outside through lane to a shared through-right lane; and
- The conversion of the westbound right lane to a shared through-right lane.

- 3) Hurontario Street / Park Street: Several lane configuration changes are to be made to the southbound approach at the intersection of Hurontario Street and Park Street, including:

- The removal of the southbound right turn lane;
- The conversion of the curbside southbound through lane to a shared through-right lane; and
- An increase in the amount of storage for the southbound left turn lane from 20m to 60m.

These geometric changes are reflected in the analysis for 2031. The design prepared in 2013 illustrates the intersection layout for these three intersections, and is included in **Appendix D**.

3 Background Growth and Development

The 2031 future traffic conditions are comprised of two main factors: background growth outside of Port Credit, and development growth within the Port Credit community node. This section explains the source of the information for these contributors, as well as the traffic volumes associated with each factor.

3.1 Background Growth Rates for Developments Outside of Port Credit

The City of Mississauga provided AM and PM peak hour per annum growth rate assumptions for developments outside of Port Credit that will impact the Traffic Influence Area of the Special Site 12 Master Plan Study. These are summarized below in Exhibit 19.

Exhibit 19: City-Identified Per Annum Growth Rates for Lakeshore Road and Hurontario Street

ROADWAY	AM PEAK HOUR	PM PEAK HOUR
Lakeshore Road Eastbound	0.0%	2.0%
Lakeshore Road Westbound	2.0%	0.0%
Hurontario Street Northbound	0.0%	0.5%
Hurontario Street Southbound	0.5%	1.0%

3.2 Future Development within Port Credit Community Node

The 2031 traffic impact analysis examined the impact of different staging of planned, proposed and potential future developments within the Port Credit Community Node Character Area (i.e. Sites 1 through 13, which are illustrated in Exhibit 3 and shown in Exhibit 5). The owners of Sites 10 and 12 have zoning approval for new developments, but still have to go through the Site Plan Approval process. The owners of Sites 1, 5, and 13 have proposed developments. The City has identified the remaining 8 sites as locations where development may potentially occur by 2031.

The City provided residential and non-residential yield estimates for Sites 5 through 13 (memo dated November 2014). The City's memo estimates that 1,937 residential units could be built on Sites 5 through 13 by 2031. IBI Group estimates that between 50,000 and 60,000 sq. m. of development (excluding above or below-grade parking) could be accommodated within the Master Plan Study Area (i.e. Sites 1-3, with no new development or uses assumed for Site 3), if full land assembly occurs on Sites 2 and 4. For the purposes of testing a worst case scenario traffic impact, IBI Group assumed a very large amount of office will be developed within the Master Plan Area (i.e. 13,200 sq. m.), along with 1,950 sq. m. of retail, and approximately 486 units. This represents a total of 2,423 new residential units and an absorption of 161 units per year for the Community Node portion of Port Credit alone (thousands of new units are anticipated to be constructed in the adjacent neighbourhood areas of Port Credit).

These development estimates for the Port Credit Community Node Character Area are aggressive. Data from both the Canada Mortgage and Housing Corporation (CMHC) and the City show that over the past decade approximately 100 residential units have been built/absorbed by the market per year within the larger Port Credit area. A moderate amount of new retail/commercial and little office has been built in recent years.

For the purposes of estimating traffic impacts from future development, IBI Group has assumed all planned, proposed and potential development discussed in the City's 2014 memo will occur on Sites 5 through 12, but that only half of the residential and non-residential development proposed for Site 13 will occur by 2031. This is consistent with the Master Plan prepared for Canada Lands that assumes full build out for Site 13 will take between 20 and 30 years. IBI Group has assumed full build out on the Master Plan Study Area blocks by 2031. Due to the lack of actual development applications, as well as the collaboration needed between adjacent landowners (i.e. land assembly), the 2031 traffic analysis represents a worst case scenario, should the lands develop as assumed. The new development site trips from development assumed to be complete for all 13 sites by 2031 is shown in Exhibit 20.

Exhibit 20: Trip Generation Summary for New Trips on Sites 1 to 13, by 2031

	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL
	AM Peak Hour (new trips)			PM Peak Hour (new trips)		
Site 1	392	109	501	104	262	366
Site 2	5	23	28	21	11	32
Site 3	0	0	0	0	0	0
Site 4	13	34	47	29	17	46
Site 5	4	14	18	13	7	20
Site 6	4	12	16	11	7	18
Site 7	2	12	14	12	6	18
Site 8	2	12	14	12	6	18
Site 9	3	5	8	5	3	8
Site 10	51	46	97	27	37	64
Site 11	18	35	53	25	17	42
Site 12	38	17	55	62	63	125
Site 13	106	192	298	159	121	280
Net Trips	638	511	1149	480	557	1037

Exhibit 20 shows that there is anticipated to be 1,149 new trips in the AM peak hour, and 1,037 new trips in the PM peak hour should all 13 sites redevelop by 2031. Approximately 26.5% and 16.6% of the new AM and PM peak hour trips in 2031 are related to the GO Station parking structure development on Site 1, respectively.

4 2015 Existing Traffic Operations

The intersections were analyzed using the Synchro 9.0 analysis software which uses the Highway Capacity Manual methodology. We have identified any volume to capacity ratios greater than 0.85, any level of service (LOS) that is an E or an F, and any queue (95th percentile) that exceeds its storage length. The HCM delay thresholds are summarized in Exhibit 21. The 2015 existing analysis results are presented below in Exhibit 22 for signalized intersections and Exhibit 23 for unsignalized intersections. Full Synchro reports for the 2015 Existing Conditions are provided in **Appendix E**. Volume diagrams for all scenarios and conditions can be found in **Appendix J**, while queuing reports are provided in **Appendix K**.

Exhibit 21: Highway Capacity Manual (HCM) Delay Thresholds

LEVEL OF SERVICE (LOS)	DELAY AT SIGNALIZED INTERSECTION (S)	DELAY AT UNSIGNALIZED INTERSECTION (S)
A	≤10 sec	≤10 sec
B	10–20 sec	10–15 sec
C	20–35 sec	15–25 sec
D	35–55 sec	25–35 sec
E	55–80 sec	35–50 sec
F	≥80 sec	≥50 sec

Exhibit 22: Existing Traffic Operations – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.75	NBL NBT SBL SBT	F E E E	0.69 0.11 0.05 0.11	24 13 6 15	- - - -
	PM	C	0.87	EBT NBL	C E	0.90 0.77	144 42	- -
Lakeshore Road / Elizabeth Street	AM	A	0.71	NBL NBT SBL SBT	E E E E	0.21 0.16 0.51 0.12	13 14 20 15	- - - -
Lakeshore Road / Hurontario Street	AM	C	0.71	SBL	E	0.86	93	30
	PM	C	0.78	SBL	D	0.78	73	30
Hurontario Street / Park Street	AM	C	0.77	EBL SBL SBR	F C C	0.96 0.66 0.23	77 60 38	55 20 8
	PM	B	0.47	EBL SBL SBR	E B C	0.79 0.35 0.26	46 42 57	55 20 8
Hurontario Street / Inglewood Drive	AM	B	0.41	EBT WBT	E E	0.56 0.22	36 17	- -

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 22, there are no movements currently operating over capacity (with a volume to capacity ratio greater than 1.00). Additionally, the overall v/c ratio for all signalized intersections does not exceed 0.87. There are a few movements with a LOS of F.

Exhibit 23: Existing Traffic Operations – Unsignalized Intersections

Intersection	Peak	Lane	LOS	V/C	Queue Length 95th (m)
Hurontario St & Eaglewood Blvd	AM	WBL	E	0.37	10.9
	PM	WBL	F	0.43	13

There is only one intersection with critical movements in the existing conditions, as demonstrated in Exhibit 23. The westbound left-turn from Eaglewood Boulevard to Hurontario Street has a LOS of F both AM and PM peak hours. However, the 95th percentile queue length is

13 metres, which is less than two vehicles lengths. Additionally, the v/c ratio shows the movement is well under capacity. The delays stem from high volumes of conflicting northbound and southbound traffic on Hurontario Street.

5 2031 Total Traffic Operations

The 2031 total analysis results are presented in this section for four development scenarios. Analysis scenarios A through D include varying levels of development within Port Credit in an attempt to identify the impacts of specific groups of development.

5.1 Scenario A (Sites 5-13)

Scenario A assumes that Sites 5 through 12 and a portion of Site 13 are built and occupied by 2031. The 2031 total analysis results are presented below in Exhibit 24 for signalized intersections. The intersections were analyzed using the Synchro 9.0 analysis software which uses the Highway Capacity Manual methodology. We have identified any volume to capacity ratios greater than 0.85, any LOS that is an E or an F, and any queue (95th percentile) that exceeds its storage length. No exhibit is provided for unsignalized intersections, as there are no critical movements identified for these intersections in Scenario A. Full Synchro reports for Scenario A are provided in **Appendix F**.

Exhibit 24: 2031 Total Traffic Operations – Scenario A – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.81	NBL	F	0.79	38	-
				SBT	E	0.53	46	-
	PM	E	1.17	EBT	F	1.18	219	-
				WBT	D	0.99	178	-
			NBL	F	1.11	63	-	
			SBT	E	0.81	78	-	
Lakeshore Road / Elizabeth Street	AM	B	0.77	NBL	E	0.44	29	-
			NBT	E	0.61	45	-	
			SBL	E	0.55	21	-	
			SBT	E	0.12	16	-	
Lakeshore Road / Hurontario Street	AM	C	0.91	EBL	D	0.90	134	-
				WBR	D	0.37	49	35
				SBL	D	0.87	50	30
	PM	C	0.92	EBL	E	0.93	102	-
SBL				C	0.83	75	30	
Hurontario Street / Park Street	AM	D	0.88	EBL	F	0.96	86	55
				SBL	D	0.81	68	60
Hurontario Street / Eaglewood Boulevard	PM	B	0.71	EBL	E	0.83	59	55
	AM	B	0.66	EBT	E	0.62	35	-
WBL				E	0.36	24	-	
WBT				E	0.32	29	-	
PM	C	0.88	SBT	C	0.95	208	-	

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 24, the 2031 total traffic operations for Scenario A are not anticipated to have any movements operating over capacity (volume to capacity ratio greater than 1.00) with the exception of the eastbound through, and northbound left-turn movements in the PM peak

hour at the Lakeshore Road / Stavebank Road intersection. The overall intersection is also over capacity in the PM peak hour. There are several movements expected to operate with a LOS of F. The eastbound left-turn lane storage at the Hurontario Street / Park Street intersection is exceeded by approximately 30 metres in the AM peak hour, while the southbound left-turn storage at the Hurontario Street / Lakeshore Road intersection is exceeded by approximately 45 metres in the PM peak hour. The storage problem at the Hurontario Street / Lakeshore Road intersection is also present under existing conditions, as seen in Exhibit 22.

The operations at the Lakeshore Road / Stavebank Road intersection are associated primarily with background traffic growth outside of Port Credit, as well as a combination of the new developments within Port Credit. However, the primary source of the volumes contributing to the eastbound through movement in 2031 in the PM peak hour is the background growth outside of Port Credit (345 vehicles), compared with the 2031 development traffic within Port Credit for Scenario A (13 vehicles).

5.1.1 Scenario A Summary

Scenario A demonstrates that there are some capacity, delay, and queuing problems throughout the network before Special Site 12 is developed, with some of the problems attributed to development outside of Port Credit.

5.2 Scenario B (Sites 2-13)

Scenario B assumes that all of the sites within the Port Credit Community Node Character Area are built and occupied by 2031, with the exception of the Metrolinx site on Site 1. The 2031 total analysis results are presented below in Exhibit 25 for signalized intersections. We have identified any volume to capacity ratios greater than 0.85, any LOS that is an E or an F, and any queue (95th percentile) that exceeds its storage length. No exhibit is provided for unsignalized intersections, as there were no critical movements identified for these intersections in Scenario B. Full Synchro reports for Scenario B are provided in **Appendix G**.

Exhibit 25: 2031 Total Traffic Operations – Scenario B – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.81	NBL	F	0.79	38	-
				SBT	E	0.54	47	-
	PM	E	1.17	EBT	F	1.19	221	-
				WBT	D	0.99	179	-
			NBL	F	1.11	63	-	
			SBT	E	0.81	78	-	
Lakeshore Road / Elizabeth Street	AM	B	0.77	NBL	E	0.45	29	-
				NBT	E	0.61	45	-
				SBL	E	0.56	22	-
				SBT	E	0.12	17	-
Lakeshore Road / Hurontario Street	AM	C	0.92	EBL	D	0.91	136	-
				WBR	D	0.39	51	35
				SBL	D	0.87	54	30
	PM	C	0.92	EBL	E	0.93	104	-
			SBL	C	0.84	76	30	
Hurontario Street / Park Street	AM	D	0.92	EBL	F	0.97	103	55
				SBL	D	0.87	78	60
	PM	B	0.74	EBL	E	0.84	65	55
Hurontario Street / Eaglewood Boulevard	AM	B	0.68	EBT	E	0.62	35	-
				WBL	E	0.36	24	-
				WBT	E	0.35	31	-
	PM	C	0.90	SBT	C	0.98	215	-

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 25, the 2031 total traffic operations for Scenario B are not anticipated to have any movements operating over capacity with the exception of the eastbound through and northbound left-turn movements in the PM peak hour at the Lakeshore Road / Stavebank Road intersection. The overall intersection is also over capacity in the PM peak hour. There are several movements expected to operate with a LOS of F. The eastbound left-turn lane storage at the Hurontario Street / Park Street intersection is exceeded by approximately 50 metres in the AM peak hour, while the southbound left-turn storage at Hurontario Street / Lakeshore Road is exceeded by approximately 45 metres in the PM peak hour. The storage problem at the Hurontario Street / Lakeshore Road intersection is also present under existing conditions, as seen in Exhibit 22.

As noted before, the operations at the Lakeshore Road / Stavebank Road intersection are primarily attributed to the background traffic growth outside of Port Credit, as well as a combination of the new developments within Port Credit. However, the primary source of the volumes contributing to the eastbound through movement in 2031 in the PM peak hour is the background growth outside of Port Credit (345 vehicles), compared with the 2031 development traffic within Port Credit for Scenario B (21 vehicles).

5.2.1 Scenario B Summary

Scenario B demonstrates that as more developments within Port Credit are completed (Sites 2-4, compared to Scenario A), there are some capacity, delay, and queuing problems that appear throughout the network even before the Metrolinx parking structure and mixed-use development on Site 1 is developed. Some of these problems are attributed to development outside of Port Credit, while other localized problems are due to the specific sites within Port Credit.

5.3 Scenario C (Sites 1, 5-13)

Scenario C assumes that the Metrolinx site (Site 1) and Sites 5 through 13 within the Port Credit Community Node Character Area are built and occupied by 2031. The 2031 total analysis results are presented below in Exhibit 26 for signalized intersections and Exhibit 27 for unsignalized intersections. We have identified any volume to capacity ratios greater than 0.85, any LOS that is an E or an F, and any queue (95th percentile) that exceeds its storage length. Full Synchro reports for Scenario C are provided in **Appendix H**.

Exhibit 26: 2031 Total Traffic Operations – Scenario C – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.86	EBT	B	0.86	224	-
				NBL	F	0.83	41	-
				NBT	E	0.17	20	-
				SBT	E	0.54	47	-
Lakeshore Road / Stavebank Road	PM	F	1.21	EBT	F	1.23	227	-
				WBT	D	1.03	192	-
				NBL	F	1.18	64	-
				SBT	E	0.85	84	-
Lakeshore Road / Elizabeth Street	AM	C	0.82	NBL	E	0.45	30	-
				NBT	E	0.63	47	-
				SBL	E	0.55	22	-
				SBT	E	0.12	17	-
Lakeshore Road / Hurontario Street	AM	D	0.97	EBL	E	0.97	160	-
				WBR	D	0.49	62	35
				SBL	E	0.91	101	30
				SBR	F	0.24	39	-
Lakeshore Road / Hurontario Street	PM	C	0.97	EBL	E	0.98	111	-
				WBT	D	0.89	127	-
				WBR	C	0.35	36	35
				SBL	D	0.89	92	30
Hurontario Street / Park Street	AM	D	0.85	EBL	E	0.83	70	55
				WBL	E	0.10	8	50
				WBT	E	0.39	24	-
				NBL	E	0.67	51	35
Hurontario Street / Park Street	PM	C	0.88	SBL	D	0.80	84	60
				EBL	E	0.92	103	55
				SBT	C	0.85	148	-
				EBT	E	0.62	35	-
Hurontario Street / Eaglewood Boulevard	AM	B	0.70	WBL	E	0.36	24	-
				WBT	E	0.37	32	-
				EBT	E	0.66	47	-
				SBT	D	0.99	251	-

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 26, the 2031 total traffic operations for Scenario C are not anticipated to have any movements operating over capacity with the exception of the eastbound through, westbound through, and northbound left-turn movements in the PM peak hour at the Lakeshore Road / Stavebank Road intersection. The overall intersection is also over capacity in the PM peak hour. There are several movements expected to operate with a LOS of F. The eastbound left-turn lane storage at the Hurontario Street / Park Street intersection is exceeded by approximately 50 metres in the PM peak hour, while the southbound left-turn storage at the Hurontario Street / Lakeshore Road intersection is exceeded by approximately 60 metres. The storage problem at the Hurontario Street / Lakeshore Road intersection is also present under existing conditions, as seen in Exhibit 22.

As noted before, the operations at the Lakeshore Road / Stavebank Road intersection are primarily attributed to the background traffic growth outside of Port Credit, as well as a combination of the new developments within Port Credit. However, the primary source of the volumes contributing to the eastbound through movement in 2031 in the PM peak hour is the background growth outside of Port Credit (345 vehicles), compared with the 2031 development traffic within Port Credit for Scenario C (37 vehicles). The same is true for the AM peak hour operations expected at the Hurontario Street / Lakeshore Road intersection.

Exhibit 27: 2031 Total Traffic Operations – Scenario C – Unsignalized Intersections

Intersection	Peak	Lane	LOS	V/C	Queue Length 95th (m)
Ann St & Park St	AM	EB	E	N/A	N/A
Ann St & Queen St & GO Parking Access	AM	NB	D	0.86	75.8

*note: There is no v/c ratio or queue length available from HCM for an all-way stop controlled intersection.

There are only two intersections with critical movements in the 2031 total traffic conditions for Scenario C, as demonstrated in Exhibit 27. The eastbound movement in the AM peak hour at Ann Street / Park Street has a LOS of E with a delay of 45 seconds. Additionally, the 95th percentile northbound queue at Ann Street / Queen Street is almost 11 vehicles long, which could on occasion block the other Site 1 entrance on Ann Street.

Given that the analysis represents a worst case scenario, with assumed development sizes and potential development accesses, the results for this movement are not considered problematic. As the Port Credit area is developed, drivers will take other routing options where there is available capacity, which would further lower the anticipated results.

5.3.1 Scenario C Summary

Scenario C demonstrates that as Site 1, and 5-13 are developed, there are some capacity, delay, and queuing problems that appear throughout the network. The Scenario C results are comparable, but slightly more congested, than the Scenario B traffic operations. As for Scenario B, some of the problems in Scenario C are attributed to development outside of Port Credit, while other localized problems are due to the specific sites within Port Credit.

5.4 Scenario D (Sites 1-13)

Scenario D assumes that all 13 sites within the Port Credit Community Node, including the Metrolinx site (Site 1), are built and occupied by 2031. The 2031 total analysis results are presented below in Exhibit 28 for signalized intersections and Exhibit 29 for unsignalized intersections. We have identified any volume to capacity ratios greater than 0.85, any LOS that is an E or an F, and any queue (95th percentile) that exceeds its storage length. Full Synchro reports for Scenario D are provided in **Appendix I**.

Exhibit 28: 2031 Total Traffic Operations – Scenario D – Signalized Intersections

Intersection	Peak Hour	Intersection LOS	Intersection V/C	Movement*	Critical Movement			
					LOS	V/C	95th Percentile Queue (m)	Storage Capacity (m)
Lakeshore Road / Stavebank Road	AM	B	0.86	EBT	B	0.86	225	-
				NBL	F	0.83	41	-
	NBT	E	0.16	20	-			
	SBT	E	0.55	48	-			
Lakeshore Road / Elizabeth Street	PM	F	1.22	EBT	F	1.24	229	-
				WBT	D	1.04	194	-
	NBL	F	1.18	64	-			
	SBT	E	0.86	85	-			
Lakeshore Road / Hurontario Street	AM	D	0.98	EBL	E	0.99	162	-
				WBR	D	0.50	62	35
	SBL	F	0.91	104	30			
	SBR	F	0.24	46	-			
Lakeshore Road / Hurontario Street	PM	C	0.99	EBL	E	1.00	112	-
				WBT	D	0.89	127	-
	WBR	C	0.36	37	35			
	SBL	D	0.89	93	30			
Hurontario Street / Park Street	AM	D	0.87	EBL	F	0.98	90	55
				WBL	E	0.10	8	50
	WBT	E	0.39	24	-			
	SBL	D	0.77	77	60			
Hurontario Street / Park Street	PM	C	0.91	EBL	E	0.94	112	55
				SBT	C	0.89	167	-
Hurontario Street / Eaglewood Boulevard	AM	B	0.72	EBT	E	0.62	35	-
				WBL	E	0.36	24	-
	WBT	E	0.40	33	-			
	PM	C	0.96	EBT	E	0.66	47	-
SBT				D	1.02	261	-	

* NBL – Northbound left, NBT – Northbound through, NBR – Northbound right, etc.

As shown in Exhibit 28, the 2031 total traffic operations for Scenario D are not anticipated to have any movements operating over capacity with the exception of the eastbound through, westbound through, and northbound left-turn movements in the PM peak hour at the Lakeshore Road / Stavebank Road intersection, the eastbound left-turn in the PM peak hour at the Lakeshore Road / Hurontario Street intersection, and the southbound through movement in the PM peak hour at the Hurontario Street / Eaglewood Boulevard intersection. The overall intersection at the Lakeshore Road / Stavebank Road intersection is also over capacity in the PM peak hour. There are several movements expected to operate with a LOS of F. The eastbound left-turn lane storage at Hurontario Street / Park Street is exceeded by approximately 55 metres in the PM peak hour, while the southbound left-turn storage at Hurontario Street / Lakeshore Road is exceeded by approximately 60 metres in the PM peak hour. The storage problem at the Hurontario Street / Lakeshore Road intersection is also present in existing conditions, as seen in Exhibit 22.

As noted before, the operations at the Lakeshore Road / Stavebank Road intersection are primarily attributed to the background traffic growth outside of Port Credit, as well as a combination of the new developments within Port Credit. However, the primary source of the volumes contributing to the eastbound through movement in 2031 in the PM peak hour is the background growth outside of Port Credit (345 vehicles), compared with the 2031 development traffic within Port Credit for Scenario D (45 vehicles). The same is true for the AM peak hour operations expected at the Hurontario Street / Lakeshore Road intersection.

As noted before, given that the analysis represents a worst case scenario, with assumed development sizes and potential development accesses, the results for the eastbound through movement are not considered problematic. As the Port Credit area is developed, drivers will take other routing options where there is available capacity, which would further lower the anticipated results.

Exhibit 29: 2031 Total Traffic Operations – Scenario D – Unsignalized Intersections

Intersection	Peak	Lane	LOS	V/C	Queue Length 95th (m)
Ann Street & Park Street	AM	EB	F	N/A	N/A
		NB	E	N/A	N/A
		Overall	E	N/A	N/A
Ann Street & Queen Street & GO Parking Access	AM	NB	D	0.86	75.8

*note: There is no v/c ratio or queue length available from HCM for an all-way stop controlled intersection.

There are only two intersections with critical movements in the 2031 total traffic conditions for Scenario D, as demonstrated in Exhibit 29. The eastbound movement in the AM peak hour at Ann Street / Park Street has a LOS of F with a delay of 64 seconds, while the northbound movement has a LOS of E and a delay of 41 seconds. Additionally, the 95th percentile northbound queue at Ann Street / Queen Street is almost 11 vehicles long, which could on occasion block the other Site 1 entrance on Ann Street. These results are not considered to be problematic.

5.4.1 Scenario D Summary

Scenario D demonstrates that as all 13 sites within Port Credit are developed, there are some capacity, delay, and queuing problems throughout the network. As noted previously, some of the problems are attributed to development outside of Port Credit, while other localized problems are due to the specific sites within Port Credit.

5.5 Mitigation Measures

The 2031 total traffic operations discussed in the previous sections include signal timing optimization and the increase of cycle lengths, where appropriate. Some additional mitigation measures were also tested and implemented in the analysis. These measures include:

- Implementing an eastbound advanced left-turn protected phase at Hurontario Street / Park Street; and
- Implementing a northbound advanced left-turn protected phase at Hurontario Street / Park Street.

Despite these mitigation measures, there are still some intersections that are operating at or near capacity, or have lengthy delays, under the development assumptions. It should be stressed that the analysis represents a worst case scenario, with assumed development sizes and potential development accesses estimated. For the unsignalized intersections, the results are generally not considered problematic. As the Port Credit area is developed, drivers are expected to take other routing options through the interior road network where there is available capacity, which would further lower the anticipated results. It should also be noted that the proposed improvements to the Lakeshore West rail line, to provide 15-minute all-day service,

will likely result in a further increase in the non-auto mode share, but has not been factored into the Master Plan transportation analysis (data has not yet been produced by Metrolinx).

For the few signalized intersections with capacity problems (i.e. a volume to capacity ratio greater than 0.85 or a LOS of E or F), one of the sources of the operational concerns stem from the large background growth volumes outside of Port Credit.

Due to the development in and around the existing Port Credit GO Station, a high level examination was undertaken to assess the impacts to the MiWay buses. The three critical movements for these buses would be the:

- Northbound movement at Ann Street / Park Street;
- Northbound movement at Ann Street / Queen Street; and
- Southbound left and through-right turn movements at Elizabeth Street / Park Street.

The worst-case scenario, Scenario D, was compared to the 2015 Existing Conditions, to see the change in delay for these movements. The movements at Elizabeth Street / Park Street only experience an increase of 1 to 2 seconds, which will not impact the buses. It is anticipated that there will be fewer buses in 2031 with the future HMLRT, so the delay impacts to passengers accessing the Port Credit GO station will be minor.

The northbound delay at Ann Street / Queen Street increases by 10 to 15 seconds over the 16 year period. This is an acceptable amount of delay over a 16 year period, and should not have a significant impact to bus operations.

The largest impact to buses is at the Ann Street / Park Street intersection in the AM peak hour. The change in delay to the northbound movement is approximately 30 additional seconds of delay. Granted this is over a 16 year period, looking at the worst-case scenario, but it is still a large increase. Options to reduce this delay include:

- Redesigning the intersection as part of the Site 1 development to include a queue jump lane to be used by transit vehicles only; and
- Converting Queen Street to two-way, east-west operations (instead of one-way, westbound operations only), with eastbound movements for transit vehicles only. This would need to be tested and designed in a manner to accommodate buses and their turning movements.

6 Conclusions and Recommendations

Based on a review of the anticipated 2031 traffic operations, the proposed GO parking structure (with a net increase of 400 spaces) and full build out land development scenario tested for the Master Plan Study Area (i.e. 486 residential units, 13,200 sq. m. of office and 1,750 sq. m. of retail) can be accommodated, provided minor mitigation measures are implemented. These results are subject to future traffic analysis to be undertaken once actual development proposals come forth, and rezoning and site plan approval is sought by developers.

The analysis presented in this report represents a worst case scenario, based on assumed development sizes and potential development accesses. Consequently, traffic operations for intersections and movements identified as over capacity or with poor levels of service should not necessarily be considered problematic. As the Port Credit area is developed, drivers are expected to take other routing options where there is available capacity, which would further reduce the identified issues. Additionally, many of the problematic intersection movements are a result of the background growth associated with development outside of Port Credit.

Appendix A

Analysis Parameters and Assumptions



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Memorandum

To/Attention Norbert Orzel - City of Mississauga **Date** June 11, 2015

From Peter Richards - IBI Group **Project No** 37342

cc Evie Przybyla - City of Mississauga
 Paul Stewart - City of Mississauga
 Joe Perrotta - City of Mississauga
 Leslie Green - City of Mississauga
 Li Dong - Metrolinx
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Subject **Special Site 12 Master Plan Study
 Modal Split, Trip Generation, and Trip Distribution Assumptions
 Draft Memorandum**

Introduction

This memorandum summarizes the modal split, trip generation, and trip distribution assumptions that will be used for the traffic impact analysis portion of the Special Site 12 Master Plan Study.

Background Growth – Traffic Influence Area

The City of Mississauga provided AM and PM peak hour per annum growth rate assumptions for developments outside of Port Credit, but would impact the Traffic Influence Area of the Special Site 12 Master Plan Study. These are summarized below in Figure 1.

Figure 1: City-Identified Per Annum Growth Rates for Lakeshore Road and Hurontario Street –

AM Peak Hour Lakeshore Road Annual Growth		
2011 vs. 2031 Existing Development Levels Maintained For Port Credit Area		
	Eastbound	Westbound
Annual Growth Rate	0.0%	2.0%

Hurontario Street Annual Growth		
2011 vs. 2031 Existing Development Levels Maintained For Port Credit Area		
	Northbound	Southbound
Annual Growth Rate	0.0%	0.5%

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**PM Peak Hour
Lakeshore Road Annual Growth**

2011 vs. 2031		
Existing Development Levels Maintained For Port Credit Area		
	Eastbound	Westbound
Annual Growth Rate	2.0%	0.0%

Hurontario Street Annual Growth

2011 vs. 2031		
Existing Development Levels Maintained For Port Credit Area		
	Northbound	Southbound
Annual Growth Rate	0.5%	1.0%

Future Development – (Port Credit Community Node)

The traffic impact analysis will examine the impact of different staging of planned, proposed and potential future developments on sites 1 through 13, which are illustrated in Figure 2. The owners of sites 10 and 12 have approved development plans. The owners of sites 5, 13 and 1 have proposed developments. The City has identified the remaining 8 sites as locations where development may potentially occur by 2031.

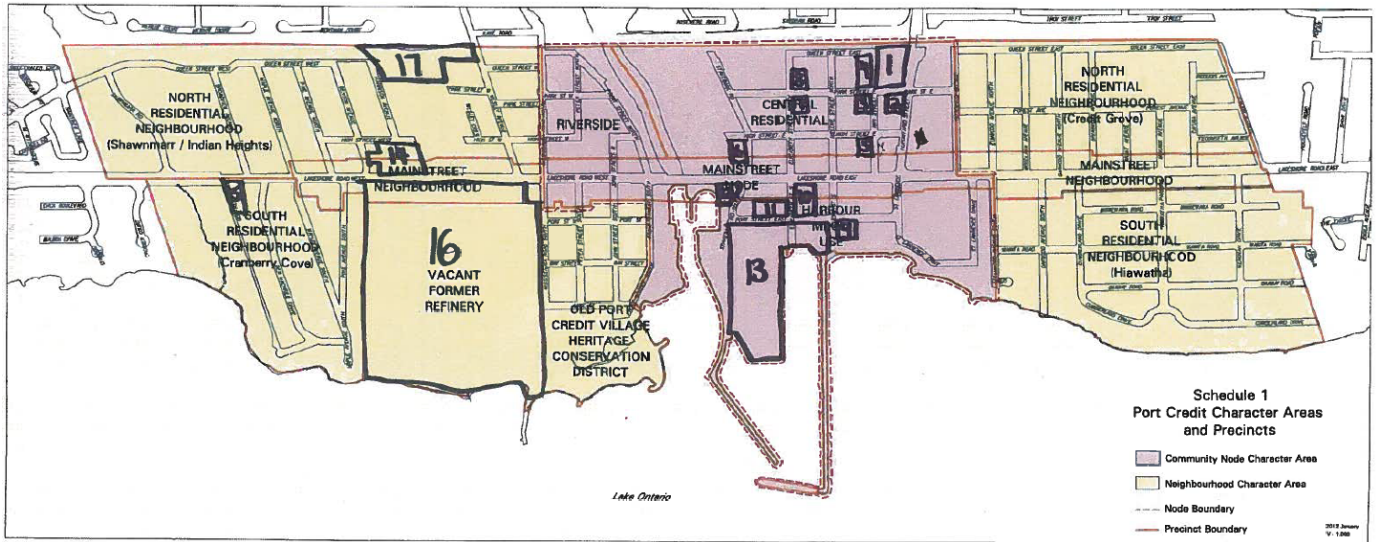
The future developments consist of commuter parking, residential, office, retail/commercial and financial land uses. The City provided residential and non-residential yield estimates for sites 5 through 13 (memo dated November 2014) and IBI Group is preparing estimates for the Master Plan Study Area (i.e. sites 1-4). The City’s memo estimates that 1,937 residential units could be built on sites 5 through 13 by 2031. IBI Group estimates approximately 486 units could be accommodated on the Master Plan Study blocks. This represents a total of 2,423 new residential units and an absorption of 161 units per year for the Community Node portion of Port Credit alone (thousands of new units are anticipated to be constructed in the adjacent Neighbourhood areas of Port Credit). A very large amount of non-residential (almost 50,000 sq. m.) has also been identified for Sites 1 through 13.

Data from both the Canada Mortgage and Housing Corporation (CMHC) and the City show that over the past decade approximately 100 residential units built/absorbed by the market per year within the larger Port Credit Area. A moderate amount of new retail/commercial has been built.

For the purposes of estimating traffic impacts from future development, IBI Group has assumed all planned, proposed and potential development shown in the City’s 2014 memo will occur on sites 5 through 12, but that only half of the residential and non-residential development proposed for site 13 will occur by 2031. This is consistent with the Master Plan prepared for Canada Lands that assumes full build out for site 13 will take between 20 and 30 years. IBI Group has assumed full build out on the Master Plan Study Area blocks by 2031.

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Figure 2: City-Identified Planned, Proposed and Potential Developments within Port Credit (by 2031)



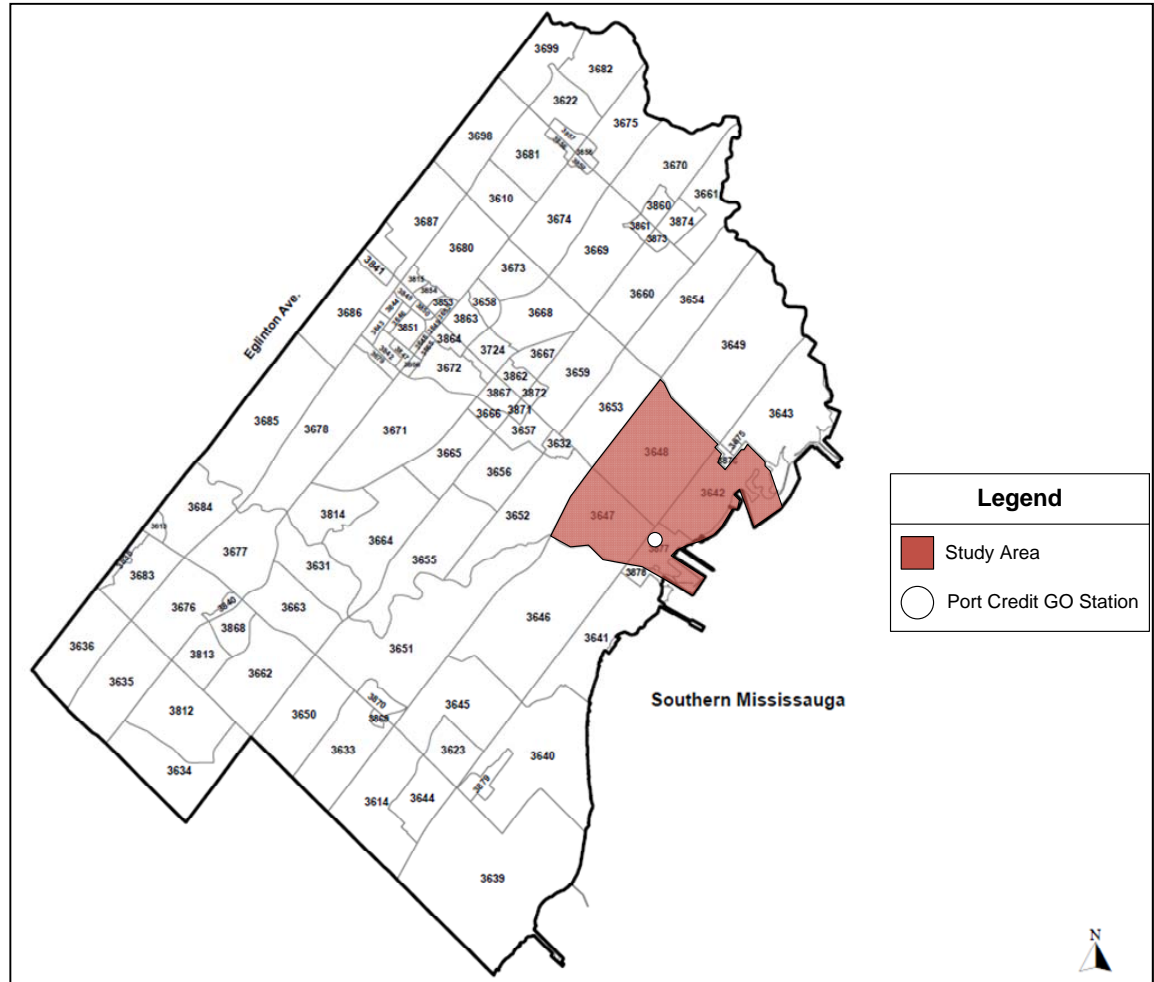
Trip distribution and modal split data from the 2011 Transportation Tomorrow Survey (TTS) were reviewed, and trip generation surveys at proxy sites were undertaken to augment the Institute of Transportation Engineers publication, Trip Generation, 9th Edition, to better reflect conditions within the study area (e.g. existing and planned rapid transit, high walk-in rates to the GO station).

Modal Split

The modal split for the study area was determined using trip information from the study area (red zones in Figure 3) surrounding the Port Credit GO Station. The areas surrounding the GO Station were chosen to dilute the impact of the GO Station, which would likely result in a modal split with a representatively high proportion of non-auto trips.

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Figure 3: Zones used for Modal Split



The total number of trips to and from the study area by primary mode of transport was determined. The modal splits, summarized in Figure 4, were calculated by dividing the number of auto driver trips by the total number of trips. The numbers were rounded down to be conservative. The raw 2011 TTS data used is available in **Attachment A**.

Figure 4: Existing Modal Split

Peak Period	Primary Mode of Travel
	Auto Driver
AM	65%
PM	75%

Metrolinx and MMM Group prepared a document entitled *Hurontario / Main Street Corridor Master Plan* in October 2010. This report looked at the existing transit mode share between the QEW and Port Credit GO Station, which was approximately 20% in both directions. With an LRT in 2031, it is estimated this transit mode share could increase to over 50%, with another projection estimating as high as 67% for the southbound transit mode share.

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From the 2011 TTS information presented in Figure 4, the non-auto mode share is approximately 35% for trips in the AM peak hour and 25% in the PM peak hour. Given the increased transit options expected to be in place by 2031, including the Hurontario-Main LRT line, we would expect the non-auto mode share to increase. This is confirmed by the traffic estimates found in the October 2010 report completed by Metrolinx and MMM Group. Based on a review of the information, we propose to use a non-auto mode share of 50% for future trips in the AM peak hour, and 45% for the PM peak hour (to recognize the existing higher auto share in the PM).

Note: The electrification of the Lakeshore West rail line, to provide 15-minute all-day service, will likely result in a further increase in the non-auto mode share, but has not been factored into the Master Plan transportation analysis (data has not yet been produced by Metrolinx).

Figure 5: 2031 Modal Split / Non-Auto Trip Reduction Proposed

Peak Period	Primary Mode of Travel in 2031	Non-Auto Trip Reduction Proposed for Trip Generation in 2031
	Auto Driver	
AM	50%	50%
PM	55%	45%

Trip Generation

As per the *Special Site 12 Master Plan Study - Trip Generation Surveys at Proxy Sites* memorandum submitted to the City of Mississauga on April 23, 2015, IBI Group proposed to undertake trip generation surveys. Through discussions with the City, three locations were confirmed to be surveyed:

- 1/33 Hurontario Street in Mississauga (near Port Credit GO Station)
- 15 Elizabeth Street in Mississauga (near Port Credit GO Station)
- 3865 Lake Shore Boulevard West in Toronto (near Long Branch GO Station)

Due to property management concerns, the trip generation surveys at 1/33 Hurontario Street did not take place. The results of the other surveys are outlined below.

15 Elizabeth Street (Residential Development)

The trip generation survey took place on June 3, 2015 from 7:00-9:00 AM and 4:30-6:30 PM. The number of auto inbound/outbound trips is summarized in Figure 6.

Figure 6: Inbound/Outbound Auto Trips at 15 Elizabeth Street

Peak Hour	# of Units	Inbound (trips)	Trip Rate (trips/unit)	Outbound (trips)	Trip Rate (trips/unit)	Total (trips)	Trip Rate (trips/unit)
AM	54	1	0.02	9	0.17	10	0.19
PM		9	0.17	5	0.09	14	0.26

*Source: City of Mississauga planning staff

As shown in Figure 6, there are 10 auto trips during the AM peak hour and 15 auto trips during the PM peak hour. Given there are 54 units at 15 Elizabeth Street, this equates to an auto trip rate of 0.19 in the AM peak hour and 0.26 during the PM peak hour.

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3865 Lake Shore Boulevard West (Residential and Small Retail Development)

The trip generation survey took place on May 21, 2015 from 7:00-9:00 AM and 4:30-6:30 PM. The number of inbound/outbound auto trips associated with the residential is summarized in Figure 7. The retail component of the site is a small medical clinic which does not have any parking spaces on the site. Surveyors monitored the parking spaces to ensure that any retail trips were discounted against the residential trip rate calculation.

Figure 7: Inbound/Outbound Auto Trips at 3865 Lake Shore Boulevard West

Peak Hour	# of Units	Inbound (trips)	Trip Rate (trips/unit)	Outbound (trips)	Trip Rate (trips/unit)	Total (trips)	Trip Rate (trips/unit)
AM	185*	7	0.04	40	0.21	47	0.25
PM		41	0.22	22	0.12	63	0.34

*Source: <http://www.condominium.ca/3865-lake-shore-blvd-w>

As shown in Figure 7, there are 47 auto trips during the AM peak hour and 63 auto trips during the PM peak hour. Given there are 185 units at 3865 Lake Shore Boulevard West, this equates to an auto trip rate of 0.25 trips/unit in the AM peak hour and 0.34 trips/unit during the PM peak hour.

ITE Trip Generation manual

A comparison was undertaken between the two surveyed auto trip rates, and the equivalent trip rates in the Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition publication. This comparison can be found Figure 8.

Figure 8: Trip Generation Survey Comparison with ITE Trip Generation manual

Peak Hour	# of Units	Source	Inbound Auto Trip Rate (trips/unit)	Outbound Auto Trip Rate (trips/unit)	Total Auto Trip Rate (trips/unit)
AM	54	Survey - 15 Elizabeth St	0.02	0.17	0.19
		ITE	0.10	0.48	0.58
		Survey - 3865 Lake Shore Blvd	0.04	0.21	0.25
		ITE	0.08	0.38	0.46
PM	185	Survey - 15 Elizabeth St	0.17	0.09	0.26
		ITE	0.45	0.22	0.67
		Survey - 3865 Lake Shore Blvd	0.22	0.12	0.34
		ITE	0.36	0.18	0.54

*ITE source was the fitted curve equation, not the rate, as this was more conservative. This is why it was different for the 2 sites, as the curve is non-linear

Summary

Given the location and nature of the two proxy surveys, it is inherent that the any trip reduction due to transit and other non-auto modes will be captured in the surveyed rate. This is because vehicle trips were surveyed, and not people trips (due to the logistics of undertaking such a survey at these sites).

A review of the surveyed and ITE trip rates in Figure 8 shows that the ITE trip rates are higher than the surveyed trip rates. Additionally, the site in Port Credit had a lower auto trip rate than

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the site in Long Branch in Toronto. This is unexpected, given the slightly higher non-auto mode share in Port Credit (as per TTS comparison).

Based on the results of the trip generation surveys, and the modal split in the areas surrounding the two survey sites, we propose to use a trip generation rate similar to the trip survey rates, but closer to that found in Port Credit. We are not recommending using the exact surveyed trip rate in Port Credit, but something near the middle of the two surveyed rates because of the:

- Small sample size (one survey date)
- Building age (the 15 Elizabeth St. building is older than the 3865 Lake Shore Blvd. W building)

Figure 9 summarizes the following:

- Recommended existing trip generation rates, which could be used for short term analysis or any analysis should the modal split not be achieved; and
- Recommended 2031 trip generation rates, which includes a conservative 10% trip reduction to the recommended existing trip generation rates (as shows that the auto driver mode share could drop up to 20% in the . This reduction accounts for the increased non-auto mode share from the time of surveys (2015) to the study horizon (2031), as discussed in the mode share section.

Figure 9: Recommended Existing and 2031 Auto Trip Generation Rate

Peak Hour	Inbound Auto Trip Rate (trips/unit)	Outbound Auto Trip Rate (trips/unit)	Total Auto Trip Rate (trips/unit)
Existing AM	0.03	0.19	0.22
2031 AM (includes increased non-auto mode share)	0.03	0.17	0.20
AM	0.19	0.10	0.29
2031 PM (includes increased non-auto mode share)	0.17	0.09	0.26

The 2031 horizon year analysis will consider residential trip rates to be 0.20 trips per unit during the AM peak hour and 0.26 trips per unit in the PM peak hour, as shown in Figure 9.

Interaction Trips

We propose to use a 5% interaction trip reduction for sites that contain retail, restaurant, or financial uses on the same site as an office or residential land use. We have not applied a trip reduction to these uses for adjacent sites.

Trip Distributions

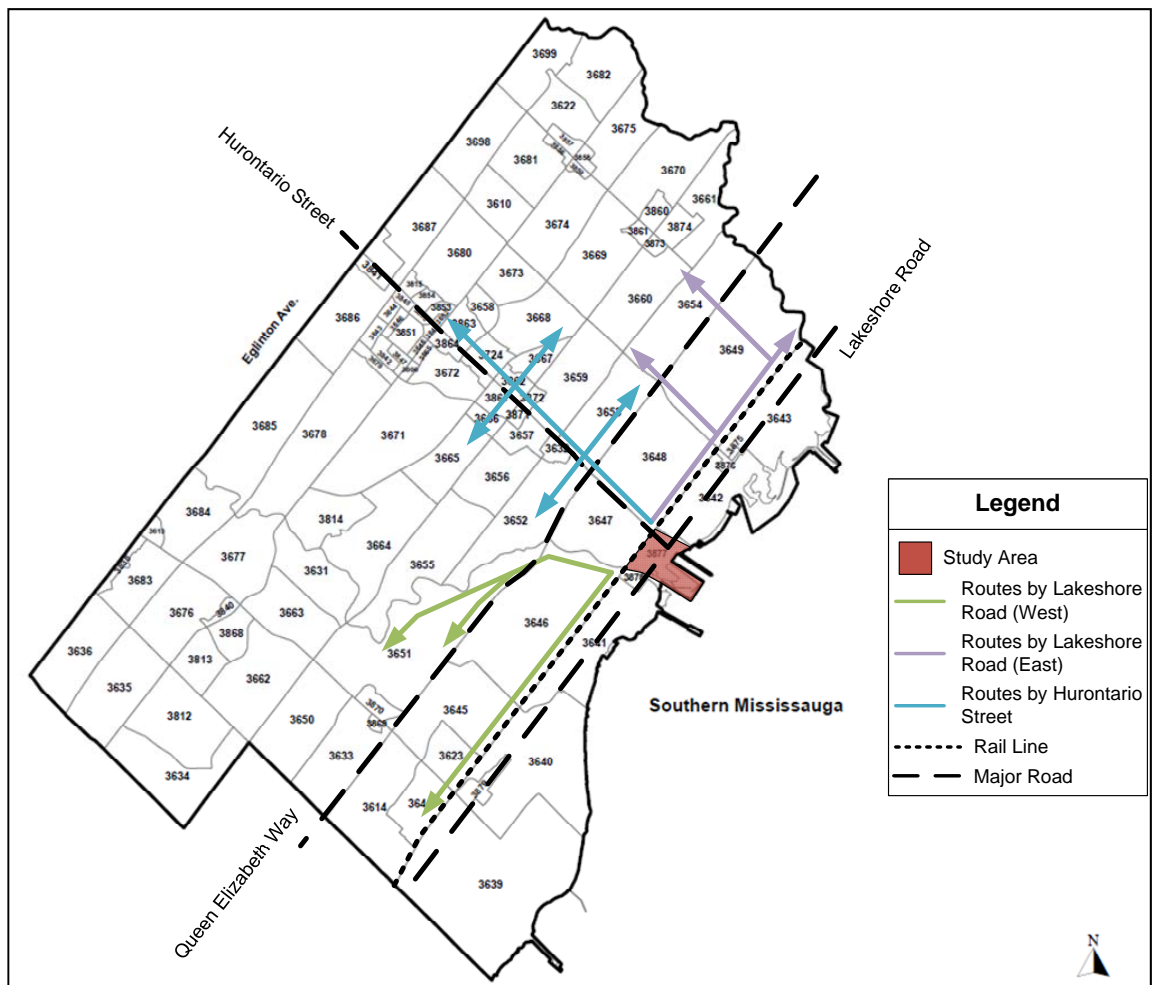
Trip distributions for the AM and PM peak periods were calculated for the following land uses: retail (includes financial), office, and residential. The study area (depicted in red in Figure 10) is within zone¹ 3877. When extracting data from the 2011 TTS for residential and office land uses, it was assumed that:

¹ University of Toronto. (2009). 2006 Traffic Zone Boundaries – Zone Numbers and Detailed Definitions. Retrieved June 1st, 2015 from: http://www.dmg.utoronto.ca/pdf/reports/2006to2010/znbdy2006/boundary2006_A.pdf

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- For traffic with destinations west of the study area, development traffic could take Lakeshore Road (to access West Mississauga, Mississauga Road, and Queen Elizabeth Way) or Hurontario Street (to Queen Elizabeth Way);
 - The traffic accessing the Queen Elizabeth Way via Hurontario Street and Lakeshore Road / Mississauga Road would be split evenly;
- For traffic with destinations east of the study area but within Mississauga, development traffic could take Lakeshore Road (to Cawthra Road or Dixie Road) or Hurontario Street (to an east-west arterial e.g. Eglinton Avenue). It was assumed that the traffic using Hurontario Street and Lakeshore Road / Cawthra Road / Dixie Road would be split evenly;
- For traffic with destinations east of the study area outside of Mississauga, development traffic would head north on Hurontario Street to access the Queen Elizabeth Way; and
- All traffic with destinations north of the study area would travel north on Hurontario Street.

Figure 10: Study Area and Travel Routes



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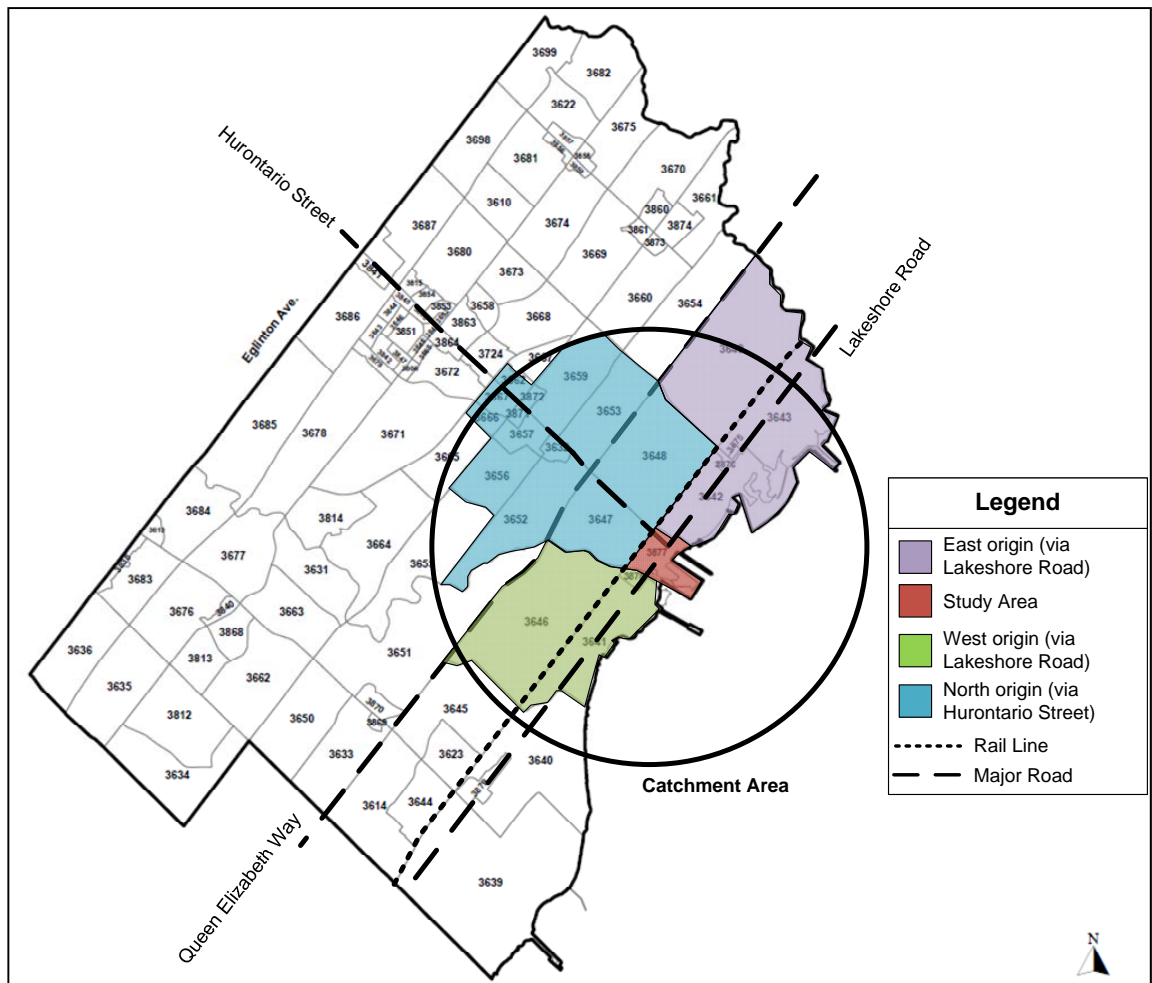
Trip distributions for residential and office land uses were calculated by taking a weighted average of the trip distributions for the inbound and outbound trips in each peak period. The trip distributions are summarized in Figure 11. Trip distributions were rounded to the nearest 5%.

Figure 11: Residential and Office Land Use Trip Distribution

Land Use	Peak Period	Lakeshore West	Lakeshore East	Hurontario Street
Residential	AM	20%	10%	70%
	PM	15%	10%	75%
Office	AM	25%	5%	70%
	PM	25%	5%	70%

The trip distributions for retail and financial land uses are determined based on the population distribution within a catchment area around the study area (approximately 4 km), illustrated in Figure 12.

Figure 12: Retail and Financial Land Use Catchment Area



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The population distribution, and subsequently the trip distribution, for retail and financial land uses are summarized in Figure 13. Trip distributions were rounded to the nearest 5%. The raw 2011 TTS data used is available in **Attachment B**.

Figure 13: Retail and Financial Land Use Trip Distribution

	West	East	North
Retail Trip Distribution	20%	20%	60%

Appendix B

Potential Future Developments in Port Credit

City of Mississauga

Memorandum

File: CD.03.POR

DATE: November 12, 2014

TO: Evie Przybyla, Leslie Green, and Joe Perrotta

FROM: Paul Stewart

CC: Susan Tanabe

RE: Potential Developments In Port Credit In The Future

As requested I have reviewed material that was sent to Leslie Green dated July 3, 2013 provided as part of the traffic analysis for the redevelopment of the Port Credit Marina. Specifically I have updated the memo and table, as it relates to the development potential for a number of sites in Port Credit. The following should be noted:

- Purpose: Table has been prepared to assist Transportation and Works Department better understand future traffic demands in Port Credit. It is important to understand the limitations of producing these figures as outlined below. The table represents a starting point for discussions related to transportation infrastructure in Port Credit.
- For sites where there is an active development application we have included statistics provided by the applicant even though an OPA and/or ZBA may be required. Once the planning process for sites is completed the unit count and commercial space may change. In some cases unit counts/space may be reduced as figures used in the above table reflect aspirations of applicants (i.e. Canada Lands, Benson&High) and in other cases the space may be increased once a development application is submitted (e.g. lands in the vicinity of the GO station parking lot development may accommodate additional commercial space).

- Traffic impact from some sites may be reduced as existing space being redeveloped currently generates some traffic (e.g. No Frills supermarket being redeveloped generates traffic which should offset some of the traffic being generated by new space).
- Some of the sites identified in the table may have been included in the previous City growth forecasts (e.g. No Frills redevelopment) whereas other sites may not have (e.g. Benson and High property). Not sure how you are using these figures but you should be careful to not double count in any transportation modelling. I believe previous growth forecasts did not assume all development potential would be accommodated by end of forecast (i.e. City has a lot of sites that can accommodate high density development, however, the market does not necessarily exist to absorb all these sites).
- The sites identified in the table are properties where there is some expectation that a development application may occur, or interest has been expressed. The degree of certainty ranges from some sites that have been approved for development (e.g. NoFrills site has reasonably high degree of certainty it will be developed as described), to sites where community meetings have been held or applications submitted (Benson & High and the Ann&High sites have reasonably high degree of certainty for redevelopment although unit counts and commercial space are likely to change), to sites that will be subject to a design/redevelopment study (properties in vicinity of GO station have a lower degree of certainty as a design study is required to confirm built form), and sites which generally seem likely to get redeveloped given locational attributes (Ports Hotel has a very low degree of certainty as to-date there has been no interest on the part of the property owner to redevelop the site).
- The table does not include a number of sites which could potentially be redeveloped at some point, but lack the development interest or site has significant constraints that make it difficult to identify with any degree of certain future development. We should discuss sensitivity of certain areas to additional traffic and whether the analysis can address or at least speak to this issue or look at sensitivity if other unanticipated sites come on stream. Sites that may be redeveloped but have not been included given uncertainty include:
 - **Credit Landing.** This plaza has additional development rights in the official plan as the site is designated for mixed-use development with a height of 4 storeys. At some point this plaza may get redeveloped, and given size of the site it could potentially accommodate height even greater than 4 storeys. However, it is not possible to provide a realistic estimate as to the amount of space and timing of development. Issues of permitting sensitive land uses on previous industrial site may also be a constraint to redevelopment.
 - **Gas Stations, Auto-dealerships, parking lots, small strip plazas, single storey main street commercial buildings that are not designated/listed on**

the heritage registry. All of these sites could theoretically be redeveloped (examples exist in Toronto and elsewhere in Mississauga) with buildings in the 3 to 4 storey height range (as permitted in most cases by the Official Plan) or higher if able to demonstrate appropriateness. The timing and likelihood of this occurring within say a 20 year timeframe is questionable.

- **High Density Residential sites that have been built below the height limit.** The apartment district surrounding the GO station contains a number of sites that have buildings on them that are below the permitted height (typically 15 storeys). It is possible someone may purchase or combine properties that have say a 5 storey building with surface parking and a duplex to redevelop these sites with a taller apartment building. However, the likelihood of this occurring and identifying various combinations of properties to create development lots goes beyond what can reasonably be assumed in this high level review for reasons such as:
 - Many of the sites that have the greatest difference between existing heights and permitted heights are small, sometimes include heritage designated buildings and would require a detailed review to determine whether a building footprint could be realistically accommodated given appropriate setbacks and separation distances from existing apartment buildings.
 - The city is concerned with the loss of its rental housing stock, and any application pertaining to redevelopment of existing apartment buildings will be complicated by this issue (retention of rental units may impact financial viability of redevelopment).
 - New development on surface parking lots will have to provide additional underground parking to compensate for lost surface parking which may increase cost of development.
 - In some cases, sites are improved with a significant building (e.g. 8 storeys or more) and the financial case for removal of this building and rental stream of revenue may make it difficult to justify redevelopment. Further work would be required to determine likelihood of redeveloping some of the buildings.
- **Parks & Open Space:** Additional development of Marina Park West (if boat launch relocated and site developed with buildings) would increase traffic; however, amount of space and likelihood of relocating boat launch are too uncertain to provide any type of realistic figure.
- **School Sites:** It is possible some public or private schools may get redeveloped and/or partially redeveloped (e.g. build new school if part of site is redeveloped), however, we do not have any information at this time to determine if this is likely to occur.

- **Residential Low Density II designation:** Most of the residential lands north of Port Credit are designated Low Density II which permits, singles, semi's duplex, triplex and other forms of low-rise dwellings. Although most of the lots are developed with single detached dwellings, Port Credit is beginning to see some of these lots being redeveloped with semi-detached units. The extent to which this continues (as opposed to people simply building a larger home) and increases the overall number of dwellings in the area has not been factored into the analysis, although to some extent this trend and the implications on vehicles is likely offset by reduced household sizes and therefore reduced car ownership .
- **Development Outside Port Credit:** With the general planning emphasis in the Province towards directing greater amounts of growth to inside existing urban areas, it is possible that development outside Port Credit (both in Mississauga and surrounding municipalities) will result in additional vehicular traffic that is not factored into the table
- It should be noted that Official Plan policy 5.1.9 states that Development proposals may be refused if existing or planned servicing and/or infrastructure are inadequate to support additional growth. Further Official Plan policy 8.1.16 states that in reviewing development applications, Mississauga will require area wide or site specific transportation studies to ensure development does not precede necessary road, transit, cycling and pedestrian improvements. As such, if applications come forward that were not anticipated in this table there is still potential to examine traffic impacts in the future. In addition, the Official Plan does not require sites to be developed to the maximum height permission and the Local Area Plan recognizes that there could be some variation in building heights for the area; as such not every site has to be developed to the maximum permitted height.
- Port Credit contains a Community Node and Neighbourhood elements of the City's urban structure. While Community Nodes are intensification areas and some intensification is intended for Neighbourhoods, I would suggest that generally speaking, the City wants to direct more of the growth to the Urban Growth Centre, Major Nodes and Intensification Corridors. However, the Growth Plan for the Greater Golden Horseshoe and the Regional Transit Plan "The Big Move" do speak to Major Transit Station Areas (which includes Port Credit GO station) as a location for intensification. As such the planning challenge in Port Credit is to achieve the proper balance. This analysis attempts to provide a realistic assessment of new development and not a worse case scenario which could result in an over investment in infrastructure for potential development that may not occur. It is not possible for me to estimate accurately the timing of when these sites may ultimately be developed.
- If the City is going to invest in additional infrastructure (e.g. bridge for cars and/or LRT) to support Inspiration Port Credit and Lakeview initiatives, it may be necessary to re-evaluate the planned function of Port Credit as well as the urban structure for the City

and the likelihood that sites not included on the table will become more viable. For example, if a new bridge across the Credit River is proposed, including LRT to Imperial Oil, it is likely that some of the sites not included may become more realistic (e.g. Credit Landing Plaza). As such, it is important to ensure that decisions made regarding investments in infrastructure and decisions regarding the manner in which growth is accommodated in the City complement each other and are not working at cross-purposes. It is also important to ensure that the city does not over invest in infrastructure that is not required by assuming sites will be redeveloped when there are significant constraints.

- The traffic analysis needs to consider the issues in and around the GO station, especially around peak periods. Although there are examples in planning where the city does not accommodate the absolute peak demand (e.g. we don't require parking spaces to satisfy demand on boxing day), in the case of Port Credit, given peak demand likely happens five out of seven days a week, likely in the morning and evening, and ultimate success of the area will be measure on peoples impressions during peak period I suggest it is important to ensure traffic congestion is thoroughly addressed and if necessary design of redevelopment modified, with particular emphasis on how parking structure will function and the necessary number of parking spaces.
- Updates to the previous table "July 3, 2013 - Summary of Future Development Potential" include the following:
 - Property at 5,6 and 8 Ann St has had the number of units reduced from 140 apartment units to 69 units (66 apartment and 3 townhouses). The reduction reflects OMB decision which found FRAM application for 140 units did not represent good planning. The revised unit count of 69 units reflects most recent submission to City. Staff have not yet made a recommendation on the appropriateness of the revised submission.
 - Properties at 41&45 Park St, and 17 Elizabeth Street have been included. As part of the Port Credit Local Area Plan, the owner indicated that they would like to develop their property (currently improved with single detached dwellings) with a high-rise apartment building. No applications submitted, and site has constraints associated with size of lot, proximity to other buildings, setbacks etc. However, as a place holder we assumed 66 units (same number as FRAM application), give similar lot area. Ultimate development may be a smaller building, but the unit count could also increase depending on the size and mix of the units.
 - Properties at 42, 44, 46 Park Street and 23 Elizabeth Street have been included. Although property owners have not indicated any interest in redevelopment, this site is across the street from 41,45, Park Street and exhibits many of the same

opportunities and constraints. As such, as a place holder, we have included this site and used same assumptions, as those across the street.

- Properties in the general vicinity of the northeast corner of Benson Avenue and Lakeshore Road, south of High Street West now have an application for a seniors oriented development including retirement residence, seniors supported housing, townhouses and commercial space.
- Property behind Credit Landing Plaza has been included. Recently application has been submitted to develop medical offices on the site.
- I recommend you share this information with the consultants undertaking the traffic and servicing analysis and request their professional opinion as to whether this information is sufficient to reasonably assess future traffic demands or whether we need to undertake more detailed review to try and establish an ultimate “worse case” scenario that includes redevelopment of existing apartment buildings etc.

November 12, 2014
DRAFT – SUMMARY OF FUTURE DEVELOPMENT POTENTIAL IN PORT CREDIT

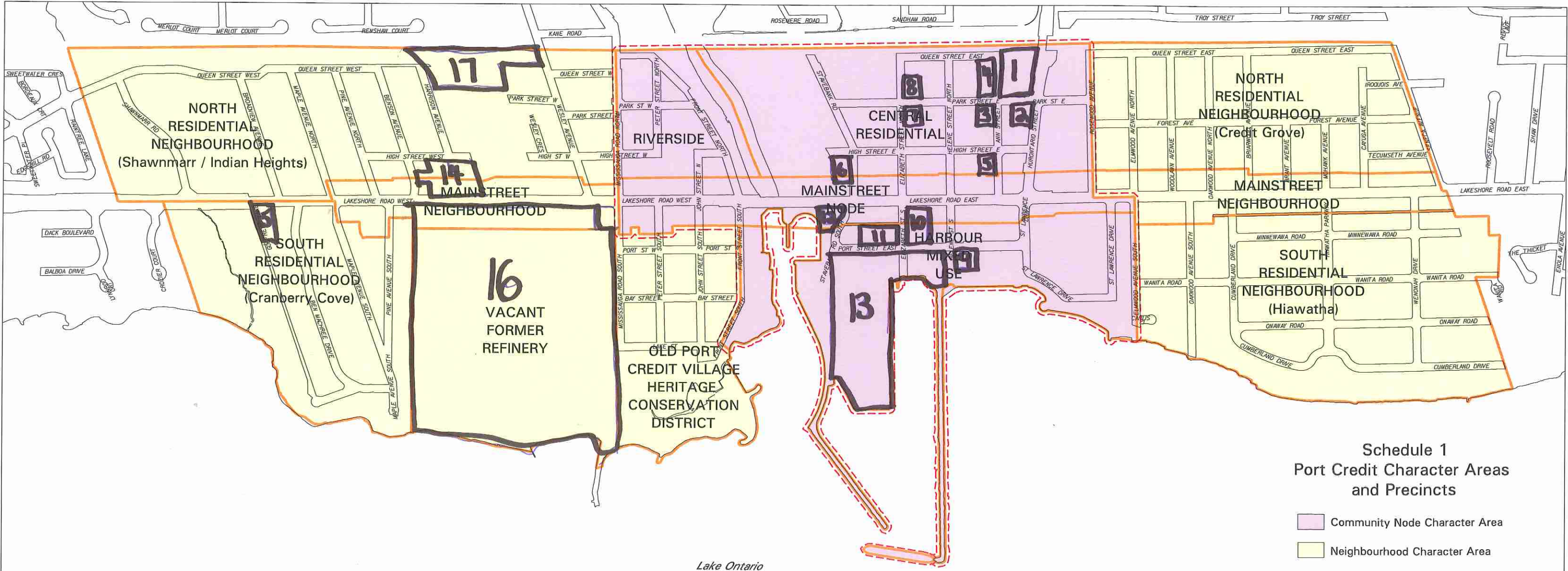
Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
Potential Development In Vicinity of GO Station In Community Node Study required to confirm appropriate development on lands in vicinity of Ann and Queen (see Local Area Plan for specific area)									
Site 1: GO Transit Lot	Mixed Use Redevelopment	7718	500	-	-	-	2000	168	Assumes one 22 storey tower (8 units per floor) with ground floor retail plus office. Site may be able to accommodate additional development; however, detail study is required. IBI / Metrolinx should examine ability to accommodate second tower and/or additional mid-rise on site. If appropriate factor additional units into traffic analysis.
Site 1: GO Transit Lot	Parking Structure	1877							In addition to residential, retail and office uses on the parking lot, the GO Transit is interested in adding an additional 300 to 500 parking spaces. Additional spaces will generate more traffic in the area. Traffic study is required to confirm impacts of development in this area. Parking lot likely located adjacent to railway, at least partially on Queen St. road allowance. IBI / Metrolinx should consider benefits of TOD development and reduce number of spaces in the parking garage.
Site 2: Former Lawn Bowling Green	Residential	2750	500	-	-	-	-	168	Assumes one 22 storey tower (8 units per floor) with ground floor retail/office; however detail study required and additional property acquisition may be necessary to create developable parcel.
Site 3: 80 High St. East	Residential	2000	500	-	-	-	-	168	Assumes one 22 storey tower (8 units per floor) with ground floor retail/office; however

Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
(Bell substation)									detail study required on the Bell Telephone parking lot. Potential constraint to redevelopment may be location of telephone infrastructure (e.g. if cables located below parking lot it may be difficult to redevelop).
Site 4: 30-78 Ann St.	Residential	3100	500	-	-	-	-	168	Assumes one 22 storey tower (8 units per floor) developed on this block, along with some ground floor retail/office; however, detail study required.
Additional Potential Development Sites North of Lakeshore Road But Outside of GO station / LRT immediate area									
Site 5: 6, 8 and 10 Ann St.	Residential	1930	180	-	-	-	-	66 unit condo plus 3 townhouses	Based on application submitted by FRAM in November 2014. Application has been revised down from 22 storeys to 15 storeys as a result of previous Council and OMB decision. Application currently being processed by staff. No decision made on application.
Site 6: 6 to 22 Stavebank	Mixed –Use	2800	180					60	Assumes a 6 storey building similar to 70 Port Street. As part of Local Area Plan land owner has requested permission additional development rights above current permission of 4 storeys.
Site 7: 41&45 Park St and 17 Elizabeth And on other side of the street Site 8: 42, 44, 46 Park St and 23 Elizabeth St.	Residential	2000 And 2000						66 <u>66</u> 132 units	No application, however, property owner of 41&45 Park have expressed interest in developing site with a 15+ storey apartment building. Area Plan permits up to 15 storeys. Lands across the street exhibit similar characteristics. Sites are relatively small, may require consolidation and don't meet guidelines for separation distances between tall buildings; however, the sites would meet guideline if developed with 6 storey buildings. It is assumed that the sites would be developed at 15 storeys as placeholder. Unit count based

Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
									on revised FRAM submission at Ann Street. Potentially aggressive assumption regarding unit count is balanced by other sites along Park Street that have theoretical ability to accommodate development but have not been included (see below).
Other smaller sites in the Area	<p>There are a number of other sites in the area that could theoretically be intensified, including:</p> <ul style="list-style-type: none"> - low rise 5-7 storey apartment buildings with significant surface parking at 12 and 26 Park Street East; however, issue of rental unit protection and how parking would be accommodated for existing buildings plus new units seems significant enough to not include. Planned function of site is currently being achieved with low rise apartment units. - single detached homes at 21,25, 27 Park Street East; however, one building is listed on heritage registry and Community Services suggest it may be an important building. Further, property consolidation is required and site is located adjacent to heritage site which may require further review to determine appropriate setbacks, etc. Issues seem significant enough not to include. - there are two 2.5 storey apartment buildings at 14 Elizabeth St; however, the lot is small and narrow and surrounding apartment buildings represent a challenge from the perspective of building separation. Issues seem significant enough to not include. <p>Depending on sensitivity and capacity of the system, traffic analysis may want to consider this additional development or identify what excess capacity is still available.</p>								
Potential Developments In The Community Node south of Lakeshore Road									
Site 9: 55 Port Street East	Residential	2300	180	-	-	-	-	20	Represents current approvals in place for land beside Regatta building that FRAM has not yet built (i.e. OP permits 95 units on the block whereas only 75 have been constructed according to City data). Site designated Mixed Use so assume small amount of commercial as most of the units in this area do not have a lot of retail space.
Site 10: 91-99 Lakeshore Road E.	Dr. James/No Frills redevelopment	5790	1905	-	-	-	2301	56	Based on application approved by Council
Site 11: 30 Port Street East (Ports Hotel)	Mixed-Use	3700	900	-	-	-	-	110	Assumes 10 storey building stepping down to the 6 storey, as proposed in the Local Area Plan. Unit count reflects general assumptions based on surrounding development, including

Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
									NO Frills redevelopment, 70 Port Street, and 65 Port Street.
Site 12: Post Office – 31 Lakeshore Road East	Commercial	1937		583	-	670	2109	-	Assumes site is redeveloped with mixture of uses.
Site 13: Canada Lands Marina	Mixed-Use		19774 to 24973 (see notes)					1200 to 1500 (see notes)	Figures from Canada Lands Master Plan, which estimates 400 jobs and between 2,280 and 2,850 people. Retail figures represent non-residential or live/work space. Inspiration Port Credit figures are still under review but could be lower than those proposed by CLC. Should speak with Ruth Marland.
Potential Developments In The Port Credit Neighbourhood									
Site 14: Vicinity of the northeast corner of Benson Avenue and Lakeshore Road, south of High Street	Seniors Oriented Mixed-Use Development	11,183	523	-	-	228		173 units retirement res. 136 seniors supportive units <u>16</u> townhouses 325 units total	Statistics are from development application currently in circulation. A staff position is not established. An OPA / ZBA would be required.
Site 15: 375 Lakeshore Road (Godfrey's Lane)	Residential townhouses	4100						18	Represent redevelopment of vacant low rise apartment buildings.

Development Site	Description	Site Area (m2) approx.	Retail GFA (m2)	Financial Institution GFA (m2)	Medical Office GFA (m2)	Restaurant GFA (m2)	Office GFA (m2)	# of Residential Units	Assumptions / Notes
Site 16: Imperial Oil	Mixed Use		See notes					See notes	Stoss draft provides two scenarios: Scenario 1: 6891 population & 4531 employees Scenario 2: 5057 population & 3363 employees Should confirm with Ruth Marland that these are the most recent figures.
Site 17: Land behind Credit Landing Plaza	Business Employment				5999				Submission of Nov 29, 2013 from Pen Equity, indicates intention to develop 90,000 square foot medical office with 415 parking stalls. Most recent site plan submission indicates the GFA for medical office is 5,999 square metres with 406 parking spaces. Previous plans have called for self storage use.



Lake Ontario

**Schedule 1
Port Credit Character Areas
and Precincts**

- Community Node Character Area
- Neighbourhood Character Area
- Node Boundary
- Precinct Boundary

Appendix C

TTS Raw Data

2011 TTS Data for RETAIL/FINANCIAL land use

West	Date : Jun 4, 2015 11:47:40 Data : 2011 TTS V1.0 Persons Filter 1 : gta06_hhld => 3646, 3641, 3878 Number of Observations = 678 Total Expanded Number = 13521
------	--

East	Date : Jun 4, 2015 11:47:40 Data : 2011 TTS V1.0 Persons Filter 1 : gta06_hhld => 3642, 3876, 3875, 3643, 3649 Number of Observations = 823 Total Expanded Number = 17228
------	--

North	Date : Jun 4, 2015 11:47:40 Data : 2011 TTS V1.0 Persons Filter 1 : gta06_hhld => 3647, 3648, 3652, 3653, 3632, 3656, 3659, 3666, 3871, 3872, 3867, 3862 Number of Observations = 2162 Total Expanded Number = 45528
-------	---

2011 TTS Data for RESIDENTIAL land use

USER : Peter Richards - IBI Group - Transportation Engineer
 DATE : Jun 4 2015 (11:47:40)
 DATA : 2011 TTS V1.0 Trips
 FILTER 1 : gta06_hhld => 3877
 FILTER 2 : gta06_orig => 3877
 FILTER 3 : trip_day => Monday - Friday
 FILTER 4 : mode_prime => Auto driver
 ROW : start_time
 Group 1 : 700-900
 Group 2 : 1630-1830
 COLUMN : gta06_dest

	37	285	290	323	353	359	484	2070	3330	3343	3385	3601	3614	3627	3631	3632	3634	3639	3640	3642	3643	3645	3651	3673	3700	3702	3703	3704	3713	3831	3871	3877	3878	4023	4024
Group 1	20	0	20	0	23	43	23	20	23	20	19	0	20	20	18	37	18	20	20	46	20	18	18	19	30	20	23	20	23	20	15	0	23	0	30
Group 2	0	18	0	23	0	0	0	0	0	0	0	20	0	0	0	30	0	0	0	20	0	0	15	0	0	0	0	0	0	0	23	0	38	20	

* * * * *

Outbound	ALL	Lakeshore West	Lakeshore East	Hurontario
AM	689	119	66	504
PM	184	90.5	20	73.5
AM	689	17%	10%	73%
PM	184	49%	11%	40%

*Proportion of those going along Lakeshore vs Hurontario 0.5

USER : Peter Richards - IBI Group - Transportation Engineer
 DATE : Jun 4 2015 (11:47:40)
 DATA : 2011 TTS V1.0 Trips
 FILTER 1 : gta06_hhld => 3877
 FILTER 2 : gta06_dest => 3877
 FILTER 3 : trip_day => Monday - Friday
 FILTER 4 : mode_prime => Auto driver
 ROW : start_time
 Group 1 : 700-900
 Group 2 : 1630-1830
 COLUMN : gta06_orig

	36	37	223	294	323	353	359	484	2072	2243	3631	3634	3639	3642	3643	3648	3651	3653	3700	3702	3703	3713	3831	3843	3857	3867	3877	4023	
Group 1	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0
Group 2	21	20	20	18	23	23	43	38	20	20	18	18	0	23	20	0	20	30	30	20	23	23	20	18	23	18	23	20	

* * * * *

Inbound	ALL	Lakeshore West	Lakeshore East	Hurontario
AM	43	20	0	23
PM	570	38	43	489
AM	43	47%	0%	53%
PM	570	7%	8%	86%

*Proportion of those going along Lakeshore vs Hurontario 0.5

2011 TTS Data for OFFICE land use

USER : Peter Richards - IBI Group - Transportation Engineer
 DATE : Jun 4 2015 (11:47:40)
 DATA : 2011 TTS V1.0 Trips
 FILTER 1 : gta06_emp => 3877
 FILTER 2 : gta06_dest => 3877
 FILTER 3 : trip_day => Monday - Friday
 FILTER 4 : mode_prime => Auto driver
 ROW : start_time
 Group 1 : 700-900
 Group 2 : 1630-1830
 COLUMN : gta06_orig

North via Hurontario Street
 West via Lakeshore Road
 East via Lakeshore Road

Group 1	109	238	307	319	602	3192	3612	3616	3632	3635	3644	3649	3655	3667	3669	3670	3675	3680	3689	3694	3810	3847	3878	4023	4026	4186	6015
Group 2	16	33	34	17	12	23	18	18	22	22	35	23	17	22	28	28	19	0	20	23	21	21	19	18	33	62	22
Group 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0

* * * * * * * * * * * * * * * *

Inbound	ALL	Lakeshore West	Lakeshore East	Hurontario
AM	626	152	37.5	436.5
PM	22	0	0	22
AM	626	24%	6%	70%
PM	22	0%	0%	100%

*Proportion of those going along Lakeshore vs Hurontario 0.5

USER : Peter Richards - IBI Group - Transportation Engineer
 DATE : Jun 4 2015 (11:47:40)
 DATA : 2011 TTS V1.0 Trips
 FILTER 1 : gta06_emp => 3877
 FILTER 2 : gta06_orig => 3877
 FILTER 3 : trip_day => Monday - Friday
 FILTER 4 : mode_prime => Auto driver
 ROW : start_time
 Group 1 : 700-900
 Group 2 : 1630-1830
 COLUMN : gta06_dest

North via Hurontario Street
 West via Lakeshore Road
 East via Lakeshore Road

Group 1	45	204	238	295	319	3192	3372	3612	3616	3632	3634	3635	3640	3644	3646	3649	3653	3655	3670	3673	3674	3686	3689	3694	3878	4023	4024	4186	6015
Group 2	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	19	0	0	0	0	0	0	0	30	0	
Group 2	12	11	33	15	17	23	23	18	18	22	30	22	0	19	28	23	22	17	28	22	28	22	20	23	19	18	53	62	22

* * * * * * * * * * * * * * * *

Outbound	ALL	Lakeshore West	Lakeshore East	Hurontario
AM	69	20	0	49
PM	670	164.5	39.5	466
AM	69	29%	0%	71%
PM	670	25%	6%	70%

*Proportion of those going along Lakeshore vs Hurontario 0.5

MODAL SPLIT DATA (PORT CREDIT)

USER : Peter Richards - IBI Group - Transportation Engineer

DATE : Jun 4 2015 (11:47:40)

DATA : 2011 TTS V1.0 Trips

FILTER 1 : gta06_orig => 3647, 3648, 3877, 3642

FILTER 3 : trip_day => Monday - Friday

ROW : start_time

Group 1 : 700-900

Group 2 : 1630-1830

COLUMN : mode_prime

	Walk	GO rail only	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Cycle	Schoolbus	Auto driver
Group 1	590	464	917	295	242	64	87	6603
Group 2	131	18	1072	61	116	44	22	4447

USER : Peter Richards - IBI Group - Transportation Engineer

DATE : Jun 4 2015 (11:47:40)

DATA : 2011 TTS V1.0 Trips

FILTER 1 : gta06_dest => 3647, 3648, 3877, 3642

FILTER 3 : trip_day => Monday - Friday

ROW : start_time

Group 1 : 700-900

Group 2 : 1630-1830

COLUMN : mode_prime

	GO rail only	Walk	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Cycle	Schoolbus	Taxi passenger	Auto driver
Group 1	0	477	1637	89	322	64	657	0	4826
Group 2	375	110	1074	225	175	64	0	20	5360

MODAL SPLIT DATA (LONG BRANCH)

USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (10:55:32) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_orig => 295 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime									USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (14:24:17) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_dest => 295 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime									
	Walk	GO rail only	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Schoolbus	Taxi passenger	Auto driver		GO rail only	Walk	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Cycle	Schoolbus	Taxi passenger	Auto driver
Group 1	49	139	218	22	279	18	15	1163	Group 1	0	13	96	0	0	0	21	15	689
Group 2	0	0	161	0	112	0	0	965	Group 2	101	35	117	44	83	35	0	0	1080

USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (10:55:32) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_orig => 294 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime									USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (14:24:17) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_dest => 294 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime								
	Auto passenger	Transit excluding GO rail	Cycle	Schoolbus	Auto driver	GO rail only	Walk	Motorcycle		GO rail only	Walk	Auto passenger	Joint GO rail and public transit	Transit excluding GO rail	Cycle	Auto driver	
Group 1	414	483	31	35	1302	53	229	15	Group 1	0	88	93	0	0	0	533	
Group 2	312	68	18	0	859	0	18	0	Group 2	31	70	276	70	339	15	1312	

USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (10:55:32) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_orig => 298 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime									USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (14:24:17) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_dest => 298 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime								
	Walk	GO rail only	Auto passenger	Transit excluding GO rail	Cycle	Schoolbus	Auto driver		GO rail only	Walk	Auto passenger	Transit excluding GO rail	Cycle	Auto driver			
Group 1	75	44	309	262	35	106	1317	Group 1	0	88	140	107	28	586			
Group 2	35	13	168	148	0	0	625	Group 2	44	0	268	222	35	1086			

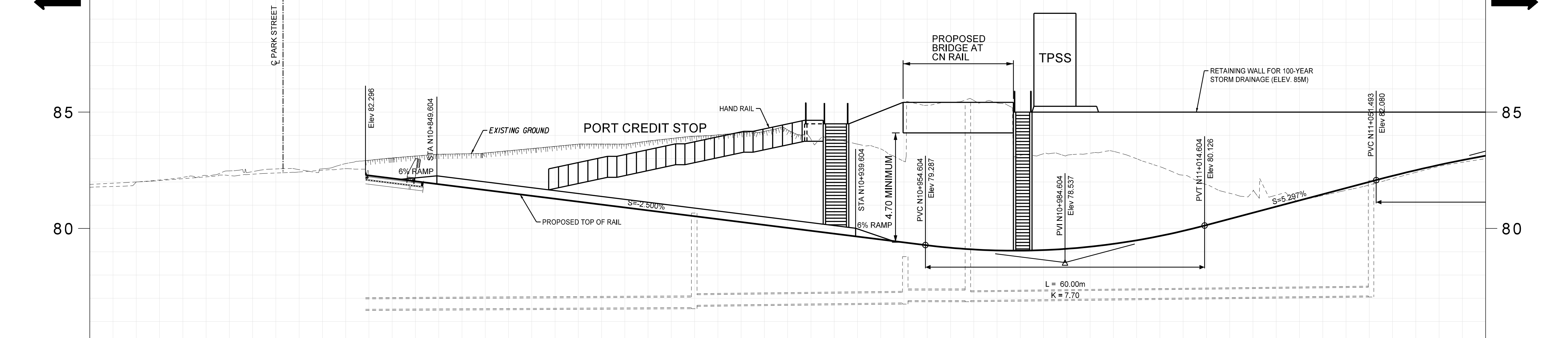
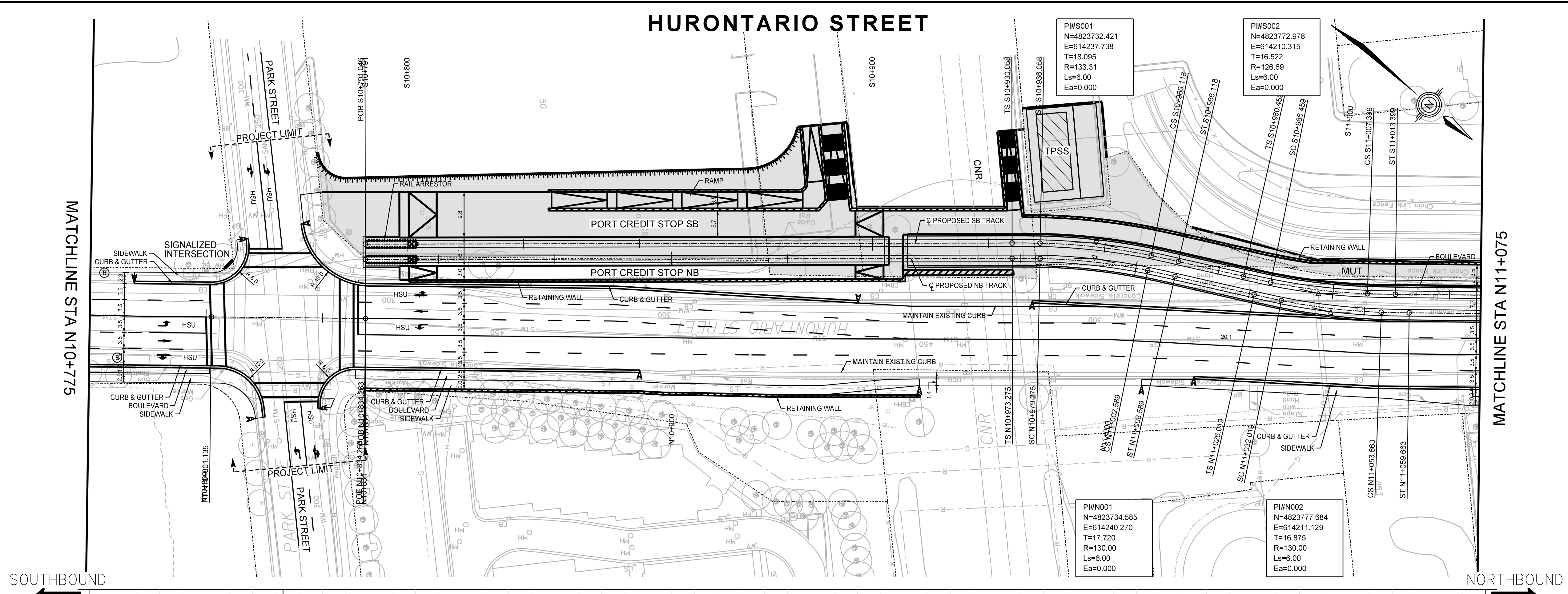
USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (14:24:17) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_orig => 3643 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime									USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (14:24:17) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_dest => 3643 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime								
	Walk	GO rail only	Auto passenger	Transit excluding GO rail	Cycle	Schoolbus	Auto driver		Walk	GO rail only	Auto passenger	Transit excluding GO rail	Cycle	Auto driver			
Group 1	44	73	178	75	0	22	577	Group 1	0	0	35	0	0	785			
Group 2	0	0	123	22	23	0	924	Group 2	23	73	221	86	23	726			

USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (10:55:32) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_orig => 296 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime									USER : Peter Richards - IBI Group - Transportation Engineer DATE : Jun 9 2015 (14:24:17) DATA : 2011 TTS V1.0 Trips FILTER 1 : gta06_dest => 296 FILTER 2 : trip_day => Monday - Friday ROW : start_time Group 1 : 700-900 Group 2 : 1630-1830 COLUMN : mode_prime								
	Auto passenger	Transit excluding GO rail	Auto driver		Walk	Auto passenger	Transit excluding GO rail	Auto driver									
Group 1	26	0	244	Group 1	22	140	50	1046									
Group 2	157	57	980	Group 2	0	43	0	278									

Appendix D

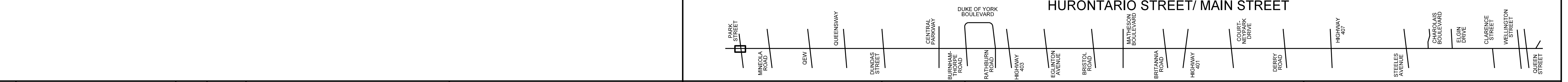
Preliminary Drawings of Intersections along
Huron Street Affected by LRT

Notes:



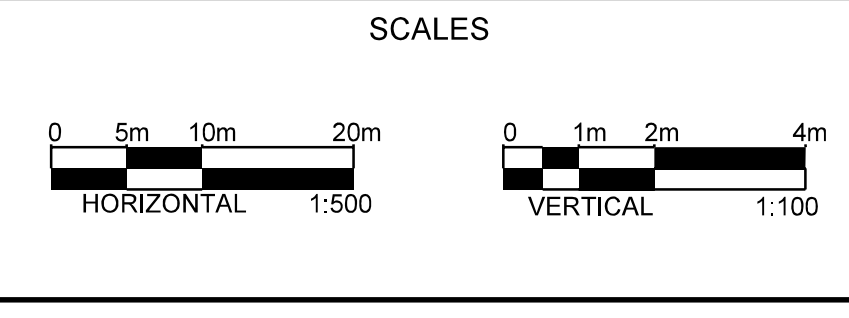
NOT FOR CONSTRUCTION

81.695	82.218	82.502	83.189	83.529	83.669	84.237	82.885	83.147	83.000	81.599	81.671	82.998	EXISTING GROUND ELEVATION / PROPOSED TOP OF RAIL PROFILE
N10+775	N10+800	N10+825	N10+860	N10+875	N10+900	N10+925	N10+950	N10+975	N11+000	N11+025	N11+050	N11+075	



No.	REVISIONS	INITIAL	DATE

REFERENCE MATERIAL:
 Surveyed Plans : HMLRT-CombinedSurvey.dgn, CityCentre.dgn, HMLRT-HWY401.dgn, Topo-LRT@QEW.dgn, LRT.dtm, CityCentre.dtm, LRT@QEW.dtm
 Design Plans : HMLRT - Alignment.dgn, HMLRT - Roadway.dgn, HMLRT - Profile.dgn
 Sewer Plans :
 Water Plans :
 Geodetic Bench Mark Index Elevation=
 Borehole Report -

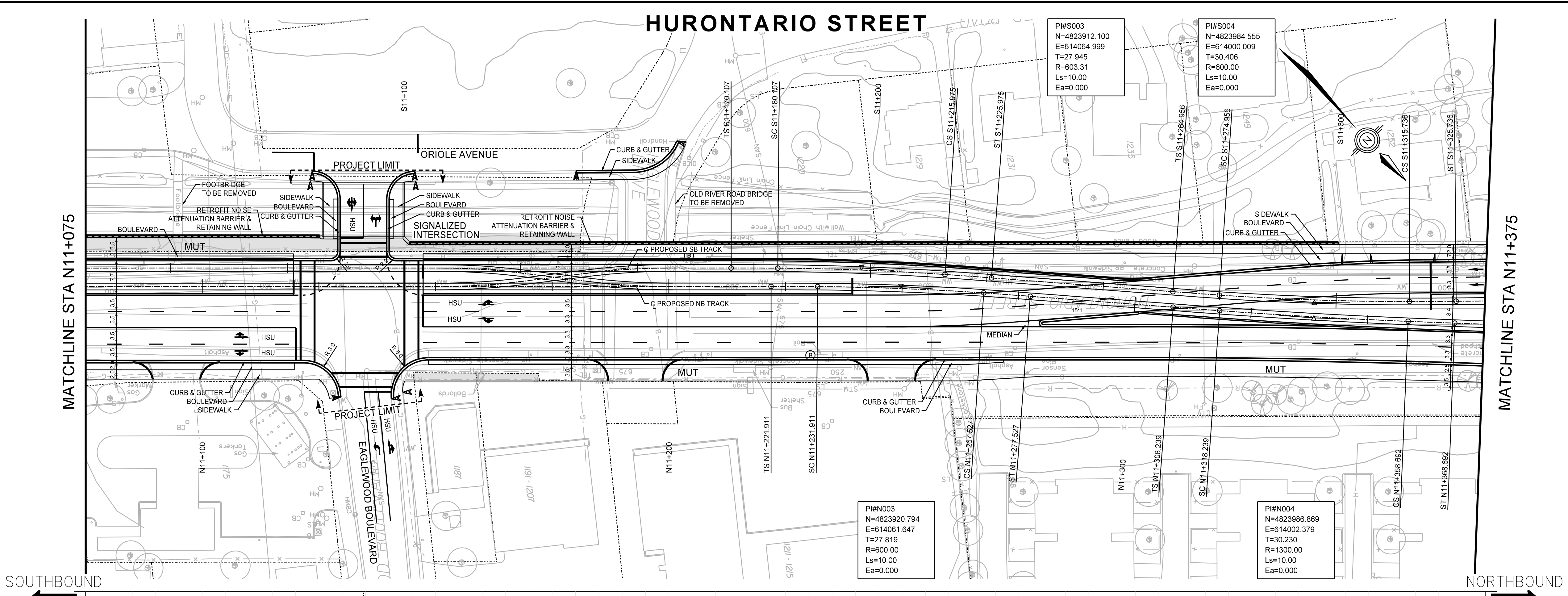


SNC-LAVALIN | steer davis gleave | DIALOG

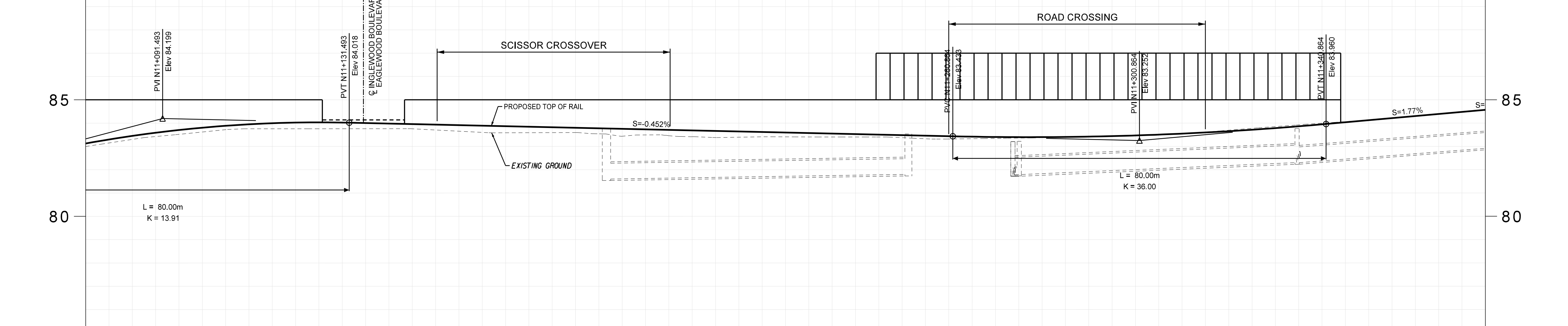
MISSISSAUGA | BRAMPTON

HURONTARIO-MAIN LRT PROJECT
 PRELIMINARY DESIGN/TPAP
 PLAN AND PROFILE
 STA N10+775 TO STA N11+075

Notes:

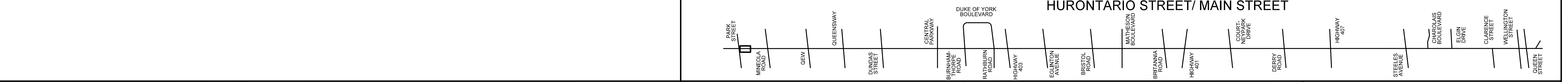


SOUTHBOUND NORTHBOUND



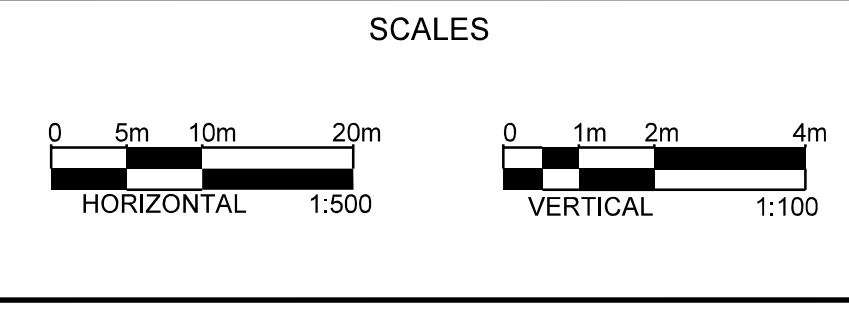
NOT FOR CONSTRUCTION

82+998 83.127	83+620 83.804	83+758 84.032	83+705 83.934	83+593 83.821	83+459 83.708	83+410 83.595	83+372 83.482	83+355 83.397	83+481 83.469	83+774 83.714	84+26 84.122	84+581 84.564	EXISTING GROUND ELEVATION / PROPOSED TOP OF RAIL PROFILE
N11+075	N11+100	N11+125	N11+150	N11+175	N11+200	N11+225	N11+250	N11+275	N11+300	N11+325	N11+350	N11+375	DESIGN CHAINAGE



No.	REVISIONS	INITIAL	DATE

REFERENCE MATERIAL:
 Surveyed Plans: HMLRT-CombinedSurvey.dgn, CityCentre.dgn, HMLRT-HWY401.dgn, Topo-LRT@QEW.dgn, LRT.dtm, CityCentre.dtm, LRT@QEW.dtm
 Design Plans: HMLRT-Alignment.dgn, HMLRT-Roadway.dgn, HMLRT-Profiles.dgn
 Sewer Plans:
 Water Plans:
 Geodetic Bench Mark Index Elevation=
 Borehole Report -



HURONTARIO-MAIN LRT PROJECT
 PRELIMINARY DESIGN/TPAP
 PLAN AND PROFILE
 STA N11+075 TO STA N11+375

Appendix E

Existing Traffic Intersection Operations

Existing 2015 AM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗		↘	↑	↗
Volume (vph)	305	1126	9	22	570	217	9	49	22	211	86	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00	1.00	0.96	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1674	3515	1360	1557	3544	1317	1545	1821		1720	1780	1376
Flt Permitted	0.34	1.00	1.00	0.21	1.00	1.00	0.69	1.00		0.70	1.00	1.00
Satd. Flow (perm)	598	3515	1360	350	3544	1317	1127	1821		1275	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	351	1294	10	25	655	249	10	56	25	243	99	267
RTOR Reduction (vph)	0	0	3	0	0	100	0	12	0	0	0	208
Lane Group Flow (vph)	351	1294	7	25	655	149	10	69	0	243	99	59
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	96.0	96.0	96.0	75.3	75.3	75.3	31.0	31.0		31.0	31.0	31.0
Effective Green, g (s)	96.0	96.0	96.0	75.3	75.3	75.3	31.0	31.0		31.0	31.0	31.0
Actuated g/C Ratio	0.69	0.69	0.69	0.54	0.54	0.54	0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	546	2410	932	188	1906	708	249	403		282	394	304
v/s Ratio Prot	c0.08	0.37			0.18			0.04			0.06	
v/s Ratio Perm	c0.36		0.01	0.07		0.11	0.01			c0.19		0.04
v/c Ratio	0.64	0.54	0.01	0.13	0.34	0.21	0.04	0.17		0.86	0.25	0.19
Uniform Delay, d1	9.8	10.9	6.9	16.1	18.3	16.9	42.8	44.1		52.4	44.9	44.3
Progression Factor	1.30	1.31	1.00	1.00	1.00	1.00	1.00	1.00		0.65	0.60	0.99
Incremental Delay, d2	2.6	0.6	0.0	1.5	0.5	0.7	0.1	0.4		24.1	0.7	0.6
Delay (s)	15.4	15.0	7.0	17.6	18.8	17.5	43.0	44.5		58.0	27.5	44.5
Level of Service	B	B	A	B	B	B	D	D		E	C	D
Approach Delay (s)		15.1			18.5			44.4			47.1	
Approach LOS		B			B			D			D	

Intersection Summary

HCM 2000 Control Delay	22.8	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)	16.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Existing 2015 AM Signalized Results
6: Stavebank Rd & Lakeshore Rd

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕		
Volume (vph)	10	1612	75	13	805	19	45	16	11	6	0	158	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0		
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00		
Frbp, ped/bikes		1.00			1.00		1.00	0.99		1.00	0.98		
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00		
Frt		0.99			1.00		1.00	0.94		1.00	0.85		
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		3289			3185		1782	1721		1794	1556		
Flt Permitted		0.95			0.89		0.37	1.00		0.74	1.00		
Satd. Flow (perm)		3115			2838		685	1721		1393	1556		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	11	1771	82	14	885	21	49	18	12	7	0	174	
RTOR Reduction (vph)	0	2	0	0	1	0	0	11	0	0	156	0	
Lane Group Flow (vph)	0	1862	0	0	919	0	49	19	0	7	18	0	
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3	
Confl. Bikes (#/hr)			1			3			1				
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%	
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0	
Parking (#/hr)		0			0								
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			2			4			4		
Permitted Phases	2			2			4			4			
Actuated Green, G (s)		110.3			110.3		14.7	14.7		14.7	14.7		
Effective Green, g (s)		110.3			110.3		14.7	14.7		14.7	14.7		
Actuated g/C Ratio		0.79			0.79		0.10	0.10		0.10	0.10		
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0		
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0		
Lane Grp Cap (vph)		2454			2235		71	180		146	163		
v/s Ratio Prot								0.01			0.01		
v/s Ratio Perm		c0.60			0.32		c0.07			0.01			
v/c Ratio		0.76			0.41		0.69	0.11		0.05	0.11		
Uniform Delay, d1		7.8			4.7		60.5	56.7		56.4	56.7		
Progression Factor		1.00			1.15		1.00	1.00		1.00	1.00		
Incremental Delay, d2		2.3			0.5		30.9	0.6		0.3	0.6		
Delay (s)		10.1			5.9		91.3	57.3		56.6	57.4		
Level of Service		B			A		F	E		E	E		
Approach Delay (s)		10.1			5.9			78.4			57.4		
Approach LOS		B			A			E			E		
Intersection Summary													
HCM 2000 Control Delay			13.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	15.0
Intersection Capacity Utilization			89.7%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

Existing 2015 AM Signalized Results
10: Hurontario St & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↗		↗	↕↗	
Volume (vph)	82	0	21	17	5	33	10	540	15	19	496	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.98	1.00		0.97	1.00	
Frt		0.97			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1691			1670		1592	3427		1656	3344	
Flt Permitted		0.73			0.89		0.44	1.00		0.43	1.00	
Satd. Flow (perm)		1284			1504		743	3427		748	3344	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	87	0	22	18	5	35	11	574	16	20	528	29
RTOR Reduction (vph)	0	40	0	0	31	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	69	0	0	27	0	11	588	0	20	554	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		9.8			8.8		48.2	48.2		48.2	48.2	
Effective Green, g (s)		9.8			8.8		48.2	48.2		48.2	48.2	
Actuated g/C Ratio		0.14			0.13		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		179			189		511	2359		515	2302	
v/s Ratio Prot								c0.17				0.17
v/s Ratio Perm		c0.05			0.02		0.01			0.03		
v/c Ratio		0.38			0.14		0.02	0.25		0.04	0.24	
Uniform Delay, d1		27.4			27.2		3.4	4.1		3.5	4.1	
Progression Factor		1.00			1.00		1.37	1.67		1.90	1.92	
Incremental Delay, d2		2.8			0.7		0.1	0.2		0.1	0.2	
Delay (s)		30.2			28.0		4.8	7.1		6.8	8.0	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		30.2			28.0			7.0			8.0	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Existing 2015 AM Signalized Results
13: Hurontario St & Park St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	156	28	29	10	25	214	20	609	39	251	465	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.97		1.00	0.91		1.00	0.99		1.00	1.00	0.89
Flpb, ped/bikes	0.96	1.00		0.95	1.00		0.96	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	0.87		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1677	1719		1703	1481		1545	3367		1726	3318	1401
Flt Permitted	0.40	1.00		0.71	1.00		0.44	1.00		0.26	1.00	1.00
Satd. Flow (perm)	704	1719		1276	1481		719	3367		481	3318	1401
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	188	34	35	12	30	258	24	734	47	302	560	247
RTOR Reduction (vph)	0	25	0	0	186	0	0	3	0	0	0	43
Lane Group Flow (vph)	188	44	0	12	102	0	24	778	0	302	560	204
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)	38.8	38.8		38.8	38.8		66.3	66.3		87.2	87.2	87.2
Effective Green, g (s)	38.8	38.8		38.8	38.8		66.3	66.3		87.2	87.2	87.2
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.47	0.47		0.62	0.62	0.62
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	195	476		353	410		340	1594		458	2066	872
v/s Ratio Prot		0.03			0.07			0.23		c0.08	0.17	
v/s Ratio Perm	c0.27			0.01			0.03			c0.33		0.15
v/c Ratio	0.96	0.09		0.03	0.25		0.07	0.49		0.66	0.27	0.23
Uniform Delay, d1	49.9	37.5		36.9	39.3		20.1	25.2		14.2	12.0	11.7
Progression Factor	1.00	1.00		1.00	1.00		1.14	1.22		1.55	1.39	1.75
Incremental Delay, d2	54.5	0.2		0.1	0.7		0.4	1.1		4.5	0.3	0.6
Delay (s)	104.4	37.7		37.0	39.9		23.3	32.0		26.5	17.0	21.0
Level of Service	F	D		D	D		C	C		C	B	C
Approach Delay (s)		86.5			39.8			31.7			20.5	
Approach LOS		F			D			C			C	

Intersection Summary

HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Existing 2015 AM Signalized Results
29: Elizabeth St & Lakeshore Rd

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑		↑	↑	
Volume (vph)	23	1650	12	10	757	10	21	19	13	35	7	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.98		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.94		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3322			3223		1704	1614		1183	1386	
Flt Permitted		0.93			0.91		0.71	1.00		0.73	1.00	
Satd. Flow (perm)		3086			2931		1271	1614		914	1386	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1833	13	11	841	11	23	21	14	39	8	66
RTOR Reduction (vph)	0	0	0	0	0	0	0	13	0	0	60	0
Lane Group Flow (vph)	0	1872	0	0	863	0	23	22	0	39	14	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		116.2			116.2		11.8	11.8		11.8	11.8	
Effective Green, g (s)		116.2			116.2		11.8	11.8		11.8	11.8	
Actuated g/C Ratio		0.83			0.83		0.08	0.08		0.08	0.08	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2561			2432		107	136		77	116	
v/s Ratio Prot								0.01			0.01	
v/s Ratio Perm		c0.61			0.29		0.02			c0.04		
v/c Ratio		0.73			0.35		0.21	0.16		0.51	0.12	
Uniform Delay, d1		5.1			2.9		59.8	59.5		61.3	59.3	
Progression Factor		0.06			2.37		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3			0.4		2.1	1.2		10.5	0.9	
Delay (s)		1.6			7.2		61.9	60.7		71.9	60.2	
Level of Service		A			A		E	E		E	E	
Approach Delay (s)		1.6			7.2			61.2			64.2	
Approach LOS		A			A			E			E	

Intersection Summary		
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.71	A
Actuated Cycle Length (s)	140.0	Sum of lost time (s)
Intersection Capacity Utilization	84.5%	12.0
Analysis Period (min)	15	ICU Level of Service
		E

c Critical Lane Group

Existing 2015 AM Signalized Results
 37: Hurontario St & Inglewood Dr/Private Access

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Volume (vph)	61	1	28	26	2	10	39	950	22	21	703	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.98		1.00	1.00		1.00	0.98	
Flpb, ped/bikes		0.95			0.99		0.98	1.00		0.98	1.00	
Frt		0.96			0.96		1.00	1.00		1.00	0.97	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1603			1603		1744	3366		1755	3153	
Flt Permitted		0.77			0.75		0.30	1.00		0.26	1.00	
Satd. Flow (perm)		1279			1249		560	3366		483	3153	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	65	1	30	28	2	11	41	1011	23	22	748	154
RTOR Reduction (vph)	0	13	0	0	10	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	83	0	0	31	0	41	1033	0	22	893	0
Confl. Peds. (#/hr)	41		9	9		41	21		20	20		21
Heavy Vehicles (%)	2%	0%	11%	12%	0%	0%	0%	8%	0%	0%	10%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2			16.2		109.8	109.8		109.8	109.8	
Effective Green, g (s)		16.2			16.2		109.8	109.8		109.8	109.8	
Actuated g/C Ratio		0.12			0.12		0.78	0.78		0.78	0.78	
Clearance Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		147			144		439	2639		378	2472	
v/s Ratio Prot								c0.31				0.28
v/s Ratio Perm		c0.06			0.03		0.07			0.05		
v/c Ratio		0.56			0.22		0.09	0.39		0.06	0.36	
Uniform Delay, d1		58.6			56.1		3.5	4.7		3.4	4.5	
Progression Factor		1.00			1.00		0.78	1.60		1.00	1.00	
Incremental Delay, d2		7.9			1.6		0.4	0.4		0.3	0.4	
Delay (s)		66.4			57.7		3.1	7.9		3.7	5.0	
Level of Service		E			E		A	A		A	A	
Approach Delay (s)		66.4			57.7			7.7			4.9	
Approach LOS		E			E			A			A	

Intersection Summary

HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Existing 2015 AM Unsignalized Results
 8: Stavebank Rd & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	5	3	45	18	36	7	33	11	6	131	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	57	23	46	9	42	14	8	166	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	125	65	199
Volume Left (vph)	3	57	9	8
Volume Right (vph)	4	46	14	25
Hadj (s)	-0.14	-0.11	0.00	-0.03
Departure Headway (s)	4.5	4.4	4.4	4.3
Degree Utilization, x	0.02	0.15	0.08	0.24
Capacity (veh/h)	734	766	772	808
Control Delay (s)	7.6	8.2	7.8	8.6
Approach Delay (s)	7.6	8.2	7.8	8.6
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.3	
Level of Service		A	
Intersection Capacity Utilization	29.6%		ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

7/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization		16.9%	ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results
 14: Stavebank Rd & Park St

7/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	66	31	61	4	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	78	36	72	5	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	218	87			86	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	218	87			86	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	90	96			99	
cM capacity (veh/h)	749	958			1454	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	114	76	118
Volume Left	78	0	13
Volume Right	36	5	0
cSH	805	1700	1454
Volume to Capacity	0.14	0.04	0.01
Queue Length 95th (m)	3.4	0.0	0.2
Control Delay (s)	10.2	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay		4.1	
Intersection Capacity Utilization		25.0%	ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↖						↕	
Volume (veh/h)	0	0	4	83	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	93	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			340	286	30	301	291	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			340	286	30	301	291	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			542	590	1031	614	457	892
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	4	183	29									
Volume Left	0	93	0									
Volume Right	4	0	0									
cSH	1700	1611	457									
Volume to Capacity	0.00	0.06	0.06									
Queue Length 95th (m)	0.0	1.3	1.4									
Control Delay (s)	0.0	4.0	13.4									
Lane LOS		A	B									
Approach Delay (s)	0.0	4.0	13.4									
Approach LOS			B									
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			35.6%	ICU Level of Service							A	
Analysis Period (min)			15									

Existing 2015 AM Unsignalized Results
 19: Ann St & Queen St & GO Parking Access

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↕			↕			↕	
Volume (veh/h)	0	1	6	1	3	0	159	9	37	2	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	0	2	9	2	5	0	248	14	58	3	2	0
Pedestrians		24			86			7			182	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		2			7			1			16	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	187			18			46	203	99	347	208	211
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	187			18			46	203	99	347	208	211
tC, single (s)	4.1			4.1			7.3	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			68	98	93	99	100	100
cM capacity (veh/h)	1182			1602			784	584	886	384	581	690

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	11	6	320	5
Volume Left	0	2	248	3
Volume Right	9	0	58	0
cSH	1700	1602	789	433
Volume to Capacity	0.01	0.00	0.41	0.01
Queue Length 95th (m)	0.0	0.0	13.9	0.2
Control Delay (s)	0.0	1.8	12.6	13.4
Lane LOS		A	B	B
Approach Delay (s)	0.0	1.8	12.6	13.4
Approach LOS			B	B

Intersection Summary

Average Delay		12.1	
Intersection Capacity Utilization		35.2%	ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results
 20: Lakeshore Rd & Ann St

7/22/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	43	1524	752	33	2	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	1712	845	37	2	12
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.90				0.84	0.90
vC, conflicting volume	914				1852	476
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	677				1085	190
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	93				99	98
cM capacity (veh/h)	729				163	720

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	48	856	856	563	319	15
Volume Left	48	0	0	0	0	2
Volume Right	0	0	0	0	37	12
cSH	729	1700	1700	1700	1700	471
Volume to Capacity	0.07	0.50	0.50	0.33	0.19	0.03
Queue Length 95th (m)	1.5	0.0	0.0	0.0	0.0	0.7
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	12.9
Lane LOS	B					B
Approach Delay (s)	0.3			0.0		12.9
Approach LOS						B

Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			53.1%		ICU Level of Service	A
Analysis Period (min)			15			

Existing 2015 AM Unsignalized Results
 21: Ann St & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	85	3	9	20	8	3	97	26	3	7	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	98	3	10	23	9	3	111	30	3	8	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	108	43	145	16
Volume Left (vph)	7	10	3	3
Volume Right (vph)	3	9	30	5
Hadj (s)	-0.01	0.03	0.40	-0.01
Departure Headway (s)	4.3	4.4	4.7	4.4
Degree Utilization, x	0.13	0.05	0.19	0.02
Capacity (veh/h)	797	764	744	769
Control Delay (s)	8.0	7.7	8.8	7.5
Approach Delay (s)	8.0	7.7	8.8	7.5
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.3	
Level of Service		A	
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results

22: Ann St & Park St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	38	212	3	14	64	103	2	81	18	10	1	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	55	307	4	20	93	149	3	117	26	14	1	1

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	367	113	149	146	17
Volume Left (vph)	55	20	0	3	14
Volume Right (vph)	4	0	149	26	1
Hadj (s)	0.04	0.16	-0.70	0.50	0.12
Departure Headway (s)	4.9	5.5	4.7	5.9	5.8
Degree Utilization, x	0.50	0.17	0.19	0.24	0.03
Capacity (veh/h)	711	622	736	552	537
Control Delay (s)	12.6	8.5	7.6	10.7	9.0
Approach Delay (s)	12.6	8.0		10.7	9.0
Approach LOS	B	A		B	A

Intersection Summary

Delay	10.6
Level of Service	B
Intersection Capacity Utilization	39.7%
ICU Level of Service	A
Analysis Period (min)	15

Existing 2015 AM Unsignalized Results
23: Helene St & Lakeshore Rd

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Volume (veh/h)	167	1533	4	2	746	7	0	0	9	2	0	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	182	1666	4	2	811	8	0	0	10	2	0	51
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.91			0.76			0.81	0.81	0.76	0.81	0.81	0.91
vC, conflicting volume	854			1687			2509	2906	852	2062	2905	446
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	642			1277			1890	2382	183	1336	2379	193
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	78			99			100	100	98	97	100	93
cM capacity (veh/h)	840			414			26	21	627	70	21	708

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1015	838	408	413	10	53
Volume Left	182	0	2	0	0	2
Volume Right	0	4	0	8	10	51
cSH	840	1700	414	1700	627	517
Volume to Capacity	0.22	0.49	0.01	0.24	0.02	0.10
Queue Length 95th (m)	5.7	0.0	0.1	0.0	0.3	2.4
Control Delay (s)	5.5	0.0	0.2	0.0	10.8	12.8
Lane LOS	A		A		B	B
Approach Delay (s)	3.0		0.1		10.8	12.8
Approach LOS					B	B

Intersection Summary

Average Delay		2.4				
Intersection Capacity Utilization		83.5%		ICU Level of Service		E
Analysis Period (min)		15				

Existing 2015 AM Unsignalized Results
 24: Helene St & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	9	42	4	4	13	5	28	176	11	4	45	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	47	4	4	14	6	31	196	12	4	50	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	61	24	239	64
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	12	10
Hadj (s)	-0.01	0.06	0.00	0.01
Departure Headway (s)	4.6	4.7	4.2	4.4
Degree Utilization, x	0.08	0.03	0.28	0.08
Capacity (veh/h)	724	704	840	787
Control Delay (s)	8.0	7.9	8.8	7.7
Approach Delay (s)	8.0	7.9	8.8	7.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results
 25: Helene St & Park St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	100	4	16	40	6	4	116	97	84	29	3
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	128	5	21	51	8	5	149	124	108	37	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	136	79	278	149
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	124	4
Hadj (s)	0.01	0.07	-0.26	0.14
Departure Headway (s)	5.0	5.2	4.4	4.9
Degree Utilization, x	0.19	0.11	0.34	0.20
Capacity (veh/h)	651	625	778	682
Control Delay (s)	9.2	8.9	9.7	9.2
Approach Delay (s)	9.2	8.9	9.7	9.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay		9.4	
Level of Service		A	
Intersection Capacity Utilization	44.2%		ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↗				↑	
Volume (veh/h)	0	0	0	106	42	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	174	69	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	114			1			484	463	116	557	443	142
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			1			484	463	116	557	443	142
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			55	100	100	100	100	100
cM capacity (veh/h)	1480			1627			434	443	848	364	455	870

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	282	197	0
Volume Left	0	174	197	0
Volume Right	0	39	0	0
cSH	1700	1627	434	1700
Volume to Capacity	0.00	0.11	0.45	0.00
Queue Length 95th (m)	0.0	2.5	16.2	0.0
Control Delay (s)	0.0	4.9	20.0	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.0	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		11.1	
Intersection Capacity Utilization		33.1%	ICU Level of Service
Analysis Period (min)		15	A

Existing 2015 AM Unsignalized Results
 30: Elizabeth St & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	31	15	9	52	4	27	13	7	10	92	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	39	19	11	66	5	34	16	9	13	116	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	58	82	59	143
Volume Left (vph)	0	11	34	13
Volume Right (vph)	19	5	9	14
Hadj (s)	-0.16	0.04	0.06	0.35
Departure Headway (s)	4.3	4.5	4.5	4.6
Degree Utilization, x	0.07	0.10	0.07	0.18
Capacity (veh/h)	788	753	769	742
Control Delay (s)	7.7	8.0	7.8	8.7
Approach Delay (s)	7.7	8.0	7.8	8.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.2	
Level of Service		A	
Intersection Capacity Utilization	29.2%		ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results

31: Elizabeth St & Park St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻		↻	↻	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	36	13	15	68	1	6	0	11	33	78	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	39	14	16	74	1	7	0	12	36	85	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	53	91	18	36	102
Volume Left (vph)	0	16	7	36	0
Volume Right (vph)	14	1	12	0	17
Hadj (s)	-0.05	0.08	-0.22	0.55	0.33
Departure Headway (s)	4.4	4.4	4.3	5.4	5.2
Degree Utilization, x	0.06	0.11	0.02	0.05	0.15
Capacity (veh/h)	793	781	797	640	671
Control Delay (s)	7.7	8.0	7.4	7.5	7.9
Approach Delay (s)	7.7	8.0	7.4	7.8	
Approach LOS	A	A	A	A	

Intersection Summary				
Delay			7.8	
Level of Service			A	
Intersection Capacity Utilization		29.2%	ICU Level of Service	A
Analysis Period (min)		15		

Existing 2015 AM Unsignalized Results
35: Hurontario St & Eaglewood Blvd

7/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	47	114	1001	72	34	799
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	53	128	1125	81	38	898
Pedestrians	22		6			2
Lane Width (m)	3.7		3.7			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	2		1			0
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			312			66
pX, platoon unblocked	0.89	0.86			0.86	
vC, conflicting volume	1718	627			1228	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1193	224			927	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	63	80			94	
cM capacity (veh/h)	142	647			610	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	53	128	750	456	38	449	449
Volume Left	53	0	0	0	38	0	0
Volume Right	0	128	0	81	0	0	0
cSH	142	647	1700	1700	610	1700	1700
Volume to Capacity	0.37	0.20	0.44	0.27	0.06	0.26	0.26
Queue Length 95th (m)	10.9	5.1	0.0	0.0	1.4	0.0	0.0
Control Delay (s)	44.7	11.9	0.0	0.0	11.3	0.0	0.0
Lane LOS	E	B			B		
Approach Delay (s)	21.5		0.0		0.5		
Approach LOS	C						

Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization	44.4%		ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results
41: Ann St & GO Parking Access

7/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	6	5	198	46	0	5
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	8	7	279	65	0	7
Pedestrians	9		1			5
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	328	325			353	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	328	325			353	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			100	
cM capacity (veh/h)	664	712			1208	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	15	344	7
Volume Left	8	0	0
Volume Right	7	65	0
cSH	685	1700	1208
Volume to Capacity	0.02	0.20	0.00
Queue Length 95th (m)	0.5	0.0	0.0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization	24.9%		ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 AM Unsignalized Results
42: Park St & GO Parking Access

7/22/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	31	221	185	90	2	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	40	283	237	115	3	1
Pedestrians			1		9	
Lane Width (m)			3.7		3.7	
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)			57			
pX, platoon unblocked						
vC, conflicting volume	362				668	304
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362				668	304
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	100
cM capacity (veh/h)	1199				409	735

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	323	353	4
Volume Left	40	0	3
Volume Right	0	115	1
cSH	1199	1700	480
Volume to Capacity	0.03	0.21	0.01
Queue Length 95th (m)	0.7	0.0	0.2
Control Delay (s)	1.3	0.0	12.6
Lane LOS	A		B
Approach Delay (s)	1.3	0.0	12.6
Approach LOS			B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		42.2%	ICU Level of Service
Analysis Period (min)		15	A

Existing 2015 PM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	242	686	13	52	1002	256	10	111	38	259	92	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.96	1.00	1.00	0.96	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1666	3614	1415	1721	3614	1440	1718	1828		1726	1921	1455
Flt Permitted	0.15	1.00	1.00	0.39	1.00	1.00	0.70	1.00		0.66	1.00	1.00
Satd. Flow (perm)	272	3614	1415	698	3614	1440	1259	1828		1200	1921	1455
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)	247	700	13	53	1022	261	10	113	39	264	94	327
RTOR Reduction (vph)	0	0	5	0	0	98	0	14	0	0	0	181
Lane Group Flow (vph)	247	700	8	53	1022	163	10	138	0	264	94	146
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	58.9	58.9	58.9	43.8	43.8	43.8	28.1	28.1		28.1	28.1	28.1
Effective Green, g (s)	58.9	58.9	58.9	43.8	43.8	43.8	28.1	28.1		28.1	28.1	28.1
Actuated g/C Ratio	0.59	0.59	0.59	0.44	0.44	0.44	0.28	0.28		0.28	0.28	0.28
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	328	2128	833	305	1582	630	353	513		337	539	408
v/s Ratio Prot	c0.09	0.19			0.28			0.08				0.05
v/s Ratio Perm	c0.35		0.01	0.08		0.11	0.01			c0.22		0.10
v/c Ratio	0.75	0.33	0.01	0.17	0.65	0.26	0.03	0.27		0.78	0.17	0.36
Uniform Delay, d1	14.3	10.5	8.5	17.1	22.0	17.8	26.1	28.0		33.1	27.2	28.7
Progression Factor	1.74	1.31	1.00	1.00	1.00	1.00	1.00	1.00		0.68	0.50	1.17
Incremental Delay, d2	10.6	0.4	0.0	1.2	2.1	1.0	0.1	0.6		12.6	0.3	1.1
Delay (s)	35.5	14.1	8.5	18.3	24.1	18.8	26.1	28.6		35.3	13.9	34.8
Level of Service	D	B	A	B	C	B	C	C		D	B	C
Approach Delay (s)		19.5			22.8			28.4			32.1	
Approach LOS		B			C			C			C	

Intersection Summary

HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Existing 2015 PM Signalized Results
6: Stavebank Rd & Lakeshore Rd

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔		↔	↔	
Volume (vph)	93	925	103	19	1286	36	111	8	24	24	4	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.89		1.00	0.85	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3300			3354		1764	1640		1762	1523	
Flt Permitted		0.60			0.92		0.41	1.00		0.74	1.00	
Satd. Flow (perm)		1984			3092		765	1640		1364	1523	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	97	964	107	20	1340	38	116	8	25	25	4	251
RTOR Reduction (vph)	0	7	0	0	2	0	0	20	0	0	30	0
Lane Group Flow (vph)	0	1161	0	0	1396	0	116	13	0	25	225	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		65.2			65.2		19.8	19.8		19.8	19.8	
Effective Green, g (s)		65.2			65.2		19.8	19.8		19.8	19.8	
Actuated g/C Ratio		0.65			0.65		0.20	0.20		0.20	0.20	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1293			2015		151	324		270	301	
v/s Ratio Prot								0.01				0.15
v/s Ratio Perm		c0.59			0.45		c0.15			0.02		
v/c Ratio		0.90			0.69		0.77	0.04		0.09	0.75	
Uniform Delay, d1		14.6			11.0		37.9	32.4		32.8	37.7	
Progression Factor		1.00			0.85		1.00	1.00		1.00	1.00	
Incremental Delay, d2		10.0			1.7		23.8	0.1		0.3	11.5	
Delay (s)		24.7			11.1		61.7	32.5		33.1	49.2	
Level of Service		C			B		E	C		C	D	
Approach Delay (s)		24.7			11.1			55.3			47.8	
Approach LOS		C			B			E			D	

Intersection Summary

HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	119.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Existing 2015 PM Signalized Results
10: Hurontario St & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Volume (vph)	102	5	55	20	6	44	15	599	18	25	608	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.98	1.00		0.95	1.00	
Frt		0.95			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1702			1654		1749	3482		1624	3468	
Flt Permitted		0.77			0.87		0.39	1.00		0.41	1.00	
Satd. Flow (perm)		1345			1467		718	3482		693	3468	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	105	5	57	21	6	45	15	618	19	26	627	43
RTOR Reduction (vph)	0	21	0	0	37	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	146	0	0	35	0	15	635	0	26	666	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		17.8			16.8		70.2	70.2		70.2	70.2	
Effective Green, g (s)		17.8			16.8		70.2	70.2		70.2	70.2	
Actuated g/C Ratio		0.18			0.17		0.70	0.70		0.70	0.70	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		239			246		504	2444		486	2434	
v/s Ratio Prot								0.18				c0.19
v/s Ratio Perm		c0.11			0.02		0.02			0.04		
v/c Ratio		0.61			0.14		0.03	0.26		0.05	0.27	
Uniform Delay, d1		37.9			35.4		4.5	5.4		4.6	5.5	
Progression Factor		1.00			1.00		1.91	1.71		0.10	0.35	
Incremental Delay, d2		6.6			0.5		0.1	0.2		0.2	0.3	
Delay (s)		44.5			36.0		8.8	9.5		0.7	2.2	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		44.5			36.0			9.5			2.1	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Existing 2015 PM Signalized Results
13: Hurontario St & Park St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	164	37	36	14	34	175	15	677	22	130	697	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.98		1.00	0.95		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.97	1.00		0.98	1.00		0.98	1.00		0.98	1.00	1.00
Frt	1.00	0.93		1.00	0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	1748		1749	1604		1753	3485		1738	3544	1464
Flt Permitted	0.52	1.00		0.71	1.00		0.35	1.00		0.35	1.00	1.00
Satd. Flow (perm)	942	1748		1301	1604		646	3485		639	3544	1464
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	174	39	38	15	36	186	16	720	23	138	741	281
RTOR Reduction (vph)	0	29	0	0	112	0	0	2	0	0	0	42
Lane Group Flow (vph)	174	48	0	15	110	0	16	742	0	138	741	239
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)	23.5	23.5		23.5	23.5		62.5	62.5		62.5	62.5	62.5
Effective Green, g (s)	23.5	23.5		23.5	23.5		62.5	62.5		62.5	62.5	62.5
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.62	0.62		0.62	0.62	0.62
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	221	410		305	376		403	2178		399	2215	915
v/s Ratio Prot		0.03			0.07			0.21			0.21	
v/s Ratio Perm	c0.18			0.01			0.02			c0.22		0.16
v/c Ratio	0.79	0.12		0.05	0.29		0.04	0.34		0.35	0.33	0.26
Uniform Delay, d1	35.9	30.1		29.6	31.4		7.2	8.9		9.0	8.9	8.4
Progression Factor	1.00	1.00		1.00	1.00		0.41	0.47		1.90	1.89	2.40
Incremental Delay, d2	19.1	0.3		0.1	0.9		0.2	0.4		2.2	0.4	0.6
Delay (s)	55.0	30.4		29.7	32.3		3.1	4.6		19.2	17.2	20.8
Level of Service	E	C		C	C		A	A		B	B	C
Approach Delay (s)		47.4			32.2			4.6			18.3	
Approach LOS		D			C			A			B	

Intersection Summary

HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Existing 2015 PM Signalized Results
29: Elizabeth St & Lakeshore Rd

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Volume (vph)	26	896	31	7	1173	44	46	42	21	52	21	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99			0.99		1.00	0.95		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.87	1.00	
Frt		1.00			0.99		1.00	0.95		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3355			3344		1719	1738		1164	1588	
Flt Permitted		0.88			0.95		0.69	1.00		0.71	1.00	
Satd. Flow (perm)		2959			3176		1248	1738		874	1588	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	28	953	33	7	1248	47	49	45	22	55	22	82
RTOR Reduction (vph)	0	2	0	0	2	0	0	19	0	0	42	0
Lane Group Flow (vph)	0	1012	0	0	1300	0	49	48	0	55	62	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		74.2			74.2		13.8	13.8		13.8	13.8	
Effective Green, g (s)		74.2			74.2		13.8	13.8		13.8	13.8	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2195			2356		172	239		120	219	
v/s Ratio Prot								0.03				0.04
v/s Ratio Perm		0.34			0.41		0.04			0.06		
v/c Ratio		0.46			0.55		0.28	0.20		0.46	0.28	
Uniform Delay, d1		5.1			5.6		38.7	38.2		39.7	38.7	
Progression Factor		0.09			0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.8		1.9	0.9		5.7	1.5	
Delay (s)		0.8			4.1		40.6	39.1		45.4	40.1	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		0.8			4.1			39.7			41.9	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			6.7									A
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			100.0						12.0			
Intersection Capacity Utilization			71.9%									C
Analysis Period (min)			15									
c Critical Lane Group												

Existing 2015 PM Signalized Results
 37: Hurontario St & Inglewood Dr/Private Access

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	↗
Volume (vph)	108	14	21	30	5	13	21	1075	22	13	1119	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		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	1.00	
Flpb, ped/bikes		0.99			0.99		1.00	1.00		0.99	1.00	
Frt		0.98			0.96		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1771			1736		1783	3527		1773	3525	
Flt Permitted		0.75			0.77		0.20	1.00		0.22	1.00	
Satd. Flow (perm)		1373			1379		379	3527		412	3525	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	111	14	22	31	5	13	22	1108	23	13	1154	42
RTOR Reduction (vph)	0	8	0	0	11	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	139	0	0	38	0	22	1130	0	13	1194	0
Confl. Peds. (#/hr)	13		12	12		13	3		14	14		3
Heavy Vehicles (%)	1%	0%	0%	3%	0%	0%	0%	3%	5%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		17.3			17.3		68.7	68.7		68.7	68.7	
Effective Green, g (s)		17.3			17.3		68.7	68.7		68.7	68.7	
Actuated g/C Ratio		0.17			0.17		0.69	0.69		0.69	0.69	
Clearance Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		237			238		260	2423		283	2421	
v/s Ratio Prot								0.32			c0.34	
v/s Ratio Perm		c0.10			0.03		0.06			0.03		
v/c Ratio		0.59			0.16		0.08	0.47		0.05	0.49	
Uniform Delay, d1		38.0			35.2		5.2	7.2		5.1	7.4	
Progression Factor		1.00			1.00		0.78	1.06		1.00	1.00	
Incremental Delay, d2		5.6			0.7		0.6	0.6		0.3	0.7	
Delay (s)		43.7			35.8		4.7	8.3		5.4	8.1	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		43.7			35.8			8.2			8.1	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.7									B
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			100.0							14.0		
Intersection Capacity Utilization			57.2%									B
Analysis Period (min)			15									
c Critical Lane Group												

Existing 2015 PM Unsignalized Results
 8: Stavebank Rd & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	42	1	38	20	23	28	85	28	13	205	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	43	23	26	32	97	32	15	233	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	92	160	281
Volume Left (vph)	22	43	32	15
Volume Right (vph)	1	26	32	33
Hadj (s)	0.05	-0.08	-0.06	-0.06
Departure Headway (s)	5.1	4.9	4.6	4.5
Degree Utilization, x	0.10	0.13	0.20	0.35
Capacity (veh/h)	635	657	744	772
Control Delay (s)	8.7	8.7	8.8	9.8
Approach Delay (s)	8.7	8.7	8.8	9.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay		9.2	
Level of Service		A	
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)		15	

Existing 2015 PM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

7/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		19.1%	ICU Level of Service
Analysis Period (min)		15	A

Existing 2015 PM Unsignalized Results

14: Stavebank Rd & Park St

7/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	74	30	103	27	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	82	33	114	30	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	381	159			163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	381	159			163	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	96			98	
cM capacity (veh/h)	604	868			1404	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	116	144	207
Volume Left	82	0	26
Volume Right	33	30	0
cSH	662	1700	1404
Volume to Capacity	0.17	0.08	0.02
Queue Length 95th (m)	4.4	0.0	0.4
Control Delay (s)	11.6	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	11.6	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		38.5%	ICU Level of Service
Analysis Period (min)		15	A

Existing 2015 PM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↑	
Volume (veh/h)	0	1	14	98	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	129	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			339	297	37	287	306	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			339	297	37	287	306	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			92			100	100	100	100	93	100
cM capacity (veh/h)	1622			1586			537	568	1035	623	436	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	139	32
Volume Left	0	129	0
Volume Right	18	0	0
cSH	1700	1586	436
Volume to Capacity	0.01	0.08	0.07
Queue Length 95th (m)	0.0	1.9	1.6
Control Delay (s)	0.0	7.0	13.9
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	13.9
Approach LOS			B

Intersection Summary		
Average Delay		7.4
Intersection Capacity Utilization	28.3%	ICU Level of Service
Analysis Period (min)		15
		A

Existing 2015 PM Unsignalized Results
 19: Ann St & Queen St & GO Parking Access

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖			↕			↕	
Volume (veh/h)	0	0	1	11	46	0	149	6	4	2	5	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	0	1	15	62	0	201	8	5	3	7	11
Pedestrians					5			93			107	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			8			9	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	169			94			200	293	99	214	293	169
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	169			94			200	293	99	214	293	169
tC, single (s)	4.1			4.1			7.3	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.7	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			64	98	99	100	99	99
cM capacity (veh/h)	1290			1392			567	514	882	575	514	799
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	1	77	215	20								
Volume Left	0	15	201	3								
Volume Right	1	0	5	11								
cSH	1700	1392	570	646								
Volume to Capacity	0.00	0.01	0.38	0.03								
Queue Length 95th (m)	0.0	0.2	12.2	0.7								
Control Delay (s)	0.0	1.5	15.1	10.8								
Lane LOS		A	C	B								
Approach Delay (s)	0.0	1.5	15.1	10.8								
Approach LOS			C	B								
Intersection Summary												
Average Delay			11.4									
Intersection Capacity Utilization			35.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Existing 2015 PM Unsignalized Results
 20: Lakeshore Rd & Ann St

7/22/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	29	957	1247	56	2	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	33	1075	1401	63	2	9
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.78				0.81	0.78
vC, conflicting volume	1531				2104	799
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1105				1530	161
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	91				97	99
cM capacity (veh/h)	375				76	630

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	33	538	538	934	530	11
Volume Left	33	0	0	0	0	2
Volume Right	0	0	0	0	63	9
cSH	375	1700	1700	1700	1700	257
Volume to Capacity	0.09	0.32	0.32	0.55	0.31	0.04
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.0	1.0
Control Delay (s)	15.5	0.0	0.0	0.0	0.0	19.6
Lane LOS	C					C
Approach Delay (s)	0.5			0.0		19.6
Approach LOS						C

Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			46.5%		ICU Level of Service	A
Analysis Period (min)			15			

Existing 2015 PM Unsignalized Results
 21: Ann St & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	134	4	5	47	7	14	67	29	13	31	8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	138	4	5	48	7	14	69	30	13	32	8

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	153	61	113	54
Volume Left (vph)	10	5	14	13
Volume Right (vph)	4	7	30	8
Hadj (s)	0.01	-0.03	0.21	-0.04
Departure Headway (s)	4.4	4.5	4.7	4.5
Degree Utilization, x	0.19	0.08	0.15	0.07
Capacity (veh/h)	788	761	732	748
Control Delay (s)	8.4	7.8	8.5	7.8
Approach Delay (s)	8.4	7.8	8.5	7.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.2	
Level of Service		A	
Intersection Capacity Utilization	26.0%		ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 PM Unsignalized Results
 22: Ann St & Park St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	25	140	9	38	186	82	7	48	33	35	11	6
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	30	169	11	46	224	99	8	58	40	42	13	7

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	210	270	99	106	63
Volume Left (vph)	30	46	0	8	42
Volume Right (vph)	11	0	99	40	7
Hadj (s)	0.01	0.08	-0.70	0.22	0.07
Departure Headway (s)	4.9	5.3	4.5	5.6	5.5
Degree Utilization, x	0.29	0.40	0.12	0.16	0.10
Capacity (veh/h)	690	658	770	588	583
Control Delay (s)	9.9	10.5	6.9	9.7	9.1
Approach Delay (s)	9.9	9.5		9.7	9.1
Approach LOS	A	A		A	A

Intersection Summary				
Delay			9.6	
Level of Service			A	
Intersection Capacity Utilization		42.1%	ICU Level of Service	A
Analysis Period (min)		15		

Existing 2015 PM Unsignalized Results
 23: Helene St & Lakeshore Rd

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Volume (veh/h)	51	913	2	15	1247	47	2	1	3	10	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	52	922	2	15	1260	47	2	1	3	10	0	37
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.79			0.90			0.84	0.84	0.90	0.84	0.84	0.79
vC, conflicting volume	1426			996			1799	2555	534	2000	2532	776
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	998			777			1032	1937	265	1273	1909	171
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			98			98	98	100	86	100	94
cM capacity (veh/h)	495			717			111	41	626	74	43	598

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	513	463	645	677	6	47
Volume Left	52	0	15	0	2	10
Volume Right	0	2	0	47	3	37
cSH	495	1700	717	1700	127	239
Volume to Capacity	0.10	0.27	0.02	0.40	0.05	0.20
Queue Length 95th (m)	2.4	0.0	0.5	0.0	1.0	5.1
Control Delay (s)	3.0	0.0	0.6	0.0	34.7	23.8
Lane LOS	A		A		D	C
Approach Delay (s)	1.6		0.3		34.7	23.8
Approach LOS					D	C

Intersection Summary

Average Delay	1.4
Intersection Capacity Utilization	74.5%
ICU Level of Service	D
Analysis Period (min)	15

Existing 2015 PM Unsignalized Results
 24: Helene St & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	92	12	16	48	6	28	47	48	16	45	29
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)	13	107	14	19	56	7	33	55	56	19	52	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	134	81	143	105
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	56	34
Hadj (s)	-0.03	0.02	-0.19	-0.14
Departure Headway (s)	4.5	4.6	4.3	4.4
Degree Utilization, x	0.17	0.11	0.17	0.13
Capacity (veh/h)	741	720	782	758
Control Delay (s)	8.5	8.2	8.3	8.1
Approach Delay (s)	8.5	8.2	8.3	8.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.3	
Level of Service		A	
Intersection Capacity Utilization	29.0%		ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 PM Unsignalized Results
 25: Helene St & Park St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	77	4	59	139	12	8	28	31	69	30	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	93	5	71	167	14	10	34	37	83	36	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	253	81	124
Volume Left (vph)	5	71	10	83
Volume Right (vph)	5	14	37	5
Hadj (s)	-0.02	0.02	-0.25	0.11
Departure Headway (s)	4.7	4.6	4.7	5.0
Degree Utilization, x	0.13	0.32	0.10	0.17
Capacity (veh/h)	711	749	704	669
Control Delay (s)	8.4	9.7	8.2	9.0
Approach Delay (s)	8.4	9.7	8.2	9.0
Approach LOS	A	A	A	A

Intersection Summary			
Delay		9.1	
Level of Service		A	
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)		15	

Existing 2015 PM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↑				↑	
Volume (veh/h)	0	0	0	105	63	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	0	0	0	159	95	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	148			22			523	488	116	543	470	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	148			22			523	488	116	543	470	199
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			88	100	100	100	100	100
cM capacity (veh/h)	1426			1576			389	420	850	370	430	787
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	291	48	0								
Volume Left	0	159	47	0								
Volume Right	0	36	2	0								
cSH	1700	1576	396	1700								
Volume to Capacity	0.00	0.10	0.12	0.00								
Queue Length 95th (m)	0.0	2.4	2.9	0.0								
Control Delay (s)	0.0	4.5	15.4	0.0								
Lane LOS		A	C	A								
Approach Delay (s)	0.0	4.5	15.4	0.0								
Approach LOS			C	A								
Intersection Summary												
Average Delay			6.1									
Intersection Capacity Utilization			Err%		ICU Level of Service				H			
Analysis Period (min)			15									

Existing 2015 PM Unsignalized Results
 30: Elizabeth St & High St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	68	19	25	47	6	31	31	43	5	115	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	72	20	27	50	6	33	33	46	5	122	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	96	83	112	147
Volume Left (vph)	3	27	33	5
Volume Right (vph)	20	6	46	19
Hadj (s)	-0.12	0.02	-0.17	0.24
Departure Headway (s)	4.5	4.6	4.3	4.7
Degree Utilization, x	0.12	0.11	0.13	0.19
Capacity (veh/h)	743	720	786	728
Control Delay (s)	8.1	8.2	8.0	8.8
Approach Delay (s)	8.1	8.2	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.3	
Level of Service		A	
Intersection Capacity Utilization	39.5%		ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 PM Unsignalized Results

31: Elizabeth St & Park St

7/22/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	47	9	52	86	0	21	0	21	21	86	24
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	62	12	68	113	0	28	0	28	28	113	32

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	75	182	55	28	145
Volume Left (vph)	1	68	28	28	0
Volume Right (vph)	12	0	28	0	32
Hadj (s)	-0.06	0.08	-0.16	0.50	0.25
Departure Headway (s)	4.7	4.7	4.7	5.7	5.4
Degree Utilization, x	0.10	0.24	0.07	0.04	0.22
Capacity (veh/h)	718	730	711	600	632
Control Delay (s)	8.2	9.1	8.1	7.7	8.7
Approach Delay (s)	8.2	9.1	8.1	8.6	
Approach LOS	A	A	A	A	

Intersection Summary	
Delay	8.7
Level of Service	A
Intersection Capacity Utilization	33.0% ICU Level of Service A
Analysis Period (min)	15

Existing 2015 PM Unsignalized Results
35: Hurontario St & Eaglewood Blvd

7/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	48	45	1058	63	74	1155
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	46	1091	65	76	1191
Pedestrians	17					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			312			66
pX, platoon unblocked	0.88	0.92			0.92	
vC, conflicting volume	1888	595			1173	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1324	381			1010	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	57	92			88	
cM capacity (veh/h)	115	558			628	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	49	46	727	429	76	595	595
Volume Left	49	0	0	0	76	0	0
Volume Right	0	46	0	65	0	0	0
cSH	115	558	1700	1700	628	1700	1700
Volume to Capacity	0.43	0.08	0.43	0.25	0.12	0.35	0.35
Queue Length 95th (m)	13.0	1.9	0.0	0.0	2.9	0.0	0.0
Control Delay (s)	58.4	12.0	0.0	0.0	11.5	0.0	0.0
Lane LOS	F	B			B		
Approach Delay (s)	36.0		0.0		0.7		
Approach LOS	E						

Intersection Summary			
Average Delay		1.7	
Intersection Capacity Utilization	48.8%		ICU Level of Service A
Analysis Period (min)	15		

Existing 2015 PM Unsignalized Results
 41: Ann St & GO Parking Access

7/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	23	12	138	4	0	21
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	30	16	182	5	0	28
Pedestrians	9		1			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	222	195			196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222	195			196	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	764	843			1378	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	46	187	28
Volume Left	30	0	0
Volume Right	16	5	0
cSH	790	1700	1378
Volume to Capacity	0.06	0.11	0.00
Queue Length 95th (m)	1.3	0.0	0.0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		1.7	
Intersection Capacity Utilization		19.7%	ICU Level of Service A
Analysis Period (min)		15	

Existing 2015 PM Unsignalized Results
42: Park St & GO Parking Access

7/22/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Volume (veh/h)	4	225	331	10	16	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	250	368	11	18	14
Pedestrians		4	1		13	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)			57			
pX, platoon unblocked						
vC, conflicting volume	392				646	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	392				646	390
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	98
cM capacity (veh/h)	1165				432	653

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	254	379	32
Volume Left	4	0	18
Volume Right	0	11	14
cSH	1165	1700	509
Volume to Capacity	0.00	0.22	0.06
Queue Length 95th (m)	0.1	0.0	1.4
Control Delay (s)	0.2	0.0	12.5
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	12.5
Approach LOS			B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		29.3%	ICU Level of Service A
Analysis Period (min)		15	

Appendix F

2031 Total Traffic Intersection Operations
Scenario A

Scenario A 2031 AM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	405	1160	9	31	802	217	9	126	31	212	166	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.97	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3515	1360	1557	3544	1315	1557	1856		1722	1780	1376
Flt Permitted	0.14	1.00	1.00	0.21	1.00	1.00	0.55	1.00		0.57	1.00	1.00
Satd. Flow (perm)	240	3515	1360	337	3544	1315	906	1856		1032	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	466	1333	10	36	922	249	10	145	36	244	191	328
RTOR Reduction (vph)	0	0	4	0	0	74	0	7	0	0	0	239
Lane Group Flow (vph)	466	1333	6	36	922	175	10	174	0	244	191	89
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	88.8	88.8	88.8	50.4	50.4	50.4	38.2	38.2		38.2	38.2	38.2
Effective Green, g (s)	88.8	88.8	88.8	50.4	50.4	50.4	38.2	38.2		38.2	38.2	38.2
Actuated g/C Ratio	0.63	0.63	0.63	0.36	0.36	0.36	0.27	0.27		0.27	0.27	0.27
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	517	2229	862	121	1275	473	247	506		281	485	375
v/s Ratio Prot	c0.23	0.38			0.26			0.09			0.11	
v/s Ratio Perm	c0.34		0.00	0.11		0.13	0.01			c0.24		0.07
v/c Ratio	0.90	0.60	0.01	0.30	0.72	0.37	0.04	0.34		0.87	0.39	0.24
Uniform Delay, d1	34.9	15.1	9.4	32.1	38.8	33.1	37.4	40.9		48.5	41.5	39.6
Progression Factor	0.78	0.86	1.00	1.00	1.00	1.00	1.00	1.00		0.53	0.56	1.14
Incremental Delay, d2	14.7	0.8	0.0	6.2	3.6	2.2	0.1	0.9		24.6	1.1	0.7
Delay (s)	42.0	13.8	9.4	38.3	42.3	35.3	37.6	41.7		50.6	24.5	45.8
Level of Service	D	B	A	D	D	D	D	D		D	C	D
Approach Delay (s)		21.0			40.8			41.5			42.0	
Approach LOS		C			D			D			D	

Intersection Summary

HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Scenario A 2031 AM Signalized Results

6: Stavebank Rd & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Volume (vph)	10	1625	107	39	1151	19	66	28	26	7	12	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			1.00		1.00	0.93		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3277			3191		1782	1682		1795	1580	
Flt Permitted		0.94			0.71		0.38	1.00		0.72	1.00	
Satd. Flow (perm)		3086			2279		715	1682		1357	1580	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	1786	118	43	1265	21	73	31	29	8	13	176
RTOR Reduction (vph)	0	3	0	0	1	0	0	25	0	0	82	0
Lane Group Flow (vph)	0	1912	0	0	1328	0	73	35	0	8	107	0
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3
Confl. Bikes (#/hr)			1			3			1			
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		106.9			106.9		18.1	18.1		18.1	18.1	
Effective Green, g (s)		106.9			106.9		18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.76			0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2356			1740		92	217		175	204	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm		c0.62			0.58		c0.10			0.01		
v/c Ratio		0.81			0.76		0.79	0.16		0.05	0.53	
Uniform Delay, d1		10.3			9.4		59.1	54.2		53.4	56.9	
Progression Factor		1.00			0.30		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.2			2.4		40.4	0.7		0.2	4.6	
Delay (s)		13.5			5.2		99.5	54.9		53.6	61.5	
Level of Service		B			A		F	D		D	E	
Approach Delay (s)		13.5			5.2			79.4			61.2	
Approach LOS		B			A			E			E	

Intersection Summary

HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Scenario A 2031 AM Signalized Results
10: Hurontario St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Volume (vph)	102	0	22	17	5	33	10	717	15	19	663	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1695			1670		1599	3431		1667	3344	
Flt Permitted		0.72			0.88		0.37	1.00		0.35	1.00	
Satd. Flow (perm)		1277			1491		616	3431		615	3344	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	109	0	23	18	5	35	11	763	16	20	705	39
RTOR Reduction (vph)	0	40	0	0	30	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	92	0	0	28	0	11	778	0	20	741	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Effective Green, g (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Actuated g/C Ratio		0.16			0.14		0.67	0.67		0.67	0.67	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		200			213		413	2303		412	2245	
v/s Ratio Prot								c0.23				0.22
v/s Ratio Perm		c0.07			0.02		0.02			0.03		
v/c Ratio		0.46			0.13		0.03	0.34		0.05	0.33	
Uniform Delay, d1		26.8			26.2		3.8	4.9		3.9	4.9	
Progression Factor		1.00			1.00		1.20	1.46		1.61	2.05	
Incremental Delay, d2		3.5			0.6		0.1	0.3		0.2	0.3	
Delay (s)		30.3			26.8		4.7	7.4		6.5	10.3	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		30.3			26.8			7.4			10.2	
Approach LOS		C			C			A			B	

Intersection Summary

HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Scenario A 2031 AM Signalized Results

13: Hurontario St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	191	28	29	10	25	214	20	806	39	251	640	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.97		1.00	0.91		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	0.96	1.00		0.95	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.87		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1675	1719		1703	1481		1575	3377		1733	3162	
Flt Permitted	0.43	1.00		0.71	1.00		0.28	1.00		0.14	1.00	
Satd. Flow (perm)	765	1719		1276	1481		457	3377		251	3162	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	230	34	35	12	30	258	24	971	47	302	771	269
RTOR Reduction (vph)	0	24	0	0	177	0	0	2	0	0	23	0
Lane Group Flow (vph)	230	45	0	12	111	0	24	1016	0	302	1017	0
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	44.0	44.0		44.0	44.0		57.6	57.6		82.0	82.0	
Effective Green, g (s)	44.0	44.0		44.0	44.0		57.6	57.6		82.0	82.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.41	0.41		0.59	0.59	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	240	540		401	465		188	1389		373	1852	
v/s Ratio Prot		0.03			0.08			0.30		c0.12	0.32	
v/s Ratio Perm	c0.30			0.01			0.05			c0.35		
v/c Ratio	0.96	0.08		0.03	0.24		0.13	0.73		0.81	0.55	
Uniform Delay, d1	47.1	33.8		33.2	35.6		25.6	34.7		27.5	17.7	
Progression Factor	1.00	1.00		1.00	1.00		0.94	1.03		0.98	1.43	
Incremental Delay, d2	46.8	0.1		0.1	0.6		1.4	3.4		11.9	1.0	
Delay (s)	93.9	33.9		33.3	36.1		25.4	38.9		38.9	26.3	
Level of Service	F	C		C	D		C	D		D	C	
Approach Delay (s)		80.1			36.0			38.6			29.2	
Approach LOS		F			D			D			C	

Intersection Summary

HCM 2000 Control Delay	38.3	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)	17.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Scenario A 2031 AM Signalized Results
29: Elizabeth St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑		↑	↑	
Volume (vph)	23	1666	25	47	1068	10	60	24	102	37	11	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.96		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.88		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3318			3220		1704	1496		1192	1406	
Flt Permitted		0.91			0.68		0.70	1.00		0.49	1.00	
Satd. Flow (perm)		3023			2207		1262	1496		621	1406	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1851	28	52	1187	11	67	27	113	41	12	70
RTOR Reduction (vph)	0	1	0	0	0	0	0	31	0	0	62	0
Lane Group Flow (vph)	0	1904	0	0	1250	0	67	109	0	41	20	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		111.1			111.1		16.9	16.9		16.9	16.9	
Effective Green, g (s)		111.1			111.1		16.9	16.9		16.9	16.9	
Actuated g/C Ratio		0.79			0.79		0.12	0.12		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2398			1751		152	180		74	169	
v/s Ratio Prot								c0.07			0.01	
v/s Ratio Perm		c0.63			0.57		0.05			0.07		
v/c Ratio		0.79			0.71		0.44	0.61		0.55	0.12	
Uniform Delay, d1		8.1			6.9		57.2	58.4		58.0	54.9	
Progression Factor		0.34			3.77		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8			2.0		4.2	8.3		14.4	0.7	
Delay (s)		4.5			28.0		61.4	66.7		72.4	55.6	
Level of Service		A			C		E	E		E	E	
Approach Delay (s)		4.5			28.0			64.9			61.2	
Approach LOS		A			C			E			E	

Intersection Summary

HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Scenario A 2031 AM Signalized Results
35: Hurontario St & Eaglewood Blvd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (vph)	61	1	28	47	2	114	40	1233	72	34	1019	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes		1.00		1.00	0.98			0.99			1.00	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.96		1.00	0.85			0.99			0.98	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1745		1707	1551			3394			3318	
Flt Permitted		0.60		0.71	1.00			0.84			0.82	
Satd. Flow (perm)		1085		1277	1551			2871			2730	
Peak-hour factor, PHF	1.00	1.00	1.00	0.89	1.00	0.89	1.00	0.89	0.89	0.89	0.89	1.00
Adj. Flow (vph)	61	1	28	53	2	128	40	1385	81	38	1145	145
RTOR Reduction (vph)	0	12	0	0	73	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	78	0	53	57	0	0	1504	0	0	1328	0
Confl. Peds. (#/hr)				6		2			22	22		
Heavy Vehicles (%)	2%	2%	2%	6%	2%	4%	2%	6%	6%	3%	9%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2		16.2	16.2			109.8			109.8	
Effective Green, g (s)		16.2		16.2	16.2			109.8			109.8	
Actuated g/C Ratio		0.12		0.12	0.12			0.78			0.78	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		125		147	179			2251			2141	
v/s Ratio Prot					0.04							
v/s Ratio Perm		c0.07		0.04				c0.52			0.49	
v/c Ratio		0.62		0.36	0.32			0.67			0.62	
Uniform Delay, d1		59.0		57.1	56.9			6.8			6.3	
Progression Factor		1.00		1.00	1.00			2.64			1.00	
Incremental Delay, d2		12.8		3.1	2.2			1.2			1.4	
Delay (s)		71.8		60.3	59.0			19.2			7.7	
Level of Service		E		E	E			B			A	
Approach Delay (s)		71.8			59.4			19.2			7.7	
Approach LOS		E			E			B			A	

Intersection Summary

HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Scenario A 2031 AM Unsignalized Results

8: Stavebank Rd & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	5	3	51	18	36	7	47	18	6	141	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	65	23	46	9	59	23	8	178	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	133	91	211
Volume Left (vph)	3	65	9	8
Volume Right (vph)	4	46	23	25
Hadj (s)	-0.14	-0.09	-0.03	-0.03
Departure Headway (s)	4.6	4.5	4.5	4.3
Degree Utilization, x	0.02	0.17	0.11	0.25
Capacity (veh/h)	711	743	769	796
Control Delay (s)	7.7	8.4	8.0	8.8
Approach Delay (s)	7.7	8.4	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	30.8%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 AM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization		16.9%	ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 AM Unsignalized Results
 14: Stavebank Rd & Park St

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	76	31	61	18	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	89	36	72	21	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	226	95			103	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226	95			103	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	96			99	
cM capacity (veh/h)	740	948			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	126	93	118
Volume Left	89	0	13
Volume Right	36	21	0
cSH	791	1700	1434
Volume to Capacity	0.16	0.05	0.01
Queue Length 95th (m)	4.0	0.0	0.2
Control Delay (s)	10.4	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay		4.2	
Intersection Capacity Utilization		25.5%	ICU Level of Service
Analysis Period (min)		15	A

Scenario A 2031 AM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	4	83	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	93	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			340	286	30	301	291	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			340	286	30	301	291	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			542	590	1031	614	457	892
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	4	183	29									
Volume Left	0	93	0									
Volume Right	4	0	0									
cSH	1700	1611	457									
Volume to Capacity	0.00	0.06	0.06									
Queue Length 95th (m)	0.0	1.3	1.4									
Control Delay (s)	0.0	4.0	13.4									
Lane LOS		A	B									
Approach Delay (s)	0.0	4.0	13.4									
Approach LOS			B									
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			35.6%	ICU Level of Service							A	
Analysis Period (min)			15									

Scenario A 2031 AM Unsignalized Results
 19: Ann St & Queen St/GO Parking Access

9/30/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (veh/h)	1	6	1	3	159	37
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)	2	9	2	5	248	58
Pedestrians	24			86	7	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			7	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		45	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		45	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		73	93
cM capacity (veh/h)			1602		905	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	6	306
Volume Left	0	2	248
Volume Right	9	0	58
cSH	1700	1602	902
Volume to Capacity	0.01	0.00	0.34
Queue Length 95th (m)	0.0	0.0	10.6
Control Delay (s)	0.0	1.8	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	11.0
Approach LOS			B

Intersection Summary			
Average Delay		10.5	
Intersection Capacity Utilization		25.3%	ICU Level of Service
Analysis Period (min)		15	A

Scenario A 2031 AM Unsignalized Results
 20: Lakeshore Rd & Ann St

9/30/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	43	1658	1105	33	2	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	1863	1242	37	2	15
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.77				0.84	0.77
vC, conflicting volume	1311				2324	674
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	818				986	0
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	91				99	98
cM capacity (veh/h)	552				185	819

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	48	931	931	828	451	17
Volume Left	48	0	0	0	0	2
Volume Right	0	0	0	0	37	15
cSH	552	1700	1700	1700	1700	562
Volume to Capacity	0.09	0.55	0.55	0.49	0.27	0.03
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.0	0.6
Control Delay (s)	12.1	0.0	0.0	0.0	0.0	11.6
Lane LOS	B					B
Approach Delay (s)	0.3			0.0		11.6
Approach LOS						B

Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			56.8%		ICU Level of Service	B
Analysis Period (min)			15			

Scenario A 2031 AM Unignalized Results

21: Ann St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	101	4	9	30	8	3	97	31	3	9	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	116	5	10	34	9	3	111	36	3	10	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	128	54	151	18
Volume Left (vph)	7	10	3	3
Volume Right (vph)	5	9	36	5
Hadj (s)	-0.01	0.04	0.37	-0.01
Departure Headway (s)	4.4	4.5	4.7	4.5
Degree Utilization, x	0.15	0.07	0.20	0.02
Capacity (veh/h)	790	753	733	748
Control Delay (s)	8.2	7.8	8.9	7.6
Approach Delay (s)	8.2	7.8	8.9	7.6
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	23.7%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 AM Unignalized Results

22: Ann St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	38	247	3	16	80	103	2	81	18	10	1	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	55	358	4	23	116	149	3	117	26	14	1	1

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	417	139	149	146	17
Volume Left (vph)	55	23	0	3	14
Volume Right (vph)	4	0	149	26	1
Hadj (s)	0.03	0.15	-0.70	0.50	0.12
Departure Headway (s)	4.9	5.6	4.7	6.1	6.0
Degree Utilization, x	0.57	0.22	0.20	0.25	0.03
Capacity (veh/h)	707	616	725	534	512
Control Delay (s)	14.2	9.0	7.7	11.1	9.2
Approach Delay (s)	14.2	8.3		11.1	9.2
Approach LOS	B	A		B	A

Intersection Summary				
Delay			11.6	
Level of Service			B	
Intersection Capacity Utilization		41.6%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario A 2031 AM Unignalized Results

23: Helene St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Volume (veh/h)	167	1640	4	12	1089	7	1	0	36	2	0	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	182	1783	4	13	1184	8	1	0	39	2	0	51
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.78			0.70			0.81	0.81	0.70	0.81	0.81	0.78
vC, conflicting volume	1227			1803			2834	3417	910	2544	3416	633
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	727			1296			1576	2294	25	1219	2292	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	73			97			97	100	95	97	100	94
cM capacity (veh/h)	669			375			42	22	728	77	22	809

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1073	896	605	599	40	53
Volume Left	182	0	13	0	1	2
Volume Right	0	4	0	8	39	51
cSH	669	1700	375	1700	506	583
Volume to Capacity	0.27	0.53	0.03	0.35	0.08	0.09
Queue Length 95th (m)	7.7	0.0	0.8	0.0	1.8	2.1
Control Delay (s)	7.9	0.0	1.1	0.0	12.7	11.8
Lane LOS	A		A		B	B
Approach Delay (s)	4.3		0.6		12.7	11.8
Approach LOS					B	B

Intersection Summary

Average Delay	3.2
Intersection Capacity Utilization	95.4%
ICU Level of Service	F
Analysis Period (min)	15

Scenario A 2031 AM Unignalized Results
 24: Helene St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	9	51	4	4	21	5	28	176	11	4	45	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	57	4	4	23	6	31	196	12	4	50	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	71	33	239	64
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	12	10
Hadj (s)	-0.01	0.08	0.00	0.01
Departure Headway (s)	4.6	4.7	4.2	4.4
Degree Utilization, x	0.09	0.04	0.28	0.08
Capacity (veh/h)	721	699	828	774
Control Delay (s)	8.1	8.0	8.9	7.8
Approach Delay (s)	8.1	8.0	8.9	7.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)		15	

Scenario A 2031 AM Unsignalized Results
 25: Helene St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	135	4	16	56	6	4	116	97	84	29	3
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	173	5	21	72	8	5	149	124	108	37	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	181	100	278	149
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	124	4
Hadj (s)	0.01	0.08	-0.26	0.14
Departure Headway (s)	5.1	5.3	4.6	5.2
Degree Utilization, x	0.26	0.15	0.36	0.21
Capacity (veh/h)	644	609	738	645
Control Delay (s)	9.9	9.2	10.1	9.5
Approach Delay (s)	9.9	9.2	10.1	9.5
Approach LOS	A	A	B	A

Intersection Summary			
Delay		9.8	
Level of Service		A	
Intersection Capacity Utilization	47.4%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 AM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↑				↑	
Volume (veh/h)	0	0	0	106	42	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	174	69	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	114			1			484	463	116	557	443	142
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			1			484	463	116	557	443	142
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			55	100	100	100	100	100
cM capacity (veh/h)	1480			1627			434	443	848	364	455	870

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	282	197	0
Volume Left	0	174	197	0
Volume Right	0	39	0	0
cSH	1700	1627	434	1700
Volume to Capacity	0.00	0.11	0.45	0.00
Queue Length 95th (m)	0.0	2.5	16.2	0.0
Control Delay (s)	0.0	4.9	20.0	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.0	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		11.1	
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Scenario A 2031 AM Unsignalized Results
 30: Elizabeth St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	38	15	11	58	4	27	16	9	10	100	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	48	19	14	73	5	34	20	11	13	127	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	67	92	66	153
Volume Left (vph)	0	14	34	13
Volume Right (vph)	19	5	11	14
Hadj (s)	-0.13	0.05	0.04	0.36
Departure Headway (s)	4.4	4.6	4.5	4.7
Degree Utilization, x	0.08	0.12	0.08	0.20
Capacity (veh/h)	770	740	758	729
Control Delay (s)	7.8	8.2	7.9	8.9
Approach Delay (s)	7.8	8.2	7.9	8.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	29.6%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 AM Unsignalized Results

31: Elizabeth St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↕		↻	↻	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	50	13	19	78	1	6	0	23	42	81	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	54	14	21	85	1	7	0	25	46	88	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	68	107	32	46	105
Volume Left (vph)	0	21	7	46	0
Volume Right (vph)	14	1	25	0	17
Hadj (s)	-0.01	0.09	-0.37	0.55	0.34
Departure Headway (s)	4.5	4.5	4.2	5.5	5.3
Degree Utilization, x	0.09	0.13	0.04	0.07	0.15
Capacity (veh/h)	768	754	802	627	656
Control Delay (s)	7.9	8.2	7.4	7.7	8.0
Approach Delay (s)	7.9	8.2	7.4	7.9	
Approach LOS	A	A	A	A	

Intersection Summary				
Delay			8.0	
Level of Service			A	
Intersection Capacity Utilization		30.2%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario A 2031 AM Unsignalized Results
41: Ann St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	0	6	0	5	0	198	46	0	5	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.71	1.00	0.71	1.00	0.71	0.71	0.71	0.71	1.00
Hourly flow rate (vph)	0	0	0	8	0	7	0	279	65	0	7	0
Pedestrians					9			1			5	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	330	360	8	328	327	325	7			353		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	330	360	8	328	327	325	7			353		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	100	100	100	99	100	99	100			100		
cM capacity (veh/h)	611	563	1073	620	587	712	1614			1208		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	15	344	7
Volume Left	0	8	0	0
Volume Right	0	7	65	0
cSH	1700	658	1614	1208
Volume to Capacity	0.00	0.02	0.00	0.00
Queue Length 95th (m)	0.0	0.5	0.0	0.0
Control Delay (s)	0.0	10.6	0.0	0.0
Lane LOS	A	B		
Approach Delay (s)	0.0	10.6	0.0	0.0
Approach LOS	A	B		

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization	24.9%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 AM Unsignalized Results
42: Park St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	31	256	0	0	203	90	0	0	0	2	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	1.00	1.00	0.78	0.78	1.00	1.00	1.00	0.78	1.00	0.78
Hourly flow rate (vph)	40	328	0	0	260	115	0	0	0	3	0	1
Pedestrians					1						9	
Lane Width (m)					3.7						3.7	
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)					57							
pX, platoon unblocked												
vC, conflicting volume	385			328			727	792	329	736	735	327
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	385			328			727	792	329	736	735	327
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	100	99	100	100
cM capacity (veh/h)	1176			1231			328	308	712	324	333	713

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	368	376	0	4
Volume Left	40	0	0	3
Volume Right	0	115	0	1
cSH	1176	1231	1700	396
Volume to Capacity	0.03	0.00	0.00	0.01
Queue Length 95th (m)	0.7	0.0	0.0	0.2
Control Delay (s)	1.2	0.0	0.0	14.2
Lane LOS	A		A	B
Approach Delay (s)	1.2	0.0	0.0	14.2
Approach LOS			A	B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization	45.0%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 PM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	342	972	13	62	1031	257	10	169	43	260	223	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1667	3614	1415	1742	3614	1440	1732	1847		1731	1921	1455
Flt Permitted	0.11	1.00	1.00	0.29	1.00	1.00	0.55	1.00		0.57	1.00	1.00
Satd. Flow (perm)	185	3614	1415	530	3614	1440	1011	1847		1044	1921	1455
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)	349	992	13	63	1052	262	10	172	44	265	228	389
RTOR Reduction (vph)	0	0	6	0	0	99	0	10	0	0	0	261
Lane Group Flow (vph)	349	992	7	63	1052	163	10	206	0	265	228	128
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	56.4	56.4	56.4	35.0	35.0	35.0	30.6	30.6		30.6	30.6	30.6
Effective Green, g (s)	56.4	56.4	56.4	35.0	35.0	35.0	30.6	30.6		30.6	30.6	30.6
Actuated g/C Ratio	0.56	0.56	0.56	0.35	0.35	0.35	0.31	0.31		0.31	0.31	0.31
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	377	2038	798	185	1264	504	309	565		319	587	445
v/s Ratio Prot	c0.17	0.27			0.29			0.11				0.12
v/s Ratio Perm	c0.35		0.01	0.12		0.11	0.01			c0.25		0.09
v/c Ratio	0.93	0.49	0.01	0.34	0.83	0.32	0.03	0.37		0.83	0.39	0.29
Uniform Delay, d1	28.3	13.1	9.6	24.0	29.8	23.8	24.3	27.1		32.3	27.3	26.4
Progression Factor	1.12	1.41	1.00	1.00	1.00	1.00	1.00	1.00		0.47	0.43	0.51
Incremental Delay, d2	26.5	0.7	0.0	4.9	6.5	1.7	0.1	0.8		17.2	0.8	0.7
Delay (s)	58.0	19.2	9.6	28.9	36.3	25.5	24.4	28.0		32.2	12.6	14.3
Level of Service	E	B	A	C	D	C	C	C		C	B	B
Approach Delay (s)		29.1			33.9			27.8			19.2	
Approach LOS		C			C			C			B	

Intersection Summary

HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Scenario A 2031 PM Unsignalized Results
 8: Stavebank Rd & High St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	42	1	49	20	23	28	96	34	13	220	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	56	23	26	32	109	39	15	250	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	105	180	298
Volume Left (vph)	22	56	32	15
Volume Right (vph)	1	26	39	33
Hadj (s)	0.05	-0.04	-0.07	-0.06
Departure Headway (s)	5.2	5.1	4.6	4.5
Degree Utilization, x	0.10	0.15	0.23	0.37
Capacity (veh/h)	616	638	734	759
Control Delay (s)	8.8	9.0	9.0	10.2
Approach Delay (s)	8.8	9.0	9.0	10.2
Approach LOS	A	A	A	B

Intersection Summary			
Delay		9.5	
Level of Service		A	
Intersection Capacity Utilization	37.3%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 PM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

10/1/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		19.1%	ICU Level of Service
Analysis Period (min)		15	A

Scenario A 2031 PM Unsignalized Results

14: Stavebank Rd & Park St

10/1/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	89	30	103	38	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	99	33	114	42	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	166			176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	166			176	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	96			98	
cM capacity (veh/h)	599	862			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	132	157	207
Volume Left	99	0	26
Volume Right	33	42	0
cSH	649	1700	1390
Volume to Capacity	0.20	0.09	0.02
Queue Length 95th (m)	5.3	0.0	0.4
Control Delay (s)	12.0	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.0	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		39.5%	ICU Level of Service
Analysis Period (min)		15	A

Scenario A 2031 PM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↑	
Volume (veh/h)	0	1	14	98	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	129	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			339	297	37	287	306	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			339	297	37	287	306	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			92			100	100	100	100	93	100
cM capacity (veh/h)	1622			1586			537	568	1035	623	436	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	139	32
Volume Left	0	129	0
Volume Right	18	0	0
cSH	1700	1586	436
Volume to Capacity	0.01	0.08	0.07
Queue Length 95th (m)	0.0	1.9	1.6
Control Delay (s)	0.0	7.0	13.9
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	13.9
Approach LOS			B

Intersection Summary		
Average Delay		7.4
Intersection Capacity Utilization	28.3%	ICU Level of Service
Analysis Period (min)		15
		A

Scenario A 2031 PM Unsignalized Results
 19: Ann St & Queen St/GO Parking Access

10/1/2015



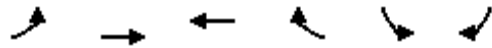
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	1	11	46	149	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	1	15	62	201	5
Pedestrians				5	93	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		186	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		186	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		71	99
cM capacity (veh/h)			1392		702	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1	77	207
Volume Left	0	15	201
Volume Right	1	0	5
cSH	1700	1392	705
Volume to Capacity	0.00	0.01	0.29
Queue Length 95th (m)	0.0	0.2	8.5
Control Delay (s)	0.0	1.5	12.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.5	12.2
Approach LOS			B

Intersection Summary			
Average Delay		9.3	
Intersection Capacity Utilization	28.9%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 PM Unsignalized Results
 20: Lakeshore Rd & Ann St

10/1/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	31	1444	1337	56	2	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	35	1622	1502	63	2	10
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.73				0.82	0.73
vC, conflicting volume	1632				2484	850
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1125				1408	53
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	90				98	99
cM capacity (veh/h)	347				91	695

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	35	811	811	1001	564	12
Volume Left	35	0	0	0	0	2
Volume Right	0	0	0	0	63	10
cSH	347	1700	1700	1700	1700	316
Volume to Capacity	0.10	0.48	0.48	0.59	0.33	0.04
Queue Length 95th (m)	2.3	0.0	0.0	0.0	0.0	0.9
Control Delay (s)	16.5	0.0	0.0	0.0	0.0	16.9
Lane LOS	C					C
Approach Delay (s)	0.3			0.0		16.9
Approach LOS						C

Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			49.9%		ICU Level of Service	A
Analysis Period (min)			15			

Scenario A 2031 PM Unsignalized Results

21: Ann St & High St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	145	5	5	64	7	14	67	31	13	33	10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	149	5	5	66	7	14	69	32	13	34	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	165	78	115	58
Volume Left (vph)	10	5	14	13
Volume Right (vph)	5	7	32	10
Hadj (s)	0.01	-0.01	0.19	-0.06
Departure Headway (s)	4.4	4.5	4.7	4.6
Degree Utilization, x	0.20	0.10	0.15	0.07
Capacity (veh/h)	781	752	719	734
Control Delay (s)	8.5	8.0	8.6	7.9
Approach Delay (s)	8.5	8.0	8.6	7.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	27.0%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 PM Unsignalized Results

22: Ann St & Park St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	25	160	9	42	220	82	7	48	33	35	11	6
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	30	193	11	51	265	99	8	58	40	42	13	7

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	234	316	99	106	63
Volume Left (vph)	30	51	0	8	42
Volume Right (vph)	11	0	99	40	7
Hadj (s)	0.01	0.08	-0.70	0.22	0.07
Departure Headway (s)	5.0	5.3	4.5	5.7	5.7
Degree Utilization, x	0.32	0.47	0.12	0.17	0.10
Capacity (veh/h)	681	655	764	557	559
Control Delay (s)	10.4	11.7	7.0	9.9	9.3
Approach Delay (s)	10.4	10.6		9.9	9.3
Approach LOS	B	B		A	A

Intersection Summary				
Delay			10.3	
Level of Service			B	
Intersection Capacity Utilization		44.8%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario A 2031 PM Unsignalized Results

23: Helene St & Lakeshore Rd

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Volume (veh/h)	51	1368	3	29	1324	47	2	1	20	10	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	52	1382	3	29	1337	47	2	1	20	10	0	37
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.74			0.81			0.84	0.84	0.81	0.84	0.84	0.74
vC, conflicting volume	1504			1457			2326	3121	764	2353	3099	814
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	979			1088			1157	2106	230	1189	2080	48
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			94			98	97	97	87	100	94
cM capacity (veh/h)	474			491			88	31	590	80	32	674

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	742	694	698	716	23	47
Volume Left	52	0	29	0	2	10
Volume Right	0	3	0	47	20	37
cSH	474	1700	491	1700	258	261
Volume to Capacity	0.11	0.41	0.06	0.42	0.09	0.18
Queue Length 95th (m)	2.5	0.0	1.3	0.0	2.1	4.6
Control Delay (s)	3.2	0.0	1.7	0.0	20.3	21.9
Lane LOS	A		A		C	C
Approach Delay (s)	1.7		0.9		20.3	21.9
Approach LOS					C	C

Intersection Summary

Average Delay		1.8				
Intersection Capacity Utilization		88.1%		ICU Level of Service		E
Analysis Period (min)		15				

Scenario A 2031 PM Unsignalized Results

24: Helene St & High St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	99	12	16	58	6	28	47	48	16	45	29
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)	13	115	14	19	67	7	33	55	56	19	52	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	142	93	143	105
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	56	34
Hadj (s)	-0.03	0.02	-0.19	-0.14
Departure Headway (s)	4.6	4.7	4.4	4.5
Degree Utilization, x	0.18	0.12	0.17	0.13
Capacity (veh/h)	737	718	770	746
Control Delay (s)	8.6	8.3	8.3	8.2
Approach Delay (s)	8.6	8.3	8.3	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	29.2%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 PM Unsignalized Results

25: Helene St & Park St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	97	4	59	173	12	8	28	31	69	30	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	117	5	71	208	14	10	34	37	83	36	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	127	294	81	124
Volume Left (vph)	5	71	10	83
Volume Right (vph)	5	14	37	5
Hadj (s)	-0.02	0.02	-0.25	0.11
Departure Headway (s)	4.8	4.6	4.8	5.1
Degree Utilization, x	0.17	0.38	0.11	0.18
Capacity (veh/h)	700	744	670	640
Control Delay (s)	8.7	10.4	8.4	9.2
Approach Delay (s)	8.7	10.4	8.4	9.2
Approach LOS	A	B	A	A

Intersection Summary			
Delay		9.6	
Level of Service		A	
Intersection Capacity Utilization	39.4%		ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 PM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↗				↑	
Volume (veh/h)	0	0	0	105	63	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	0	0	0	159	95	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	148			22			523	488	116	543	470	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	148			22			523	488	116	543	470	199
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			88	100	100	100	100	100
cM capacity (veh/h)	1426			1576			389	420	850	370	430	787

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	291	48	0
Volume Left	0	159	47	0
Volume Right	0	36	2	0
cSH	1700	1576	396	1700
Volume to Capacity	0.00	0.10	0.12	0.00
Queue Length 95th (m)	0.0	2.4	2.9	0.0
Control Delay (s)	0.0	4.5	15.4	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.5	15.4	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		6.1	
Intersection Capacity Utilization		Err%	ICU Level of Service
Analysis Period (min)		15	H

Scenario A 2031 PM Unsignalized Results

30: Elizabeth St & High St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	74	19	26	56	6	33	38	44	5	120	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	79	20	28	60	6	35	40	47	5	128	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	94	122	152
Volume Left (vph)	3	28	35	5
Volume Right (vph)	20	6	47	19
Hadj (s)	-0.11	0.02	-0.16	0.24
Departure Headway (s)	4.6	4.7	4.4	4.8
Degree Utilization, x	0.13	0.12	0.15	0.20
Capacity (veh/h)	730	710	771	716
Control Delay (s)	8.2	8.4	8.2	9.0
Approach Delay (s)	8.2	8.4	8.2	9.0
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	41.3%		ICU Level of Service
Analysis Period (min)		15	A

Scenario A 2031 PM Unsignalized Results

31: Elizabeth St & Park St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↕		↻	↻	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	58	9	62	101	0	21	0	29	25	88	24
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	76	12	82	133	0	28	0	38	33	116	32

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	89	214	66	33	147
Volume Left (vph)	1	82	28	33	0
Volume Right (vph)	12	0	38	0	32
Hadj (s)	-0.05	0.08	-0.23	0.50	0.25
Departure Headway (s)	4.8	4.7	4.8	5.8	5.6
Degree Utilization, x	0.12	0.28	0.09	0.05	0.23
Capacity (veh/h)	699	718	691	582	612
Control Delay (s)	8.4	9.6	8.3	8.0	9.0
Approach Delay (s)	8.4	9.6	8.3	8.8	
Approach LOS	A	A	A	A	

Intersection Summary				
Delay			9.0	
Level of Service			A	
Intersection Capacity Utilization		34.6%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario A 2031 PM Unsignalized Results
 41: Ann St & GO Parking Access

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	0	23	0	12	0	138	4	0	21	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.76	1.00	0.76	1.00	0.76	0.76	0.76	0.76	1.00
Hourly flow rate (vph)	0	0	0	30	0	16	0	182	5	0	28	0
Pedestrians					9			1			2	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	230	223	29	222	221	195	28			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	230	223	29	222	221	195	28			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	100	100	100	96	100	98	100			100		
cM capacity (veh/h)	706	670	1045	728	672	843	1586			1378		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	46	187	28
Volume Left	0	30	0	0
Volume Right	0	16	5	0
cSH	1700	764	1586	1378
Volume to Capacity	0.00	0.06	0.00	0.00
Queue Length 95th (m)	0.0	1.3	0.0	0.0
Control Delay (s)	0.0	10.0	0.0	0.0
Lane LOS	A	B		
Approach Delay (s)	0.0	10.0	0.0	0.0
Approach LOS	A	B		

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization	19.7%		ICU Level of Service
Analysis Period (min)	15		A

Scenario A 2031 PM Unsignalized Results
42: Park St & GO Parking Access

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	245	0	0	369	10	0	0	0	16	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	1.00	1.00	0.90	0.90	1.00	1.00	1.00	0.90	1.00	0.90
Hourly flow rate (vph)	4	272	0	0	410	11	0	0	0	18	0	14
Pedestrians		4			1							13
Lane Width (m)		3.7			3.7							3.7
Walking Speed (m/s)		1.2			1.2							1.2
Percent Blockage		0			0							1
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					57							
pX, platoon unblocked												
vC, conflicting volume	434			272			715	715	273	711	710	433
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	434			272			715	715	273	711	710	433
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	95	100	98
cM capacity (veh/h)	1124			1291			333	351	765	343	353	618

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	277	421	0	32
Volume Left	4	0	0	18
Volume Right	0	11	0	14
cSH	1124	1291	1700	428
Volume to Capacity	0.00	0.00	0.00	0.08
Queue Length 95th (m)	0.1	0.0	0.0	1.7
Control Delay (s)	0.2	0.0	0.0	14.1
Lane LOS	A		A	B
Approach Delay (s)	0.2	0.0	0.0	14.1
Approach LOS			A	B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		31.3%	ICU Level of Service A
Analysis Period (min)		15	

Scenario A 2031 PM Signalized Results

6: Stavebank Rd & Lakeshore Rd

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Volume (vph)	93	1283	146	64	1312	37	134	20	71	25	20	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.88		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3300			3348		1768	1632		1767	1547	
Flt Permitted		0.61			0.67		0.36	1.00		0.70	1.00	
Satd. Flow (perm)		2019			2259		667	1632		1294	1547	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	97	1336	152	67	1367	39	140	21	74	26	21	252
RTOR Reduction (vph)	0	8	0	0	2	0	0	42	0	0	36	0
Lane Group Flow (vph)	0	1577	0	0	1471	0	140	53	0	26	237	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Effective Green, g (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio		0.66			0.66		0.19	0.19		0.19	0.19	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1332			1490		126	310		245	293	
v/s Ratio Prot								0.03				0.15
v/s Ratio Perm		c0.78			0.65		c0.21			0.02		
v/c Ratio		1.18			0.99		1.11	0.17		0.11	0.81	
Uniform Delay, d1		17.0			16.6		40.5	33.9		33.5	38.7	
Progression Factor		1.00			1.24		1.00	1.00		1.00	1.00	
Incremental Delay, d2		90.7			18.0		113.1	0.5		0.4	16.8	
Delay (s)		107.7			38.6		153.6	34.5		33.9	55.6	
Level of Service		F			D		F	C		C	E	
Approach Delay (s)		107.7			38.6		105.5				53.7	
Approach LOS		F			D		F				D	

Intersection Summary

HCM 2000 Control Delay	74.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	134.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Scenario A 2031 PM Signalized Results
10: Hurontario St & High St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	↗
Volume (vph)	114	5	56	20	6	44	16	798	18	25	890	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.96	1.00	
Frt		0.96			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1705			1654		1765	3489		1654	3470	
Flt Permitted		0.76			0.88		0.27	1.00		0.32	1.00	
Satd. Flow (perm)		1337			1472		494	3489		549	3470	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	118	5	58	21	6	45	16	823	19	26	918	60
RTOR Reduction (vph)	0	21	0	0	37	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	160	0	0	35	0	16	841	0	26	975	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Effective Green, g (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Actuated g/C Ratio		0.19			0.18		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		254			264		340	2407		378	2394	
v/s Ratio Prot								0.24				c0.28
v/s Ratio Perm		c0.12			0.02		0.03			0.05		
v/c Ratio		0.63			0.13		0.05	0.35		0.07	0.41	
Uniform Delay, d1		37.3			34.4		5.0	6.3		5.0	6.7	
Progression Factor		1.00			1.00		1.38	1.57		0.15	0.12	
Incremental Delay, d2		6.8			0.5		0.2	0.3		0.3	0.4	
Delay (s)		44.0			34.9		7.1	10.3		1.0	1.2	
Level of Service		D			C		A	B		A	A	
Approach Delay (s)		44.0			34.9			10.2			1.2	
Approach LOS		D			C			B			A	

Intersection Summary

HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Scenario A 2031 PM Signalized Results

13: Hurontario St & Park St

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	37	36	14	34	175	15	895	22	130	1009	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98		1.00	0.95		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	0.97	1.00		0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.93		1.00	0.87		1.00	1.00		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)	1719	1748		1749	1604		1777	3491		1749	3378	
Flt Permitted	0.53	1.00		0.71	1.00		0.13	1.00		0.25	1.00	
Satd. Flow (perm)	958	1748		1301	1604		246	3491		466	3378	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	196	39	38	15	36	186	16	952	23	138	1073	321
RTOR Reduction (vph)	0	29	0	0	78	0	0	2	0	0	25	0
Lane Group Flow (vph)	196	48	0	15	144	0	16	973	0	138	1369	0
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	24.7	24.7		24.7	24.7		61.3	61.3		61.3	61.3	
Effective Green, g (s)	24.7	24.7		24.7	24.7		61.3	61.3		61.3	61.3	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.61	0.61		0.61	0.61	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	236	431		321	396		150	2139		285	2070	
v/s Ratio Prot		0.03			0.09			0.28			c0.41	
v/s Ratio Perm	c0.20			0.01			0.07			0.30		
v/c Ratio	0.83	0.11		0.05	0.36		0.11	0.46		0.48	0.66	
Uniform Delay, d1	35.7	29.2		28.7	31.2		8.0	10.4		10.6	12.6	
Progression Factor	1.00	1.00		1.00	1.00		0.42	0.46		1.38	1.55	
Incremental Delay, d2	23.3	0.2		0.1	1.2		1.4	0.7		2.2	0.6	
Delay (s)	59.0	29.4		28.8	32.4		4.7	5.4		16.9	20.1	
Level of Service	E	C		C	C		A	A		B	C	
Approach Delay (s)		50.7			32.1			5.4			19.8	
Approach LOS		D			C			A			B	

Intersection Summary

HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Scenario A 2031 PM Signalized Results
29: Elizabeth St & Lakeshore Rd

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Volume (vph)	26	1281	41	35	1220	46	69	50	84	54	23	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99			0.99		1.00	0.91		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.89	1.00	
Frt		1.00			0.99		1.00	0.91		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3359			3342		1720	1579		1185	1592	
Flt Permitted		0.89			0.86		0.69	1.00		0.61	1.00	
Satd. Flow (perm)		3003			2869		1244	1579		756	1592	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	28	1363	44	37	1298	49	73	53	89	57	24	84
RTOR Reduction (vph)	0	2	0	0	2	0	0	46	0	0	46	0
Lane Group Flow (vph)	0	1433	0	0	1382	0	73	96	0	57	62	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Effective Green, g (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2207			2108		180	228		109	230	
v/s Ratio Prot								0.06				0.04
v/s Ratio Perm		0.48			c0.48		0.06			c0.08		
v/c Ratio		0.65			0.66		0.41	0.42		0.52	0.27	
Uniform Delay, d1		6.7			6.8		38.8	38.9		39.6	38.0	
Progression Factor		0.29			0.57		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.2		3.1	2.6		8.4	1.3	
Delay (s)		2.1			5.1		41.9	41.5		47.9	39.4	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		2.1			5.1			41.7			42.3	
Approach LOS		A			A			D			D	

Intersection Summary

HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Scenario A 2031 PM Signalized Results
35: Hurontario St & Eaglewood Blvd

10/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (vph)	108	14	21	48	5	45	21	1327	63	74	1584	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			*1.00	
Frbp, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.86			0.99			1.00	
Flt Protected		0.96		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1779		1825	1629			3511			3714	
Flt Permitted		0.75		0.70	1.00			0.90			0.71	
Satd. Flow (perm)		1376		1342	1629			3156			2652	
Peak-hour factor, PHF	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.97	0.97	0.97	0.97	1.00
Adj. Flow (vph)	108	14	21	49	5	46	21	1368	65	76	1633	41
RTOR Reduction (vph)	0	7	0	0	38	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	136	0	49	13	0	0	1451	0	0	1750	0
Confl. Peds. (#/hr)									17	17		
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	3%	0%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.8		16.8	16.8			69.2			69.2	
Effective Green, g (s)		16.8		16.8	16.8			69.2			69.2	
Actuated g/C Ratio		0.17		0.17	0.17			0.69			0.69	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		231		225	273			2183			1835	
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.10		0.04				0.46			c0.66	
v/c Ratio		0.59		0.22	0.05			0.66			0.95	
Uniform Delay, d1		38.4		35.9	34.9			8.8			13.9	
Progression Factor		1.00		1.00	1.00			1.76			1.00	
Incremental Delay, d2		6.0		1.0	0.1			1.5			12.6	
Delay (s)		44.4		36.9	35.0			17.0			26.5	
Level of Service		D		D	D			B			C	
Approach Delay (s)		44.4			36.0			17.0			26.5	
Approach LOS		D			D			B			C	

Intersection Summary

HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	118.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Appendix G

2031 Total Traffic Intersection Operations
Scenario B

Scenario B 2031 AM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	406	1160	9	31	802	220	9	126	31	220	166	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.97	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3515	1360	1557	3544	1315	1557	1856		1722	1780	1376
Flt Permitted	0.13	1.00	1.00	0.21	1.00	1.00	0.56	1.00		0.57	1.00	1.00
Satd. Flow (perm)	227	3515	1360	337	3544	1315	913	1856		1039	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	467	1333	10	36	922	253	10	145	36	253	191	328
RTOR Reduction (vph)	0	0	4	0	0	75	0	6	0	0	0	236
Lane Group Flow (vph)	467	1333	6	36	922	178	10	175	0	253	191	92
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	87.8	87.8	87.8	49.1	49.1	49.1	39.2	39.2		39.2	39.2	39.2
Effective Green, g (s)	87.8	87.8	87.8	49.1	49.1	49.1	39.2	39.2		39.2	39.2	39.2
Actuated g/C Ratio	0.63	0.63	0.63	0.35	0.35	0.35	0.28	0.28		0.28	0.28	0.28
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	513	2204	852	118	1242	461	255	519		290	498	385
v/s Ratio Prot	c0.23	0.38			0.26			0.09			0.11	
v/s Ratio Perm	c0.34		0.00	0.11		0.14	0.01			c0.24		0.07
v/c Ratio	0.91	0.60	0.01	0.31	0.74	0.39	0.04	0.34		0.87	0.38	0.24
Uniform Delay, d1	36.0	15.7	9.8	33.0	39.9	34.1	36.7	40.1		48.0	40.7	38.9
Progression Factor	0.79	0.80	1.00	1.00	1.00	1.00	1.00	1.00		0.53	0.57	1.03
Incremental Delay, d2	15.8	0.8	0.0	6.6	4.0	2.4	0.1	0.8		24.8	1.0	0.7
Delay (s)	44.2	13.4	9.8	39.6	43.9	36.6	36.8	40.9		50.4	24.0	40.7
Level of Service	D	B	A	D	D	D	D	D		D	C	D
Approach Delay (s)		21.3			42.3			40.7			39.8	
Approach LOS		C			D			D			D	

Intersection Summary		
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.92	
Actuated Cycle Length (s)	140.0	Sum of lost time (s) 16.0
Intersection Capacity Utilization	93.6%	ICU Level of Service F
Analysis Period (min)	15	

c Critical Lane Group

Scenario B 2031 AM Signalized Results

6: Stavebank Rd & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Volume (vph)	10	1629	107	39	1162	19	66	28	26	7	12	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			1.00		1.00	0.93		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3277			3191		1782	1682		1795	1580	
Flt Permitted		0.94			0.71		0.38	1.00		0.72	1.00	
Satd. Flow (perm)		3085			2277		712	1682		1357	1580	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	1790	118	43	1277	21	73	31	29	8	13	177
RTOR Reduction (vph)	0	3	0	0	1	0	0	25	0	0	80	0
Lane Group Flow (vph)	0	1916	0	0	1340	0	73	35	0	8	110	0
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3
Confl. Bikes (#/hr)			1			3			1			
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		106.8			106.8		18.2	18.2		18.2	18.2	
Effective Green, g (s)		106.8			106.8		18.2	18.2		18.2	18.2	
Actuated g/C Ratio		0.76			0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2353			1737		92	218		176	205	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm		c0.62			0.59		c0.10			0.01		
v/c Ratio		0.81			0.77		0.79	0.16		0.05	0.54	
Uniform Delay, d1		10.4			9.6		59.1	54.1		53.3	57.0	
Progression Factor		1.00			0.30		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.2			2.5		40.4	0.7		0.2	4.9	
Delay (s)		13.6			5.4		99.4	54.8		53.5	61.8	
Level of Service		B			A		F	D		D	E	
Approach Delay (s)		13.6			5.4			79.3			61.5	
Approach LOS		B			A			E			E	

Intersection Summary

HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Scenario B 2031 AM Signalized Results

10: Hurontario St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	↗
Volume (vph)	102	0	22	17	5	33	10	721	15	19	671	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1695			1670		1599	3431		1667	3344	
Flt Permitted		0.72			0.88		0.36	1.00		0.35	1.00	
Satd. Flow (perm)		1277			1491		609	3431		612	3344	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	109	0	23	18	5	35	11	767	16	20	714	40
RTOR Reduction (vph)	0	40	0	0	30	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	92	0	0	28	0	11	782	0	20	750	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Effective Green, g (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Actuated g/C Ratio		0.16			0.14		0.67	0.67		0.67	0.67	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		200			213		408	2303		410	2245	
v/s Ratio Prot								c0.23				0.22
v/s Ratio Perm		c0.07			0.02		0.02			0.03		
v/c Ratio		0.46			0.13		0.03	0.34		0.05	0.33	
Uniform Delay, d1		26.8			26.2		3.8	4.9		3.9	4.9	
Progression Factor		1.00			1.00		1.28	1.52		1.59	2.16	
Incremental Delay, d2		3.5			0.6		0.1	0.3		0.2	0.3	
Delay (s)		30.3			26.8		5.0	7.8		6.4	10.9	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		30.3			26.8			7.7			10.7	
Approach LOS		C			C			A			B	

Intersection Summary

HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Scenario B 2031 AM Signalized Results

13: Hurontario St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	228	28	38	10	25	214	24	806	39	251	640	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.96		1.00	0.91		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	0.96	1.00		0.95	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.91		1.00	0.87		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1673	1693		1704	1481		1576	3377		1733	3157	
Flt Permitted	0.46	1.00		0.70	1.00		0.27	1.00		0.11	1.00	
Satd. Flow (perm)	811	1693		1264	1481		451	3377		205	3157	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	275	34	46	12	30	258	29	971	47	302	771	282
RTOR Reduction (vph)	0	30	0	0	168	0	0	3	0	0	26	0
Lane Group Flow (vph)	275	50	0	12	120	0	29	1015	0	302	1027	0
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	49.1	49.1		49.1	49.1		52.2	52.2		76.9	76.9	
Effective Green, g (s)	49.1	49.1		49.1	49.1		52.2	52.2		76.9	76.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.37	0.37		0.55	0.55	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	284	593		443	519		168	1259		349	1734	
v/s Ratio Prot		0.03			0.08			0.30		c0.13	0.33	
v/s Ratio Perm	c0.34			0.01			0.06			c0.34		
v/c Ratio	0.97	0.08		0.03	0.23		0.17	0.81		0.87	0.59	
Uniform Delay, d1	44.7	30.4		29.8	32.1		29.4	39.4		35.1	21.1	
Progression Factor	1.00	1.00		1.00	1.00		0.93	1.02		0.90	1.38	
Incremental Delay, d2	44.9	0.1		0.1	0.5		2.2	5.5		18.2	1.3	
Delay (s)	89.5	30.5		29.8	32.6		29.6	45.5		50.0	30.4	
Level of Service	F	C		C	C		C	D		D	C	
Approach Delay (s)		76.2			32.5			45.1			34.8	
Approach LOS		E			C			D			C	

Intersection Summary

HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Scenario B 2031 AM Signalized Results
29: Elizabeth St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑		↑	↑	
Volume (vph)	23	1670	25	47	1078	10	60	24	102	37	11	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.96		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.88		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3318			3220		1704	1496		1192	1405	
Flt Permitted		0.91			0.68		0.70	1.00		0.49	1.00	
Satd. Flow (perm)		3022			2208		1261	1496		617	1405	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1856	28	52	1198	11	67	27	113	41	12	71
RTOR Reduction (vph)	0	1	0	0	0	0	0	32	0	0	63	0
Lane Group Flow (vph)	0	1909	0	0	1261	0	67	108	0	41	20	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		111.3			111.3		16.7	16.7		16.7	16.7	
Effective Green, g (s)		111.3			111.3		16.7	16.7		16.7	16.7	
Actuated g/C Ratio		0.79			0.79		0.12	0.12		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2402			1755		150	178		73	167	
v/s Ratio Prot								c0.07			0.01	
v/s Ratio Perm		c0.63			0.57		0.05			0.07		
v/c Ratio		0.79			0.72		0.45	0.61		0.56	0.12	
Uniform Delay, d1		8.0			6.9		57.4	58.5		58.2	55.1	
Progression Factor		0.39			3.85		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8			2.0		4.4	8.4		15.2	0.7	
Delay (s)		4.9			28.5		61.7	66.9		73.4	55.8	
Level of Service		A			C		E	E		E	E	
Approach Delay (s)		4.9			28.5			65.3			61.6	
Approach LOS		A			C			E			E	

Intersection Summary

HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Scenario B 2031 AM Signalized Results
35: Hurontario St & Eaglewood Blvd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (vph)	61	1	28	47	2	114	40	1270	72	34	1030	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes		1.00		1.00	0.98			0.99			1.00	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.96		1.00	0.85			0.99			0.98	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1745		1707	1551			3395			3318	
Flt Permitted		0.60		0.71	1.00			0.85			0.82	
Satd. Flow (perm)		1085		1277	1551			2875			2716	
Peak-hour factor, PHF	1.00	1.00	1.00	0.89	1.00	0.89	1.00	0.89	0.89	0.89	0.89	1.00
Adj. Flow (vph)	61	1	28	53	2	128	40	1427	81	38	1157	145
RTOR Reduction (vph)	0	12	0	0	67	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	78	0	53	63	0	0	1546	0	0	1340	0
Confl. Peds. (#/hr)				6		2			22	22		
Heavy Vehicles (%)	2%	2%	2%	6%	2%	4%	2%	6%	6%	3%	9%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2		16.2	16.2			109.8			109.8	
Effective Green, g (s)		16.2		16.2	16.2			109.8			109.8	
Actuated g/C Ratio		0.12		0.12	0.12			0.78			0.78	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		125		147	179			2254			2130	
v/s Ratio Prot					0.04							
v/s Ratio Perm		c0.07		0.04				c0.54			0.49	
v/c Ratio		0.62		0.36	0.35			0.69			0.63	
Uniform Delay, d1		59.0		57.1	57.1			7.0			6.4	
Progression Factor		1.00		1.00	1.00			2.50			1.00	
Incremental Delay, d2		12.8		3.1	2.5			1.1			1.4	
Delay (s)		71.8		60.3	59.5			18.8			7.9	
Level of Service		E		E	E			B			A	
Approach Delay (s)		71.8			59.7			18.8			7.9	
Approach LOS		E			E			B			A	

Intersection Summary

HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Scenario B 2031 AM Unsignalized Results

8: Stavebank Rd & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	5	3	52	18	36	7	47	18	6	141	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	66	23	46	9	59	23	8	178	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	134	91	211
Volume Left (vph)	3	66	9	8
Volume Right (vph)	4	46	23	25
Hadj (s)	-0.14	-0.09	-0.03	-0.03
Departure Headway (s)	4.6	4.5	4.5	4.3
Degree Utilization, x	0.02	0.17	0.11	0.25
Capacity (veh/h)	711	743	768	795
Control Delay (s)	7.7	8.4	8.0	8.8
Approach Delay (s)	7.7	8.4	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	30.9%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 AM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization		16.9%	ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 AM Unsignalized Results

14: Stavebank Rd & Park St

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	76	31	61	18	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	89	36	72	21	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	226	95			103	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226	95			103	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	96			99	
cM capacity (veh/h)	740	948			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	126	93	118
Volume Left	89	0	13
Volume Right	36	21	0
cSH	791	1700	1434
Volume to Capacity	0.16	0.05	0.01
Queue Length 95th (m)	4.0	0.0	0.2
Control Delay (s)	10.4	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay		4.2	
Intersection Capacity Utilization		25.5%	ICU Level of Service
Analysis Period (min)		15	A

Scenario B 2031 AM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	4	83	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	93	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			340	286	30	301	291	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			340	286	30	301	291	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			542	590	1031	614	457	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	183	29
Volume Left	0	93	0
Volume Right	4	0	0
cSH	1700	1611	457
Volume to Capacity	0.00	0.06	0.06
Queue Length 95th (m)	0.0	1.3	1.4
Control Delay (s)	0.0	4.0	13.4
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	13.4
Approach LOS			B

Intersection Summary		
Average Delay		5.2
Intersection Capacity Utilization	35.6%	ICU Level of Service
Analysis Period (min)		15
		A

Scenario B 2031 AM Unsignalized Results
 19: Ann St & Queen St/GO Parking Access

9/30/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (veh/h)	1	6	1	3	159	37
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)	2	9	2	5	248	58
Pedestrians	24			86	7	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			7	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		45	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		45	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		73	93
cM capacity (veh/h)			1602		905	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	6	306
Volume Left	0	2	248
Volume Right	9	0	58
cSH	1700	1602	902
Volume to Capacity	0.01	0.00	0.34
Queue Length 95th (m)	0.0	0.0	10.6
Control Delay (s)	0.0	1.8	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	11.0
Approach LOS			B

Intersection Summary			
Average Delay		10.5	
Intersection Capacity Utilization	25.3%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 AM Unsignalized Results
 20: Lakeshore Rd & Ann St

9/30/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	46	1659	1105	33	2	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	52	1864	1242	37	2	26
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.77				0.84	0.77
vC, conflicting volume	1311				2332	674
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	809				982	0
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	91				99	97
cM capacity (veh/h)	554				185	816

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	52	932	932	828	451	28
Volume Left	52	0	0	0	0	2
Volume Right	0	0	0	0	37	26
cSH	554	1700	1700	1700	1700	641
Volume to Capacity	0.09	0.55	0.55	0.49	0.27	0.04
Queue Length 95th (m)	2.1	0.0	0.0	0.0	0.0	1.0
Control Delay (s)	12.2	0.0	0.0	0.0	0.0	10.9
Lane LOS	B					B
Approach Delay (s)	0.3			0.0		10.9
Approach LOS						B

Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			56.8%		ICU Level of Service	B
Analysis Period (min)			15			

Scenario B 2031 AM Unsignalized Results

21: Ann St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	101	4	9	31	8	3	100	31	3	19	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	116	5	10	36	9	3	115	36	3	22	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	128	55	154	30
Volume Left (vph)	7	10	3	3
Volume Right (vph)	5	9	36	5
Hadj (s)	-0.01	0.04	0.37	0.00
Departure Headway (s)	4.4	4.5	4.7	4.5
Degree Utilization, x	0.16	0.07	0.20	0.04
Capacity (veh/h)	781	744	729	747
Control Delay (s)	8.2	7.9	8.9	7.7
Approach Delay (s)	8.2	7.9	8.9	7.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	24.0%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 AM Unsignalized Results

22: Ann St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	38	250	3	19	89	105	2	84	18	34	8	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	55	362	4	28	129	152	3	122	26	49	12	1

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	422	157	152	151	62
Volume Left (vph)	55	28	0	3	49
Volume Right (vph)	4	0	152	26	1
Hadj (s)	0.03	0.16	-0.70	0.50	0.14
Departure Headway (s)	5.1	5.9	5.0	6.3	6.2
Degree Utilization, x	0.60	0.25	0.21	0.26	0.11
Capacity (veh/h)	674	586	684	511	500
Control Delay (s)	15.7	9.6	8.1	11.6	9.9
Approach Delay (s)	15.7	8.9		11.6	9.9
Approach LOS	C	A		B	A

Intersection Summary				
Delay			12.4	
Level of Service			B	
Intersection Capacity Utilization		41.9%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario B 2031 AM Unsignalized Results
 23: Helene St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Volume (veh/h)	167	1644	4	12	1099	7	1	0	36	2	0	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	182	1787	4	13	1195	8	1	0	39	2	0	51
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.78			0.70			0.81	0.81	0.70	0.81	0.81	0.78
vC, conflicting volume	1238			1807			2844	3432	913	2557	3431	638
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	731			1302			1572	2296	28	1220	2294	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	73			97			97	100	95	97	100	94
cM capacity (veh/h)	664			373			42	22	725	77	22	806

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1075	898	610	605	40	53
Volume Left	182	0	13	0	1	2
Volume Right	0	4	0	8	39	51
cSH	664	1700	373	1700	505	580
Volume to Capacity	0.27	0.53	0.03	0.36	0.08	0.09
Queue Length 95th (m)	7.8	0.0	0.8	0.0	1.8	2.1
Control Delay (s)	8.1	0.0	1.1	0.0	12.7	11.8
Lane LOS	A		A		B	B
Approach Delay (s)	4.4		0.6		12.7	11.8
Approach LOS					B	B

Intersection Summary

Average Delay		3.2				
Intersection Capacity Utilization		95.8%		ICU Level of Service		F
Analysis Period (min)		15				

Scenario B 2031 AM Unsignalized Results

24: Helene St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	9	51	4	4	22	5	28	176	11	4	45	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	57	4	4	24	6	31	196	12	4	50	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	71	34	239	64
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	12	10
Hadj (s)	-0.01	0.08	0.00	0.01
Departure Headway (s)	4.6	4.8	4.2	4.4
Degree Utilization, x	0.09	0.05	0.28	0.08
Capacity (veh/h)	721	698	828	774
Control Delay (s)	8.1	8.0	8.9	7.8
Approach Delay (s)	8.1	8.0	8.9	7.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)		15	

Scenario B 2031 AM Unsignalized Results

25: Helene St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	135	4	16	57	6	4	116	97	84	29	3
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	173	5	21	73	8	5	149	124	108	37	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	181	101	278	149
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	124	4
Hadj (s)	0.01	0.08	-0.26	0.14
Departure Headway (s)	5.1	5.3	4.6	5.2
Degree Utilization, x	0.26	0.15	0.36	0.21
Capacity (veh/h)	643	609	737	644
Control Delay (s)	9.9	9.2	10.1	9.6
Approach Delay (s)	9.9	9.2	10.1	9.6
Approach LOS	A	A	B	A

Intersection Summary			
Delay		9.8	
Level of Service		A	
Intersection Capacity Utilization	47.5%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 AM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↑				↑	
Volume (veh/h)	0	0	0	106	42	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	174	69	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	114			1			484	463	116	557	443	142
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			1			484	463	116	557	443	142
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			55	100	100	100	100	100
cM capacity (veh/h)	1480			1627			434	443	848	364	455	870

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	282	197	0
Volume Left	0	174	197	0
Volume Right	0	39	0	0
cSH	1700	1627	434	1700
Volume to Capacity	0.00	0.11	0.45	0.00
Queue Length 95th (m)	0.0	2.5	16.2	0.0
Control Delay (s)	0.0	4.9	20.0	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.0	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		11.1	
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Scenario B 2031 AM Unsignalized Results

30: Elizabeth St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	38	15	11	59	4	27	16	9	10	101	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	48	19	14	75	5	34	20	11	13	128	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	67	94	66	154
Volume Left (vph)	0	14	34	13
Volume Right (vph)	19	5	11	14
Hadj (s)	-0.13	0.05	0.04	0.36
Departure Headway (s)	4.4	4.6	4.5	4.7
Degree Utilization, x	0.08	0.12	0.08	0.20
Capacity (veh/h)	769	739	757	729
Control Delay (s)	7.8	8.2	7.9	8.9
Approach Delay (s)	7.8	8.2	7.9	8.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	29.6%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 AM Unsignalized Results

31: Elizabeth St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↔	↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	50	13	20	78	1	6	0	23	42	81	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	54	14	22	85	1	7	0	25	46	88	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	68	108	32	46	105
Volume Left (vph)	0	22	7	46	0
Volume Right (vph)	14	1	25	0	17
Hadj (s)	-0.01	0.09	-0.37	0.55	0.34
Departure Headway (s)	4.5	4.5	4.2	5.5	5.3
Degree Utilization, x	0.09	0.14	0.04	0.07	0.15
Capacity (veh/h)	768	754	801	627	655
Control Delay (s)	7.9	8.2	7.4	7.7	8.1
Approach Delay (s)	7.9	8.2	7.4	7.9	
Approach LOS	A	A	A	A	

Intersection Summary				
Delay			8.0	
Level of Service			A	
Intersection Capacity Utilization		30.2%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario B 2031 AM Unsignalized Results
 41: Ann St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	31	6	0	5	5	198	46	0	5	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.71	1.00	0.71	1.00	0.71	0.71	0.71	0.71	1.00
Hourly flow rate (vph)	0	0	31	8	0	7	5	279	65	0	7	0
Pedestrians					9			1			5	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	340	370	8	369	337	325	7			353		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	340	370	8	369	337	325	7			353		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	100	100	97	99	100	99	100			100		
cM capacity (veh/h)	600	554	1073	564	577	712	1614			1208		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	31	15	349	7								
Volume Left	0	8	5	0								
Volume Right	31	7	65	0								
cSH	1073	623	1614	1208								
Volume to Capacity	0.03	0.02	0.00	0.00								
Queue Length 95th (m)	0.6	0.5	0.1	0.0								
Control Delay (s)	8.5	10.9	0.1	0.0								
Lane LOS	A	B	A									
Approach Delay (s)	8.5	10.9	0.1	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			31.5%		ICU Level of Service				A			
Analysis Period (min)			15									

Scenario B 2031 AM Unsignalized Results
42: Park St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	31	283	0	5	213	90	4	0	19	2	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	1.00	1.00	0.78	0.78	1.00	1.00	1.00	0.78	1.00	0.78
Hourly flow rate (vph)	40	363	0	5	273	115	4	0	19	3	0	1
Pedestrians					1						9	
Lane Width (m)					3.7						3.7	
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)					57							
pX, platoon unblocked	1.00						1.00	1.00		1.00	1.00	1.00
vC, conflicting volume	397			363			784	850	364	812	792	340
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	397			363			784	849	364	812	792	339
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			99	100	97	99	100	100
cM capacity (veh/h)	1163			1196			299	284	681	279	307	702

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	403	393	23	4
Volume Left	40	5	4	3
Volume Right	0	115	19	1
cSH	1163	1196	557	349
Volume to Capacity	0.03	0.00	0.04	0.01
Queue Length 95th (m)	0.7	0.1	0.9	0.2
Control Delay (s)	1.1	0.1	11.7	15.4
Lane LOS	A	A	B	C
Approach Delay (s)	1.1	0.1	11.7	15.4
Approach LOS			B	C

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization	42.8%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 PM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	345	972	13	62	1031	263	10	169	43	263	223	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1667	3614	1415	1742	3614	1440	1732	1847		1731	1921	1455
Flt Permitted	0.11	1.00	1.00	0.29	1.00	1.00	0.56	1.00		0.57	1.00	1.00
Satd. Flow (perm)	186	3614	1415	530	3614	1440	1012	1847		1045	1921	1455
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)	352	992	13	63	1052	268	10	172	44	268	228	389
RTOR Reduction (vph)	0	0	6	0	0	102	0	10	0	0	0	261
Lane Group Flow (vph)	352	992	7	63	1052	166	10	206	0	268	228	128
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	56.3	56.3	56.3	34.8	34.8	34.8	30.7	30.7		30.7	30.7	30.7
Effective Green, g (s)	56.3	56.3	56.3	34.8	34.8	34.8	30.7	30.7		30.7	30.7	30.7
Actuated g/C Ratio	0.56	0.56	0.56	0.35	0.35	0.35	0.31	0.31		0.31	0.31	0.31
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	378	2034	796	184	1257	501	310	567		320	589	446
v/s Ratio Prot	c0.17	0.27			0.29			0.11				0.12
v/s Ratio Perm	c0.35		0.01	0.12		0.12	0.01			c0.26		0.09
v/c Ratio	0.93	0.49	0.01	0.34	0.84	0.33	0.03	0.36		0.84	0.39	0.29
Uniform Delay, d1	28.4	13.2	9.6	24.1	30.0	24.0	24.3	27.0		32.3	27.3	26.3
Progression Factor	1.12	1.41	1.00	1.00	1.00	1.00	1.00	1.00		0.48	0.45	0.49
Incremental Delay, d2	27.4	0.7	0.0	5.0	6.7	1.8	0.1	0.8		17.8	0.8	0.7
Delay (s)	59.2	19.3	9.6	29.1	36.7	25.8	24.3	27.9		33.1	13.0	13.6
Level of Service	E	B	A	C	D	C	C	C		C	B	B
Approach Delay (s)		29.6			34.3			27.7			19.3	
Approach LOS		C			C			C			B	

Intersection Summary

HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Scenario B 2031 PM Signalized Results

6: Stavebank Rd & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Volume (vph)	93	1291	146	64	1317	37	134	20	71	25	20	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.88		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3300			3348		1768	1632		1767	1547	
Flt Permitted		0.61			0.67		0.36	1.00		0.70	1.00	
Satd. Flow (perm)		2017			2253		667	1632		1294	1547	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	97	1345	152	67	1372	39	140	21	74	26	21	252
RTOR Reduction (vph)	0	8	0	0	2	0	0	41	0	0	36	0
Lane Group Flow (vph)	0	1586	0	0	1476	0	140	54	0	26	237	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Effective Green, g (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio		0.66			0.66		0.19	0.19		0.19	0.19	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1331			1486		126	310		245	293	
v/s Ratio Prot								0.03				0.15
v/s Ratio Perm		c0.79			0.66		c0.21			0.02		
v/c Ratio		1.19			0.99		1.11	0.17		0.11	0.81	
Uniform Delay, d1		17.0			16.8		40.5	33.9		33.5	38.8	
Progression Factor		1.00			1.25		1.00	1.00		1.00	1.00	
Incremental Delay, d2		94.0			19.3		113.1	0.6		0.4	17.3	
Delay (s)		111.0			40.2		153.6	34.5		33.9	56.0	
Level of Service		F			D		F	C		C	E	
Approach Delay (s)		111.0			40.2		105.5				54.1	
Approach LOS		F			D		F				D	

Intersection Summary

HCM 2000 Control Delay	76.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	134.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Scenario B 2031 PM Signalized Results

10: Hurontario St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↗		↗	↕↗	
Volume (vph)	114	5	56	20	6	44	16	807	18	25	893	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.96	1.00	
Frt		0.96			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1705			1654		1766	3489		1655	3470	
Flt Permitted		0.76			0.88		0.26	1.00		0.31	1.00	
Satd. Flow (perm)		1337			1472		492	3489		543	3470	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	118	5	58	21	6	45	16	832	19	26	921	60
RTOR Reduction (vph)	0	21	0	0	37	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	160	0	0	35	0	16	850	0	26	978	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Effective Green, g (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Actuated g/C Ratio		0.19			0.18		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		254			264		339	2407		374	2394	
v/s Ratio Prot								0.24				c0.28
v/s Ratio Perm		c0.12			0.02		0.03			0.05		
v/c Ratio		0.63			0.13		0.05	0.35		0.07	0.41	
Uniform Delay, d1		37.3			34.4		5.0	6.4		5.0	6.7	
Progression Factor		1.00			1.00		1.38	1.57		0.16	0.12	
Incremental Delay, d2		6.8			0.5		0.2	0.3		0.3	0.4	
Delay (s)		44.0			34.9		7.1	10.3		1.1	1.2	
Level of Service		D			C		A	B		A	A	
Approach Delay (s)		44.0			34.9			10.3			1.2	
Approach LOS		D			C			B			A	

Intersection Summary

HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Scenario B 2031 PM Signalized Results

13: Hurontario St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Volume (vph)	204	37	39	14	34	175	24	895	22	130	1009	338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98		1.00	0.96		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	0.97	1.00		0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.92		1.00	0.87		1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1742		1749	1604		1785	3491		1749	3363	
Flt Permitted	0.54	1.00		0.70	1.00		0.12	1.00		0.25	1.00	
Satd. Flow (perm)	978	1742		1298	1604		220	3491		459	3363	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	217	39	41	15	36	186	26	952	23	138	1073	360
RTOR Reduction (vph)	0	30	0	0	73	0	0	2	0	0	29	0
Lane Group Flow (vph)	217	50	0	15	149	0	26	973	0	138	1404	0
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6				2
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	26.3	26.3		26.3	26.3		59.7	59.7		59.7	59.7	
Effective Green, g (s)	26.3	26.3		26.3	26.3		59.7	59.7		59.7	59.7	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.60	0.60		0.60	0.60	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	257	458		341	421		131	2084		274	2007	
v/s Ratio Prot		0.03			0.09			0.28				c0.42
v/s Ratio Perm	c0.22			0.01			0.12			0.30		
v/c Ratio	0.84	0.11		0.04	0.35		0.20	0.47		0.50	0.70	
Uniform Delay, d1	34.9	28.0		27.5	29.9		9.2	11.3		11.6	13.9	
Progression Factor	1.00	1.00		1.00	1.00		0.38	0.47		1.31	1.48	
Incremental Delay, d2	23.5	0.2		0.1	1.1		3.2	0.7		2.2	0.7	
Delay (s)	58.5	28.2		27.6	31.0		6.8	6.0		17.4	21.3	
Level of Service	E	C		C	C		A	A		B	C	
Approach Delay (s)		50.3			30.8			6.0			20.9	
Approach LOS		D			C			A			C	

Intersection Summary

HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Scenario B 2031 PM Signalized Results
29: Elizabeth St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↗	↖		↗	↖	
Volume (vph)	26	1289	41	35	1225	46	69	50	84	54	23	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99			0.99		1.00	0.91		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.89	1.00	
Frt		1.00			0.99		1.00	0.91		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3360			3342		1720	1579		1185	1592	
Flt Permitted		0.89			0.86		0.69	1.00		0.61	1.00	
Satd. Flow (perm)		3003			2867		1244	1579		756	1592	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	28	1371	44	37	1303	49	73	53	89	57	24	84
RTOR Reduction (vph)	0	2	0	0	2	0	0	45	0	0	45	0
Lane Group Flow (vph)	0	1441	0	0	1387	0	73	97	0	57	63	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Effective Green, g (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2207			2107		180	228		109	230	
v/s Ratio Prot								0.06				0.04
v/s Ratio Perm		0.48			c0.48		0.06			c0.08		
v/c Ratio		0.65			0.66		0.41	0.42		0.52	0.27	
Uniform Delay, d1		6.8			6.8		38.8	38.9		39.6	38.1	
Progression Factor		0.29			0.57		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.2		3.1	2.6		8.4	1.3	
Delay (s)		2.1			5.1		41.9	41.6		47.9	39.4	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		2.1			5.1			41.7			42.3	
Approach LOS		A			A			D			D	

Intersection Summary

HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Scenario B 2031 PM Signalized Results
35: Hurontario St & Eaglewood Blvd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (vph)	108	14	21	48	5	45	21	1347	63	74	1620	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			*1.00	
Frbp, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.86			0.99			1.00	
Flt Protected		0.96		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1779		1825	1629			3512			3715	
Flt Permitted		0.75		0.70	1.00			0.90			0.71	
Satd. Flow (perm)		1376		1342	1629			3152			2640	
Peak-hour factor, PHF	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.97	0.97	0.97	0.97	1.00
Adj. Flow (vph)	108	14	21	49	5	46	21	1389	65	76	1670	41
RTOR Reduction (vph)	0	7	0	0	38	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	136	0	49	13	0	0	1472	0	0	1787	0
Confl. Peds. (#/hr)									17	17		
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	3%	0%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.8		16.8	16.8			69.2			69.2	
Effective Green, g (s)		16.8		16.8	16.8			69.2			69.2	
Actuated g/C Ratio		0.17		0.17	0.17			0.69			0.69	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		231		225	273			2181			1826	
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.10		0.04				0.47			c0.68	
v/c Ratio		0.59		0.22	0.05			0.68			0.98	
Uniform Delay, d1		38.4		35.9	34.9			8.9			14.7	
Progression Factor		1.00		1.00	1.00			1.73			1.00	
Incremental Delay, d2		6.0		1.0	0.1			1.5			16.6	
Delay (s)		44.4		36.9	35.0			16.9			31.3	
Level of Service		D		D	D			B			C	
Approach Delay (s)		44.4			36.0			16.9			31.3	
Approach LOS		D			D			B			C	

Intersection Summary

HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	120.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Scenario B 2031 PM Unsignalized Results
 8: Stavebank Rd & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	42	1	49	20	23	28	96	34	13	220	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	56	23	26	32	109	39	15	250	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	105	180	298
Volume Left (vph)	22	56	32	15
Volume Right (vph)	1	26	39	33
Hadj (s)	0.05	-0.04	-0.07	-0.06
Departure Headway (s)	5.2	5.1	4.6	4.5
Degree Utilization, x	0.10	0.15	0.23	0.37
Capacity (veh/h)	616	638	734	759
Control Delay (s)	8.8	9.0	9.0	10.2
Approach Delay (s)	8.8	9.0	9.0	10.2
Approach LOS	A	A	A	B

Intersection Summary			
Delay		9.5	
Level of Service		A	
Intersection Capacity Utilization	37.3%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 PM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		19.1%	ICU Level of Service
Analysis Period (min)		15	A

Scenario B 2031 PM Unsignalized Results

14: Stavebank Rd & Park St

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	89	30	103	38	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	99	33	114	42	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	166			176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	166			176	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	96			98	
cM capacity (veh/h)	599	862			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	132	157	207
Volume Left	99	0	26
Volume Right	33	42	0
cSH	649	1700	1390
Volume to Capacity	0.20	0.09	0.02
Queue Length 95th (m)	5.3	0.0	0.4
Control Delay (s)	12.0	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.0	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		39.5%	ICU Level of Service
Analysis Period (min)		15	A

Scenario B 2031 PM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1	14	98	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	129	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			339	297	37	287	306	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			339	297	37	287	306	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			92			100	100	100	100	93	100
cM capacity (veh/h)	1622			1586			537	568	1035	623	436	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	139	32
Volume Left	0	129	0
Volume Right	18	0	0
cSH	1700	1586	436
Volume to Capacity	0.01	0.08	0.07
Queue Length 95th (m)	0.0	1.9	1.6
Control Delay (s)	0.0	7.0	13.9
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	13.9
Approach LOS			B

Intersection Summary		
Average Delay		7.4
Intersection Capacity Utilization	28.3%	ICU Level of Service
Analysis Period (min)		15
		A

Scenario B 2031 PM Unsignalized Results
 19: Ann St & Queen St/GO Parking Access

9/30/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	1	11	46	149	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	1	15	62	201	5
Pedestrians				5	93	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		186	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		186	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		71	99
cM capacity (veh/h)			1392		702	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1	77	207
Volume Left	0	15	201
Volume Right	1	0	5
cSH	1700	1392	705
Volume to Capacity	0.00	0.01	0.29
Queue Length 95th (m)	0.0	0.2	8.5
Control Delay (s)	0.0	1.5	12.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.5	12.2
Approach LOS			B

Intersection Summary			
Average Delay		9.3	
Intersection Capacity Utilization	28.9%		ICU Level of Service
Analysis Period (min)	15		A

Scenario B 2031 PM Unsignalized Results
 20: Lakeshore Rd & Ann St

9/30/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	36	1447	1337	56	2	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	40	1626	1502	63	2	16
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.73				0.82	0.73
vC, conflicting volume	1632				2497	850
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1123				1415	50
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	88				97	98
cM capacity (veh/h)	347				89	697

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	40	813	813	1001	564	18
Volume Left	40	0	0	0	0	2
Volume Right	0	0	0	0	63	16
cSH	347	1700	1700	1700	1700	376
Volume to Capacity	0.12	0.48	0.48	0.59	0.33	0.05
Queue Length 95th (m)	2.7	0.0	0.0	0.0	0.0	1.1
Control Delay (s)	16.7	0.0	0.0	0.0	0.0	15.1
Lane LOS	C					C
Approach Delay (s)	0.4			0.0		15.1
Approach LOS						C

Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			50.0%		ICU Level of Service	A
Analysis Period (min)			15			

Scenario B 2031 PM Unsignalized Results

21: Ann St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	145	5	5	64	7	14	72	31	13	38	10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	149	5	5	66	7	14	74	32	13	39	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	165	78	121	63
Volume Left (vph)	10	5	14	13
Volume Right (vph)	5	7	32	10
Hadj (s)	0.01	-0.01	0.21	-0.06
Departure Headway (s)	4.5	4.5	4.8	4.6
Degree Utilization, x	0.20	0.10	0.16	0.08
Capacity (veh/h)	774	746	715	732
Control Delay (s)	8.6	8.0	8.7	8.0
Approach Delay (s)	8.6	8.0	8.7	8.0
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	27.3%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 PM Unsignalized Results

22: Ann St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	25	161	9	44	240	86	7	53	33	48	14	6
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	30	194	11	53	289	104	8	64	40	58	17	7

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	235	342	104	112	82
Volume Left (vph)	30	53	0	8	58
Volume Right (vph)	11	0	104	40	7
Hadj (s)	0.01	0.08	-0.70	0.25	0.09
Departure Headway (s)	5.2	5.4	4.7	5.9	5.9
Degree Utilization, x	0.34	0.52	0.13	0.19	0.13
Capacity (veh/h)	659	642	745	539	543
Control Delay (s)	10.8	12.9	7.2	10.3	9.8
Approach Delay (s)	10.8	11.6		10.3	9.8
Approach LOS	B	B		B	A

Intersection Summary				
Delay			11.0	
Level of Service			B	
Intersection Capacity Utilization		46.8%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario B 2031 PM Unsignalized Results

23: Helene St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Volume (veh/h)	51	1376	3	29	1329	47	2	1	20	10	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	52	1390	3	29	1342	47	2	1	20	10	0	37
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.74			0.80			0.84	0.84	0.80	0.84	0.84	0.74
vC, conflicting volume	1509			1465			2337	3134	768	2362	3112	817
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	984			1093			1158	2111	227	1189	2084	48
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			94			98	97	97	87	100	94
cM capacity (veh/h)	472			488			88	31	590	80	32	673

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	746	698	701	719	23	47
Volume Left	52	0	29	0	2	10
Volume Right	0	3	0	47	20	37
cSH	472	1700	488	1700	257	261
Volume to Capacity	0.11	0.41	0.06	0.42	0.09	0.18
Queue Length 95th (m)	2.6	0.0	1.3	0.0	2.1	4.6
Control Delay (s)	3.3	0.0	1.8	0.0	20.4	21.9
Lane LOS	A		A		C	C
Approach Delay (s)	1.7		0.9		20.4	21.9
Approach LOS					C	C

Intersection Summary

Average Delay		1.8				
Intersection Capacity Utilization		88.3%		ICU Level of Service		E
Analysis Period (min)		15				

Scenario B 2031 PM Unsignalized Results

24: Helene St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	99	12	16	58	6	28	47	48	16	45	29
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)	13	115	14	19	67	7	33	55	56	19	52	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	142	93	143	105
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	56	34
Hadj (s)	-0.03	0.02	-0.19	-0.14
Departure Headway (s)	4.6	4.7	4.4	4.5
Degree Utilization, x	0.18	0.12	0.17	0.13
Capacity (veh/h)	737	718	770	746
Control Delay (s)	8.6	8.3	8.3	8.2
Approach Delay (s)	8.6	8.3	8.3	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	29.2%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 PM Unsignalized Results

25: Helene St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	97	4	59	173	12	8	28	31	69	30	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	117	5	71	208	14	10	34	37	83	36	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	127	294	81	124
Volume Left (vph)	5	71	10	83
Volume Right (vph)	5	14	37	5
Hadj (s)	-0.02	0.02	-0.25	0.11
Departure Headway (s)	4.8	4.6	4.8	5.1
Degree Utilization, x	0.17	0.38	0.11	0.18
Capacity (veh/h)	700	744	670	640
Control Delay (s)	8.7	10.4	8.4	9.2
Approach Delay (s)	8.7	10.4	8.4	9.2
Approach LOS	A	B	A	A

Intersection Summary			
Delay		9.6	
Level of Service		A	
Intersection Capacity Utilization	39.4%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 PM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↑				↑	
Volume (veh/h)	0	0	0	105	63	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	0	0	0	159	95	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	148			22			523	488	116	543	470	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	148			22			523	488	116	543	470	199
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			88	100	100	100	100	100
cM capacity (veh/h)	1426			1576			389	420	850	370	430	787

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	291	48	0
Volume Left	0	159	47	0
Volume Right	0	36	2	0
cSH	1700	1576	396	1700
Volume to Capacity	0.00	0.10	0.12	0.00
Queue Length 95th (m)	0.0	2.4	2.9	0.0
Control Delay (s)	0.0	4.5	15.4	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.5	15.4	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		6.1	
Intersection Capacity Utilization		Err%	ICU Level of Service H
Analysis Period (min)		15	

Scenario B 2031 PM Unsignalized Results

30: Elizabeth St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	74	19	26	56	6	33	38	44	5	120	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	79	20	28	60	6	35	40	47	5	128	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	94	122	152
Volume Left (vph)	3	28	35	5
Volume Right (vph)	20	6	47	19
Hadj (s)	-0.11	0.02	-0.16	0.24
Departure Headway (s)	4.6	4.7	4.4	4.8
Degree Utilization, x	0.13	0.12	0.15	0.20
Capacity (veh/h)	730	710	771	716
Control Delay (s)	8.2	8.4	8.2	9.0
Approach Delay (s)	8.2	8.4	8.2	9.0
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	41.3%		ICU Level of Service A
Analysis Period (min)		15	

Scenario B 2031 PM Unsignalized Results

31: Elizabeth St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↕		↶	↷	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	58	9	62	101	0	21	0	29	25	88	24
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	76	12	82	133	0	28	0	38	33	116	32

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	89	214	66	33	147
Volume Left (vph)	1	82	28	33	0
Volume Right (vph)	12	0	38	0	32
Hadj (s)	-0.05	0.08	-0.23	0.50	0.25
Departure Headway (s)	4.8	4.7	4.8	5.8	5.6
Degree Utilization, x	0.12	0.28	0.09	0.05	0.23
Capacity (veh/h)	699	718	691	582	612
Control Delay (s)	8.4	9.6	8.3	8.0	9.0
Approach Delay (s)	8.4	9.6	8.3	8.8	
Approach LOS	A	A	A	A	

Intersection Summary				
Delay			9.0	
Level of Service			A	
Intersection Capacity Utilization		34.6%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario B 2031 PM Unsignalized Results
41: Ann St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	16	23	0	12	9	138	4	0	21	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.76	1.00	0.76	1.00	0.76	0.76	0.76	0.76	1.00
Hourly flow rate (vph)	0	0	16	30	0	16	9	182	5	0	28	0
Pedestrians					9			1			2	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	248	241	29	256	239	195	28			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	248	241	29	256	239	195	28			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	100	100	98	96	100	98	99			100		
cM capacity (veh/h)	685	651	1045	678	653	843	1586			1378		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	16	46	196	28								
Volume Left	0	30	9	0								
Volume Right	16	16	5	0								
cSH	1045	727	1586	1378								
Volume to Capacity	0.02	0.06	0.01	0.00								
Queue Length 95th (m)	0.3	1.4	0.1	0.0								
Control Delay (s)	8.5	10.3	0.4	0.0								
Lane LOS	A	B	A									
Approach Delay (s)	8.5	10.3	0.4	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			30.4%		ICU Level of Service					A		
Analysis Period (min)			15									

Scenario B 2031 PM Unsignalized Results
42: Park St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	259	0	21	393	10	2	0	9	16	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	1.00	1.00	0.90	0.90	1.00	1.00	1.00	0.90	1.00	0.90
Hourly flow rate (vph)	4	288	0	21	437	11	2	0	9	18	0	14
Pedestrians		4			1							13
Lane Width (m)		3.7			3.7							3.7
Walking Speed (m/s)		1.2			1.2							1.2
Percent Blockage		0			0							1
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					57							
pX, platoon unblocked												
vC, conflicting volume	461			288			799	799	289	804	794	459
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	461			288			799	799	289	804	794	459
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	100	99	94	100	98
cM capacity (veh/h)	1099			1274			288	308	750	289	311	597

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	292	469	11	32
Volume Left	4	21	2	18
Volume Right	0	11	9	14
cSH	1099	1274	581	376
Volume to Capacity	0.00	0.02	0.02	0.09
Queue Length 95th (m)	0.1	0.4	0.4	2.0
Control Delay (s)	0.2	0.5	11.3	15.5
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.5	11.3	15.5
Approach LOS			B	C

Intersection Summary			
Average Delay		1.1	
Intersection Capacity Utilization	45.4%		ICU Level of Service
Analysis Period (min)		15	A

Appendix H

2031 Total Traffic Intersection Operations
Scenario C

Scenario C 2031 AM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	432	1161	9	31	846	263	9	126	31	231	166	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.97	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3515	1360	1557	3544	1315	1557	1856		1722	1780	1376
Flt Permitted	0.09	1.00	1.00	0.21	1.00	1.00	0.56	1.00		0.57	1.00	1.00
Satd. Flow (perm)	166	3515	1360	336	3544	1315	914	1856		1041	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	497	1334	10	36	972	302	10	145	36	266	191	328
RTOR Reduction (vph)	0	0	4	0	0	89	0	6	0	0	0	236
Lane Group Flow (vph)	497	1334	6	36	972	213	10	175	0	266	191	92
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	87.6	87.6	87.6	46.8	46.8	46.8	39.4	39.4		39.4	39.4	39.4
Effective Green, g (s)	87.6	87.6	87.6	46.8	46.8	46.8	39.4	39.4		39.4	39.4	39.4
Actuated g/C Ratio	0.63	0.63	0.63	0.33	0.33	0.33	0.28	0.28		0.28	0.28	0.28
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	513	2199	850	112	1184	439	257	522		292	500	387
v/s Ratio Prot	c0.26	0.38			0.27			0.09			0.11	
v/s Ratio Perm	c0.34		0.00	0.11		0.16	0.01			c0.26		0.07
v/c Ratio	0.97	0.61	0.01	0.32	0.82	0.49	0.04	0.33		0.91	0.38	0.24
Uniform Delay, d1	41.1	15.8	9.9	34.8	42.8	37.0	36.5	39.9		48.6	40.5	38.7
Progression Factor	0.85	0.77	1.00	1.00	1.00	1.00	1.00	1.00		0.91	0.97	2.65
Incremental Delay, d2	24.0	0.8	0.0	7.4	6.5	3.8	0.1	0.8		31.2	1.0	0.6
Delay (s)	58.8	13.0	9.9	42.2	49.2	40.9	36.7	40.7		75.3	40.2	103.4
Level of Service	E	B	A	D	D	D	D	D		E	D	F
Approach Delay (s)		25.4			47.1			40.5			78.5	
Approach LOS		C			D			D			E	

Intersection Summary

HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Scenario C 2031 AM Signalized Results

6: Stavebank Rd & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↖	↗		↖	↗	
Volume (vph)	10	1737	107	39	1175	19	66	28	26	7	12	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			1.00		1.00	0.93		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3280			3191		1782	1682		1795	1580	
Flt Permitted		0.94			0.69		0.37	1.00		0.72	1.00	
Satd. Flow (perm)		3090			2199		695	1682		1357	1580	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	1909	118	43	1291	21	73	31	29	8	13	178
RTOR Reduction (vph)	0	3	0	0	1	0	0	24	0	0	82	0
Lane Group Flow (vph)	0	2035	0	0	1354	0	73	36	0	8	109	0
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3
Confl. Bikes (#/hr)			1			3			1			
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		107.1			107.1		17.9	17.9		17.9	17.9	
Effective Green, g (s)		107.1			107.1		17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.76			0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2363			1682		88	215		173	202	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm		c0.66			0.62		c0.11			0.01		
v/c Ratio		0.86			0.81		0.83	0.17		0.05	0.54	
Uniform Delay, d1		11.3			10.1		59.6	54.4		53.6	57.2	
Progression Factor		1.00			0.28		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.4			3.0		48.9	0.8		0.2	5.0	
Delay (s)		15.7			5.8		108.4	55.2		53.8	62.2	
Level of Service		B			A		F	E		D	E	
Approach Delay (s)		15.7			5.8			84.4			61.9	
Approach LOS		B			A			F			E	

Intersection Summary

HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Scenario C 2031 AM Signalized Results
10: Hurontario St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Volume (vph)	102	0	23	17	5	33	18	782	15	19	681	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1694			1670		1600	3432		1671	3345	
Flt Permitted		0.72			0.88		0.36	1.00		0.32	1.00	
Satd. Flow (perm)		1279			1491		602	3432		566	3345	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	109	0	24	18	5	35	19	832	16	20	724	39
RTOR Reduction (vph)	0	40	0	0	30	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	93	0	0	28	0	19	847	0	20	760	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Effective Green, g (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Actuated g/C Ratio		0.16			0.14		0.67	0.67		0.67	0.67	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		200			213		404	2304		380	2245	
v/s Ratio Prot								c0.25				0.23
v/s Ratio Perm		c0.07			0.02		0.03			0.04		
v/c Ratio		0.47			0.13		0.05	0.37		0.05	0.34	
Uniform Delay, d1		26.8			26.2		3.9	5.0		3.9	4.9	
Progression Factor		1.00			1.00		1.21	1.51		0.95	1.02	
Incremental Delay, d2		3.6			0.6		0.1	0.3		0.2	0.3	
Delay (s)		30.4			26.8		4.9	7.9		3.9	5.3	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		30.4			26.8			7.8			5.3	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Scenario C 2031 AM Signalized Results

13: Hurontario St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Volume (vph)	254	28	47	10	25	214	85	806	39	251	640	413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	3.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.96		1.00	0.91		1.00	1.00		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.96	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.91		1.00	0.87		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1673		1705	1477		1586	3377		1733	3082	
Flt Permitted	0.25	1.00		0.70	1.00		0.21	1.00		0.15	1.00	
Satd. Flow (perm)	454	1673		1253	1477		349	3377		280	3082	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	306	34	57	12	30	258	102	971	47	302	771	498
RTOR Reduction (vph)	0	40	0	0	234	0	0	2	0	0	60	0
Lane Group Flow (vph)	306	51	0	12	54	0	102	1016	0	302	1209	0
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	3	8			4			6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	41.6	41.6		13.1	13.1		61.4	61.4		84.4	84.4	
Effective Green, g (s)	41.6	41.6		13.1	13.1		61.4	61.4		84.4	84.4	
Actuated g/C Ratio	0.30	0.30		0.09	0.09		0.44	0.44		0.60	0.60	
Clearance Time (s)	3.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	368	497		117	138		153	1481		376	1858	
v/s Ratio Prot	c0.15	0.03			0.04			0.30		c0.11	0.39	
v/s Ratio Perm	c0.10			0.01			0.29			c0.37		
v/c Ratio	0.83	0.10		0.10	0.39		0.67	0.69		0.80	0.65	
Uniform Delay, d1	42.6	35.7		58.1	59.7		31.2	31.6		23.0	18.2	
Progression Factor	1.00	1.00		1.00	1.00		1.58	1.53		1.56	1.11	
Incremental Delay, d2	14.7	0.2		0.8	3.8		20.2	2.5		10.5	1.4	
Delay (s)	57.3	35.9		58.9	63.5		69.3	51.0		46.4	21.5	
Level of Service	E	D		E	E		E	D		D	C	
Approach Delay (s)		52.4			63.3			52.6			26.3	
Approach LOS		D			E			D			C	

Intersection Summary

HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Scenario C 2031 AM Signalized Results

29: Elizabeth St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑		↑	↑	
Volume (vph)	23	1778	25	47	1089	10	60	24	102	37	11	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.96		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.88		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3319			3221		1704	1496		1192	1403	
Flt Permitted		0.91			0.66		0.70	1.00		0.49	1.00	
Satd. Flow (perm)		3028			2135		1251	1496		619	1403	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1976	28	52	1210	11	67	27	113	41	12	73
RTOR Reduction (vph)	0	1	0	0	0	0	0	26	0	0	64	0
Lane Group Flow (vph)	0	2029	0	0	1273	0	67	114	0	41	21	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		111.2			111.2		16.8	16.8		16.8	16.8	
Effective Green, g (s)		111.2			111.2		16.8	16.8		16.8	16.8	
Actuated g/C Ratio		0.79			0.79		0.12	0.12		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2405			1695		150	179		74	168	
v/s Ratio Prot								c0.08			0.01	
v/s Ratio Perm		c0.67			0.60		0.05			0.07		
v/c Ratio		0.84			0.75		0.45	0.63		0.55	0.12	
Uniform Delay, d1		9.0			7.3		57.3	58.7		58.1	55.0	
Progression Factor		0.36			4.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			2.3		4.4	9.8		14.4	0.7	
Delay (s)		5.4			32.2		61.7	68.5		72.5	55.7	
Level of Service		A			C		E	E		E	E	
Approach Delay (s)		5.4			32.2			66.3			61.2	
Approach LOS		A			C			E			E	

Intersection Summary

HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Scenario C 2031 AM Signalized Results
35: Hurontario St & Eaglewood Blvd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (vph)	61	1	28	47	2	114	40	1296	72	34	1209	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes		1.00		1.00	0.98			0.99			1.00	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.96		1.00	0.85			0.99			0.99	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1745		1707	1551			3396			3322	
Flt Permitted		0.60		0.71	1.00			0.82			0.83	
Satd. Flow (perm)		1085		1277	1551			2801			2748	
Peak-hour factor, PHF	1.00	1.00	1.00	0.89	1.00	0.89	1.00	0.89	0.89	0.89	0.89	1.00
Adj. Flow (vph)	61	1	28	53	2	128	40	1456	81	38	1358	145
RTOR Reduction (vph)	0	12	0	0	64	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	78	0	53	66	0	0	1575	0	0	1541	0
Confl. Peds. (#/hr)				6		2			22	22		
Heavy Vehicles (%)	2%	2%	2%	6%	2%	4%	2%	6%	6%	3%	9%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2		16.2	16.2			109.8			109.8	
Effective Green, g (s)		16.2		16.2	16.2			109.8			109.8	
Actuated g/C Ratio		0.12		0.12	0.12			0.78			0.78	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		125		147	179			2196			2155	
v/s Ratio Prot					0.04							
v/s Ratio Perm		c0.07		0.04				c0.56			0.56	
v/c Ratio		0.62		0.36	0.37			0.72			0.72	
Uniform Delay, d1		59.0		57.1	57.2			7.4			7.4	
Progression Factor		1.00		1.00	1.00			0.61			1.00	
Incremental Delay, d2		12.8		3.1	2.7			1.5			2.1	
Delay (s)		71.8		60.3	59.9			6.1			9.5	
Level of Service		E		E	E			A			A	
Approach Delay (s)		71.8			60.0			6.1			9.5	
Approach LOS		E			E			A			A	

Intersection Summary

HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Scenario C 2031 AM Unsignalized Results

8: Stavebank Rd & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	5	3	51	18	36	7	47	18	6	143	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	65	23	46	9	59	23	8	181	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	133	91	214
Volume Left (vph)	3	65	9	8
Volume Right (vph)	4	46	23	25
Hadj (s)	-0.14	-0.09	-0.03	-0.02
Departure Headway (s)	4.6	4.5	4.5	4.3
Degree Utilization, x	0.02	0.17	0.11	0.26
Capacity (veh/h)	710	742	769	795
Control Delay (s)	7.7	8.4	8.0	8.8
Approach Delay (s)	7.7	8.4	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	30.9%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 AM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization		16.9%	ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 AM Unsignalized Results

14: Stavebank Rd & Park St

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	78	31	61	18	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	92	36	72	21	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	226	95			103	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226	95			103	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	96			99	
cM capacity (veh/h)	740	948			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	128	93	118
Volume Left	92	0	13
Volume Right	36	21	0
cSH	790	1700	1434
Volume to Capacity	0.16	0.05	0.01
Queue Length 95th (m)	4.0	0.0	0.2
Control Delay (s)	10.4	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay		4.3	
Intersection Capacity Utilization		25.6%	ICU Level of Service
Analysis Period (min)		15	A

Scenario C 2031 AM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	4	85	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	96	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			345	291	30	305	295	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			345	291	30	305	295	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			538	586	1031	610	453	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	185	29
Volume Left	0	96	0
Volume Right	4	0	0
cSH	1700	1611	453
Volume to Capacity	0.00	0.06	0.06
Queue Length 95th (m)	0.0	1.3	1.4
Control Delay (s)	0.0	4.0	13.5
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	13.5
Approach LOS			B

Intersection Summary		
Average Delay		5.2
Intersection Capacity Utilization	35.7%	ICU Level of Service
Analysis Period (min)		15
		A

Scenario C 2031 AM Unsignalized Results
 19: Ann St & Queen St/GO Parking Access

9/30/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (veh/h)	1	6	33	7	159	305
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)	2	9	52	11	248	477
Pedestrians	24			86	7	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			7	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		151	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		151	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		67	46
cM capacity (veh/h)			1602		762	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	62	725
Volume Left	0	52	248
Volume Right	9	0	477
cSH	1700	1602	839
Volume to Capacity	0.01	0.03	0.86
Queue Length 95th (m)	0.0	0.7	75.8
Control Delay (s)	0.0	6.1	29.7
Lane LOS		A	D
Approach Delay (s)	0.0	6.1	29.7
Approach LOS			D

Intersection Summary			
Average Delay		27.5	
Intersection Capacity Utilization	46.7%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 AM Unsignalized Results
 20: Lakeshore Rd & Ann St

9/30/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	94	1685	1105	77	3	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	106	1893	1242	87	3	37
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.75				0.81	0.75
vC, conflicting volume	1360				2479	699
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	806				960	0
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	80				98	95
cM capacity (veh/h)	539				164	791

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	106	947	947	828	500	40
Volume Left	106	0	0	0	0	3
Volume Right	0	0	0	0	87	37
cSH	539	1700	1700	1700	1700	599
Volume to Capacity	0.20	0.56	0.56	0.49	0.29	0.07
Queue Length 95th (m)	5.1	0.0	0.0	0.0	0.0	1.5
Control Delay (s)	13.3	0.0	0.0	0.0	0.0	11.4
Lane LOS	B					B
Approach Delay (s)	0.7			0.0		11.4
Approach LOS						B

Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			57.5%		ICU Level of Service	B
Analysis Period (min)			15			

Scenario C 2031 AM Unsignalized Results

21: Ann St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	31	101	4	9	30	16	3	192	31	4	30	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	36	116	5	10	34	18	3	221	36	5	34	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	156	63	260	44
Volume Left (vph)	36	10	3	5
Volume Right (vph)	5	18	36	5
Hadj (s)	0.03	-0.01	0.50	0.00
Departure Headway (s)	4.8	4.9	5.0	4.8
Degree Utilization, x	0.21	0.09	0.36	0.06
Capacity (veh/h)	698	677	692	694
Control Delay (s)	9.1	8.4	10.8	8.1
Approach Delay (s)	9.1	8.4	10.8	8.1
Approach LOS	A	A	B	A

Intersection Summary			
Delay		9.8	
Level of Service		A	
Intersection Capacity Utilization	30.8%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 AM Unsignalized Results

22: Ann St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	47	247	3	19	81	249	2	209	18	91	20	2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	68	358	4	28	117	361	3	303	26	132	29	3

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	430	145	361	332	164
Volume Left (vph)	68	28	0	3	132
Volume Right (vph)	4	0	361	26	3
Hadj (s)	0.04	0.16	-0.70	0.64	0.15
Departure Headway (s)	7.3	7.9	7.0	8.1	8.5
Degree Utilization, x	0.88	0.32	0.70	0.75	0.38
Capacity (veh/h)	430	432	486	415	380
Control Delay (s)	42.9	13.4	23.8	31.8	16.7
Approach Delay (s)	42.9	20.8		31.8	16.7
Approach LOS	E	C		D	C

Intersection Summary

Delay	29.5
Level of Service	D
Intersection Capacity Utilization	54.6%
ICU Level of Service	A
Analysis Period (min)	15

Scenario C 2031 AM Unsignalized Results

23: Helene St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Volume (veh/h)	201	1718	4	12	1109	7	1	0	36	2	0	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	218	1867	4	13	1205	8	1	0	39	2	0	52
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.76			0.64			0.76	0.76	0.64	0.76	0.76	0.76
vC, conflicting volume	1249			1888			3004	3598	953	2682	3596	644
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	685			1256			1562	2343	0	1138	2341	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	68			96			97	100	94	97	100	93
cM capacity (veh/h)	673			353			38	17	686	78	17	785

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1152	938	616	610	40	54
Volume Left	218	0	13	0	1	2
Volume Right	0	4	0	8	39	52
cSH	673	1700	353	1700	470	575
Volume to Capacity	0.32	0.55	0.04	0.36	0.09	0.09
Queue Length 95th (m)	9.9	0.0	0.8	0.0	2.0	2.2
Control Delay (s)	10.0	0.0	1.2	0.0	13.4	11.9
Lane LOS	A		A		B	B
Approach Delay (s)	5.5		0.6		13.4	11.9
Approach LOS					B	B

Intersection Summary

Average Delay		3.9				
Intersection Capacity Utilization		99.1%		ICU Level of Service		F
Analysis Period (min)		15				

Scenario C 2031 AM Unsignalized Results

24: Helene St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	9	51	4	4	21	5	28	185	36	4	46	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	57	4	4	23	6	31	206	40	4	51	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	71	33	277	66
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	40	10
Hadj (s)	-0.01	0.08	-0.06	0.01
Departure Headway (s)	4.7	4.8	4.2	4.5
Degree Utilization, x	0.09	0.04	0.32	0.08
Capacity (veh/h)	705	683	840	766
Control Delay (s)	8.2	8.1	9.1	7.9
Approach Delay (s)	8.2	8.1	9.1	7.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.7	
Level of Service		A	
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)		15	

Scenario C 2031 AM Unsignalized Results

25: Helene St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	135	4	16	58	6	4	116	106	84	30	4
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	173	5	21	74	8	5	149	136	108	38	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	181	103	290	151
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	136	5
Hadj (s)	0.01	0.08	-0.27	0.14
Departure Headway (s)	5.2	5.4	4.6	5.2
Degree Utilization, x	0.26	0.15	0.37	0.22
Capacity (veh/h)	637	603	738	641
Control Delay (s)	10.0	9.3	10.3	9.6
Approach Delay (s)	10.0	9.3	10.3	9.6
Approach LOS	A	A	B	A

Intersection Summary			
Delay		9.9	
Level of Service		A	
Intersection Capacity Utilization	48.2%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 AM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↗				↑	
Volume (veh/h)	0	0	0	108	44	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	177	72	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	117			1			494	473	116	567	453	145
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	117			1			494	473	116	567	453	145
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			54	100	100	100	100	100
cM capacity (veh/h)	1476			1627			426	437	848	358	448	867

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	289	197	0
Volume Left	0	177	197	0
Volume Right	0	39	0	0
cSH	1700	1627	426	1700
Volume to Capacity	0.00	0.11	0.46	0.00
Queue Length 95th (m)	0.0	2.6	16.6	0.0
Control Delay (s)	0.0	4.9	20.5	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.5	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		11.2	
Intersection Capacity Utilization	33.3%		ICU Level of Service
Analysis Period (min)		15	A

Scenario C 2031 AM Unsignalized Results
 30: Elizabeth St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	38	15	11	58	4	27	16	9	10	103	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	48	19	14	73	5	34	20	11	13	130	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	67	92	66	157
Volume Left (vph)	0	14	34	13
Volume Right (vph)	19	5	11	14
Hadj (s)	-0.13	0.05	0.04	0.36
Departure Headway (s)	4.4	4.6	4.5	4.7
Degree Utilization, x	0.08	0.12	0.08	0.21
Capacity (veh/h)	768	738	757	729
Control Delay (s)	7.8	8.2	7.9	8.9
Approach Delay (s)	7.8	8.2	7.9	8.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	29.6%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 AM Unsignalized Results

31: Elizabeth St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↔	↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	50	13	21	79	1	6	0	23	42	82	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	54	14	23	86	1	7	0	25	46	89	18

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	68	110	32	46	108
Volume Left (vph)	0	23	7	46	0
Volume Right (vph)	14	1	25	0	18
Hadj (s)	-0.01	0.09	-0.37	0.55	0.33
Departure Headway (s)	4.5	4.5	4.3	5.5	5.3
Degree Utilization, x	0.09	0.14	0.04	0.07	0.16
Capacity (veh/h)	766	752	799	626	656
Control Delay (s)	7.9	8.3	7.4	7.7	8.1
Approach Delay (s)	7.9	8.3	7.4	8.0	
Approach LOS	A	A	A	A	

Intersection Summary				
Delay			8.0	
Level of Service			A	
Intersection Capacity Utilization		30.2%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario C 2031 AM Unsignalized Results
 41: Ann St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	0	75	0	5	0	466	61	0	37	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.71	1.00	0.71	1.00	0.71	0.71	0.71	0.71	1.00
Hourly flow rate (vph)	0	0	0	106	0	7	0	656	86	0	52	0
Pedestrians					9			1			5	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	763	803	53	761	760	713	52			751		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	763	803	53	761	760	713	52			751		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	100	100	100	67	100	98	100			100		
cM capacity (veh/h)	312	314	1013	320	333	430	1554			861		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	113	742	52
Volume Left	0	106	0	0
Volume Right	0	7	86	0
cSH	1700	325	1554	861
Volume to Capacity	0.00	0.35	0.00	0.00
Queue Length 95th (m)	0.0	10.6	0.0	0.0
Control Delay (s)	0.0	21.9	0.0	0.0
Lane LOS	A	C		
Approach Delay (s)	0.0	21.9	0.0	0.0
Approach LOS	A	C		

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization	40.9%		ICU Level of Service
Analysis Period (min)		15	A

Scenario C 2031 AM Unsignalized Results
42: Park St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	31	337	0	0	349	199	0	0	0	2	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	1.00	1.00	0.78	0.78	1.00	1.00	1.00	0.78	1.00	0.78
Hourly flow rate (vph)	40	432	0	0	447	255	0	0	0	3	0	6
Pedestrians					1						9	
Lane Width (m)					3.7						3.7	
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)					57							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	712			432			1093	1223	433	1097	1096	584
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	685			432			1079	1214	433	1083	1082	553
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	100	99	100	99
cM capacity (veh/h)	881			1128			180	166	622	181	199	515
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	472	703	0	9								
Volume Left	40	0	0	3								
Volume Right	0	255	0	6								
cSH	881	1128	1700	337								
Volume to Capacity	0.05	0.00	0.00	0.03								
Queue Length 95th (m)	1.0	0.0	0.0	0.6								
Control Delay (s)	1.3	0.0	0.0	16.0								
Lane LOS	A		A	C								
Approach Delay (s)	1.3	0.0	0.0	16.0								
Approach LOS			A	C								
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			53.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Scenario C 2031 PM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	355	976	13	62	1037	269	10	169	43	306	223	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1667	3614	1414	1742	3614	1440	1732	1847		1731	1921	1455
Flt Permitted	0.11	1.00	1.00	0.29	1.00	1.00	0.57	1.00		0.58	1.00	1.00
Satd. Flow (perm)	195	3614	1414	528	3614	1440	1032	1847		1062	1921	1455
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)	362	996	13	63	1058	274	10	172	44	312	228	389
RTOR Reduction (vph)	0	0	6	0	0	107	0	9	0	0	0	242
Lane Group Flow (vph)	362	996	7	63	1058	167	10	207	0	312	228	147
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	53.9	53.9	53.9	33.0	33.0	33.0	33.1	33.1		33.1	33.1	33.1
Effective Green, g (s)	53.9	53.9	53.9	33.0	33.0	33.0	33.1	33.1		33.1	33.1	33.1
Actuated g/C Ratio	0.54	0.54	0.54	0.33	0.33	0.33	0.33	0.33		0.33	0.33	0.33
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	368	1947	762	174	1192	475	341	611		351	635	481
v/s Ratio Prot	c0.18	0.28			0.29			0.11				0.12
v/s Ratio Perm	c0.35		0.00	0.12		0.12	0.01			c0.29		0.10
v/c Ratio	0.98	0.51	0.01	0.36	0.89	0.35	0.03	0.34		0.89	0.36	0.31
Uniform Delay, d1	29.3	14.7	10.7	25.5	31.7	25.4	22.6	25.2		31.7	25.4	24.9
Progression Factor	1.14	1.40	1.00	1.00	1.00	1.00	1.00	1.00		0.53	0.51	0.30
Incremental Delay, d2	39.2	0.8	0.0	5.8	10.0	2.0	0.1	0.7		22.8	0.7	0.7
Delay (s)	72.7	21.4	10.7	31.2	41.7	27.4	22.7	25.9		39.7	13.5	8.1
Level of Service	E	C	B	C	D	C	C	C		D	B	A
Approach Delay (s)		34.8			38.4			25.7			20.1	
Approach LOS		C			D			C			C	

Intersection Summary

HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Scenario C 2031 PM Signalized Results

6: Stavebank Rd & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Volume (vph)	93	1307	146	64	1374	37	134	20	71	25	20	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.88		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3305			3350		1770	1632		1767	1546	
Flt Permitted		0.60			0.67		0.34	1.00		0.70	1.00	
Satd. Flow (perm)		1977			2251		630	1632		1294	1546	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	97	1361	152	67	1431	39	140	21	74	26	21	261
RTOR Reduction (vph)	0	8	0	0	2	0	0	40	0	0	32	0
Lane Group Flow (vph)	0	1602	0	0	1535	0	140	55	0	26	250	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Effective Green, g (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio		0.66			0.66		0.19	0.19		0.19	0.19	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1304			1485		119	310		245	293	
v/s Ratio Prot								0.03				0.16
v/s Ratio Perm		c0.81			0.68		c0.22			0.02		
v/c Ratio		1.23			1.03		1.18	0.18		0.11	0.85	
Uniform Delay, d1		17.0			17.0		40.5	34.0		33.5	39.2	
Progression Factor		1.00			1.22		1.00	1.00		1.00	1.00	
Incremental Delay, d2		109.8			29.8		137.6	0.6		0.4	22.6	
Delay (s)		126.8			50.6		178.1	34.5		33.9	61.7	
Level of Service		F			D		F	C		C	E	
Approach Delay (s)		126.8			50.6			120.1			59.4	
Approach LOS		F			D			F			E	

Intersection Summary

HCM 2000 Control Delay	89.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	137.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Scenario C 2031 PM Signalized Results
10: Hurontario St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↗		↗	↕↗	
Volume (vph)	114	5	58	20	6	44	18	821	18	25	934	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.97	1.00	
Frt		0.96			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1704			1654		1767	3489		1657	3471	
Flt Permitted		0.76			0.88		0.25	1.00		0.31	1.00	
Satd. Flow (perm)		1339			1470		465	3489		534	3471	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	118	5	60	21	6	45	19	846	19	26	963	62
RTOR Reduction (vph)	0	21	0	0	37	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	162	0	0	35	0	19	864	0	26	1022	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Effective Green, g (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Actuated g/C Ratio		0.19			0.18		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		254			264		320	2407		368	2394	
v/s Ratio Prot								0.25				c0.29
v/s Ratio Perm		c0.12			0.02		0.04			0.05		
v/c Ratio		0.64			0.13		0.06	0.36		0.07	0.43	
Uniform Delay, d1		37.3			34.4		5.0	6.4		5.1	6.8	
Progression Factor		1.00			1.00		1.56	1.71		0.27	0.19	
Incremental Delay, d2		7.1			0.5		0.3	0.3		0.2	0.3	
Delay (s)		44.4			34.9		8.1	11.2		1.6	1.6	
Level of Service		D			C		A	B		A	A	
Approach Delay (s)		44.4			34.9			11.2			1.6	
Approach LOS		D			C			B			A	

Intersection Summary

HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Scenario C 2031 PM Signalized Results

13: Hurontario St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	325	37	82	14	34	175	38	895	22	130	1009	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98		1.00	0.96		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	0.97	1.00		0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.90		1.00	0.87		1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1718	1681		1751	1605		1785	3491		1751	3353	
Flt Permitted	0.58	1.00		0.68	1.00		0.08	1.00		0.22	1.00	
Satd. Flow (perm)	1056	1681		1246	1605		149	3491		404	3353	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	346	39	87	15	36	186	40	952	23	138	1073	387
RTOR Reduction (vph)	0	30	0	0	44	0	0	1	0	0	35	0
Lane Group Flow (vph)	346	96	0	15	178	0	40	974	0	138	1425	0
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	35.7	35.7		35.7	35.7		50.3	50.3		50.3	50.3	
Effective Green, g (s)	35.7	35.7		35.7	35.7		50.3	50.3		50.3	50.3	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.50	0.50		0.50	0.50	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	376	600		444	572		74	1755		203	1686	
v/s Ratio Prot		0.06			0.11			0.28			c0.43	
v/s Ratio Perm	c0.33			0.01			0.27			0.34		
v/c Ratio	0.92	0.16		0.03	0.31		0.54	0.55		0.68	0.85	
Uniform Delay, d1	30.8	21.9		20.9	23.3		17.0	17.1		18.8	21.5	
Progression Factor	1.00	1.00		1.00	1.00		0.46	0.45		1.00	1.00	
Incremental Delay, d2	28.4	0.3		0.1	0.7		24.4	1.2		16.9	5.4	
Delay (s)	59.2	22.2		21.0	23.9		32.1	9.0		35.6	26.9	
Level of Service	E	C		C	C		C	A		D	C	
Approach Delay (s)		49.3			23.7			9.9			27.7	
Approach LOS		D			C			A			C	

Intersection Summary

HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	106.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Scenario C 2031 PM Signalized Results
29: Elizabeth St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↖	↗		↖	↗	
Volume (vph)	26	1305	41	35	1273	46	69	50	84	54	23	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99			0.99		1.00	0.91		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.89	1.00	
Frt		1.00			0.99		1.00	0.91		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3360			3345		1721	1579		1185	1585	
Flt Permitted		0.89			0.86		0.68	1.00		0.61	1.00	
Satd. Flow (perm)		2994			2872		1234	1579		756	1585	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	28	1388	44	37	1354	49	73	53	89	57	24	94
RTOR Reduction (vph)	0	2	0	0	2	0	0	44	0	0	41	0
Lane Group Flow (vph)	0	1458	0	0	1438	0	73	98	0	57	77	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Effective Green, g (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2200			2110		178	228		109	229	
v/s Ratio Prot								0.06				0.05
v/s Ratio Perm		0.49			0.50		0.06			0.08		
v/c Ratio		0.66			0.68		0.41	0.43		0.52	0.34	
Uniform Delay, d1		6.8			7.0		38.9	39.0		39.6	38.4	
Progression Factor		0.30			0.58		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.3		3.2	2.7		8.4	1.8	
Delay (s)		2.2			5.4		42.1	41.7		47.9	40.2	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		2.2			5.4			41.8			42.7	
Approach LOS		A			A			D			D	

Intersection Summary

HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Scenario C 2031 PM Signalized Results
 35: Hurontario St & Eaglewood Blvd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Volume (vph)	108	14	21	48	5	45	21	1468	63	74	1646	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			*1.00	
Frbp, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.86			0.99			1.00	
Flt Protected		0.96		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1779		1825	1629			3513			3715	
Flt Permitted		0.75		0.70	1.00			0.90			0.67	
Satd. Flow (perm)		1376		1346	1629			3146			2499	
Peak-hour factor, PHF	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.97	0.97	0.97	0.97	1.00
Adj. Flow (vph)	108	14	21	49	5	46	21	1513	65	76	1697	41
RTOR Reduction (vph)	0	5	0	0	39	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	138	0	49	12	0	0	1597	0	0	1814	0
Confl. Peds. (#/hr)									17	17		
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	3%	0%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		18.4		18.4	18.4			87.6			87.6	
Effective Green, g (s)		18.4		18.4	18.4			87.6			87.6	
Actuated g/C Ratio		0.15		0.15	0.15			0.73			0.73	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		210		206	249			2296			1824	
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.10		0.04				0.51			c0.73	
v/c Ratio		0.66		0.24	0.05			0.70			0.99	
Uniform Delay, d1		47.8		44.6	43.3			8.9			16.0	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		9.6		1.2	0.2			1.8			19.8	
Delay (s)		57.4		45.9	43.5			10.7			35.8	
Level of Service		E		D	D			B			D	
Approach Delay (s)		57.4			44.7			10.7			35.8	
Approach LOS		E			D			B			D	

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	124.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Scenario C 2031 PM Unsignalized Results

8: Stavebank Rd & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	42	1	49	20	23	28	96	34	13	229	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	56	23	26	32	109	39	15	260	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	105	180	308
Volume Left (vph)	22	56	32	15
Volume Right (vph)	1	26	39	33
Hadj (s)	0.05	-0.04	-0.07	-0.05
Departure Headway (s)	5.3	5.1	4.7	4.5
Degree Utilization, x	0.10	0.15	0.23	0.39
Capacity (veh/h)	612	634	731	759
Control Delay (s)	8.9	9.0	9.1	10.4
Approach Delay (s)	8.9	9.0	9.1	10.4
Approach LOS	A	A	A	B

Intersection Summary			
Delay		9.6	
Level of Service		A	
Intersection Capacity Utilization		37.5%	ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 PM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		19.1%	ICU Level of Service
Analysis Period (min)		15	A

Scenario C 2031 PM Unsignalized Results

14: Stavebank Rd & Park St

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	98	30	103	38	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	109	33	114	42	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	166			176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	166			176	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	96			98	
cM capacity (veh/h)	599	862			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	142	157	207
Volume Left	109	0	26
Volume Right	33	42	0
cSH	645	1700	1390
Volume to Capacity	0.22	0.09	0.02
Queue Length 95th (m)	5.9	0.0	0.4
Control Delay (s)	12.2	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.2	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		39.8%	ICU Level of Service
Analysis Period (min)		15	A

Scenario C 2031 PM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1	14	107	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	141	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			362	321	37	311	330	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			362	321	37	311	330	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			91			100	100	100	100	92	100
cM capacity (veh/h)	1622			1586			513	546	1035	598	418	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	151	32
Volume Left	0	141	0
Volume Right	18	0	0
cSH	1700	1586	418
Volume to Capacity	0.01	0.09	0.08
Queue Length 95th (m)	0.0	2.0	1.7
Control Delay (s)	0.0	7.0	14.3
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	14.3
Approach LOS			B

Intersection Summary		
Average Delay		7.5
Intersection Capacity Utilization	28.8%	ICU Level of Service
Analysis Period (min)		15
		A

Scenario C 2031 PM Unsignalized Results
 19: Ann St & Queen St/GO Parking Access

9/30/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	1	131	62	149	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	1	177	84	201	54
Pedestrians				5	93	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		532	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		532	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			87		48	94
cM capacity (veh/h)			1392		388	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1	261	255
Volume Left	0	177	201
Volume Right	1	0	54
cSH	1700	1392	440
Volume to Capacity	0.00	0.13	0.58
Queue Length 95th (m)	0.0	3.1	25.1
Control Delay (s)	0.0	5.7	23.9
Lane LOS		A	C
Approach Delay (s)	0.0	5.7	23.9
Approach LOS			C

Intersection Summary			
Average Delay		14.7	
Intersection Capacity Utilization		35.0%	ICU Level of Service
Analysis Period (min)		15	A

Scenario C 2031 PM Unsignalized Results
 20: Lakeshore Rd & Ann St

9/30/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	38	1457	1337	62	6	56
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	43	1637	1502	70	7	63
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.72				0.81	0.72
vC, conflicting volume	1639				2510	853
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1107				1394	15
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	88				93	91
cM capacity (veh/h)	348				90	724

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	43	819	819	1001	570	70
Volume Left	43	0	0	0	0	7
Volume Right	0	0	0	0	70	63
cSH	348	1700	1700	1700	1700	431
Volume to Capacity	0.12	0.48	0.48	0.59	0.34	0.16
Queue Length 95th (m)	2.9	0.0	0.0	0.0	0.0	4.0
Control Delay (s)	16.8	0.0	0.0	0.0	0.0	15.0
Lane LOS	C					B
Approach Delay (s)	0.4			0.0		15.0
Approach LOS						B

Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			50.7%		ICU Level of Service	A
Analysis Period (min)			15			

Scenario C 2031 PM Unsignalized Results

21: Ann St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	13	145	5	7	64	9	14	80	31	15	82	10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	13	149	5	7	66	9	14	82	32	15	85	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	168	82	129	110
Volume Left (vph)	13	7	14	15
Volume Right (vph)	5	9	32	10
Hadj (s)	0.01	-0.02	0.23	-0.03
Departure Headway (s)	4.6	4.7	4.9	4.6
Degree Utilization, x	0.22	0.11	0.17	0.14
Capacity (veh/h)	732	714	696	722
Control Delay (s)	8.9	8.2	8.9	8.4
Approach Delay (s)	8.9	8.2	8.9	8.4
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.7	
Level of Service		A	
Intersection Capacity Utilization	28.3%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 PM Unsignalized Results

22: Ann St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	26	160	9	47	223	107	7	66	33	222	57	11
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	31	193	11	57	269	129	8	80	40	267	69	13

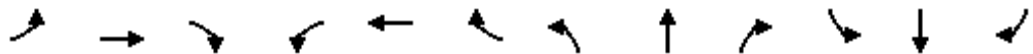
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	235	325	129	128	349
Volume Left (vph)	31	57	0	8	267
Volume Right (vph)	11	0	129	40	13
Hadj (s)	0.01	0.09	-0.70	0.31	0.13
Departure Headway (s)	6.5	6.7	5.9	7.1	6.3
Degree Utilization, x	0.43	0.60	0.21	0.25	0.62
Capacity (veh/h)	507	517	582	437	536
Control Delay (s)	14.3	18.1	9.2	12.5	19.0
Approach Delay (s)	14.3	15.6		12.5	19.0
Approach LOS	B	C		B	C

Intersection Summary				
Delay			16.0	
Level of Service			C	
Intersection Capacity Utilization		58.0%	ICU Level of Service	B
Analysis Period (min)		15		

Scenario C 2031 PM Unsignalized Results

23: Helene St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Volume (veh/h)	55	1388	3	29	1371	47	2	1	20	10	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	56	1402	3	29	1385	47	2	1	20	10	0	43
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.73			0.80			0.83	0.83	0.80	0.83	0.83	0.73
vC, conflicting volume	1551			1477			2384	3197	775	2419	3174	838
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1017			1097			1176	2154	219	1218	2127	41
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			94			98	96	97	86	100	94
cM capacity (veh/h)	453			484			83	28	594	74	29	672

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	757	704	722	740	23	54
Volume Left	56	0	29	0	2	10
Volume Right	0	3	0	47	20	43
cSH	453	1700	484	1700	246	267
Volume to Capacity	0.12	0.41	0.06	0.44	0.09	0.20
Queue Length 95th (m)	2.9	0.0	1.3	0.0	2.2	5.1
Control Delay (s)	3.8	0.0	1.8	0.0	21.2	21.8
Lane LOS	A		A		C	C
Approach Delay (s)	1.9		0.9		21.2	21.8
Approach LOS					C	C

Intersection Summary

Average Delay		1.9				
Intersection Capacity Utilization		92.0%		ICU Level of Service		F
Analysis Period (min)		15				

Scenario C 2031 PM Unsignalized Results

24: Helene St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	99	12	16	58	6	28	48	51	16	51	29
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)	13	115	14	19	67	7	33	56	59	19	59	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	142	93	148	112
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	59	34
Hadj (s)	-0.03	0.02	-0.20	-0.13
Departure Headway (s)	4.6	4.7	4.4	4.5
Degree Utilization, x	0.18	0.12	0.18	0.14
Capacity (veh/h)	731	712	769	743
Control Delay (s)	8.6	8.3	8.4	8.2
Approach Delay (s)	8.6	8.3	8.4	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	29.4%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 PM Unsignalized Results

25: Helene St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	97	4	62	178	12	8	28	32	69	33	8
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	117	5	75	214	14	10	34	39	83	40	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	127	304	82	133
Volume Left (vph)	5	75	10	83
Volume Right (vph)	5	14	39	10
Hadj (s)	-0.02	0.02	-0.26	0.08
Departure Headway (s)	4.8	4.6	4.9	5.1
Degree Utilization, x	0.17	0.39	0.11	0.19
Capacity (veh/h)	692	739	663	639
Control Delay (s)	8.8	10.6	8.5	9.3
Approach Delay (s)	8.8	10.6	8.5	9.3
Approach LOS	A	B	A	A

Intersection Summary			
Delay		9.7	
Level of Service		A	
Intersection Capacity Utilization	40.0%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 PM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↑				↑	
Volume (veh/h)	0	0	0	112	72	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	0	0	0	170	109	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	161			22			558	523	116	578	505	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	161			22			558	523	116	578	505	212
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			87	100	100	100	100	100
cM capacity (veh/h)	1410			1576			367	399	850	348	408	773

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	315	48	0
Volume Left	0	170	47	0
Volume Right	0	36	2	0
cSH	1700	1576	373	1700
Volume to Capacity	0.00	0.11	0.13	0.00
Queue Length 95th (m)	0.0	2.5	3.1	0.0
Control Delay (s)	0.0	4.5	16.1	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.5	16.1	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		Err%	ICU Level of Service
Analysis Period (min)		15	H

Scenario C 2031 PM Unsignalized Results

30: Elizabeth St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	74	19	26	56	6	33	38	44	5	129	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	79	20	28	60	6	35	40	47	5	137	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	94	122	162
Volume Left (vph)	3	28	35	5
Volume Right (vph)	20	6	47	19
Hadj (s)	-0.11	0.02	-0.16	0.25
Departure Headway (s)	4.6	4.7	4.4	4.8
Degree Utilization, x	0.13	0.12	0.15	0.21
Capacity (veh/h)	725	705	768	715
Control Delay (s)	8.3	8.4	8.2	9.1
Approach Delay (s)	8.3	8.4	8.2	9.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	41.8%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 PM Unsignalized Results

31: Elizabeth St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕		↔	↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	58	9	67	105	0	21	0	29	25	92	29
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	76	12	88	138	0	28	0	38	33	121	38

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	89	226	66	33	159
Volume Left (vph)	1	88	28	33	0
Volume Right (vph)	12	0	38	0	38
Hadj (s)	-0.05	0.08	-0.23	0.50	0.22
Departure Headway (s)	4.8	4.8	4.9	5.9	5.6
Degree Utilization, x	0.12	0.30	0.09	0.05	0.25
Capacity (veh/h)	689	712	681	578	611
Control Delay (s)	8.5	9.8	8.3	8.0	9.2
Approach Delay (s)	8.5	9.8	8.3	9.0	
Approach LOS	A	A	A	A	

Intersection Summary				
Delay			9.2	
Level of Service			A	
Intersection Capacity Utilization		46.3%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario C 2031 PM Unsignalized Results
 41: Ann St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	0	141	0	12	0	174	12	0	141	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.76	1.00	0.76	1.00	0.76	0.76	0.76	0.76	1.00
Hourly flow rate (vph)	0	0	0	186	0	16	0	229	16	0	186	0
Pedestrians					9			1			2	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	440	439	187	432	431	248	186			254		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	440	439	187	432	431	248	186			254		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	100	100	100	65	100	98	100			100		
cM capacity (veh/h)	513	508	855	529	513	788	1389			1313		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	201	245	186
Volume Left	0	186	0	0
Volume Right	0	16	16	0
cSH	1700	543	1389	1313
Volume to Capacity	0.00	0.37	0.00	0.00
Queue Length 95th (m)	0.0	11.9	0.0	0.0
Control Delay (s)	0.0	15.5	0.0	0.0
Lane LOS	A	C		
Approach Delay (s)	0.0	15.5	0.0	0.0
Approach LOS	A	C		

Intersection Summary			
Average Delay		4.9	
Intersection Capacity Utilization	26.4%		ICU Level of Service A
Analysis Period (min)		15	

Scenario C 2031 PM Unsignalized Results
42: Park St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	432	0	0	394	70	0	0	0	16	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	1.00	1.00	0.90	0.90	1.00	1.00	1.00	0.90	1.00	0.90
Hourly flow rate (vph)	4	480	0	0	438	78	0	0	0	18	0	23
Pedestrians		4			1						13	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					57							
pX, platoon unblocked												
vC, conflicting volume	529			480			993	1017	481	980	979	494
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	529			480			993	1017	481	980	979	494
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	92	100	96
cM capacity (veh/h)	1037			1082			212	234	585	226	246	571

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	484	516	0	41
Volume Left	4	0	0	18
Volume Right	0	78	0	23
cSH	1037	1082	1700	344
Volume to Capacity	0.00	0.00	0.00	0.12
Queue Length 95th (m)	0.1	0.0	0.0	2.8
Control Delay (s)	0.1	0.0	0.0	16.9
Lane LOS	A		A	C
Approach Delay (s)	0.1	0.0	0.0	16.9
Approach LOS			A	C

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		37.2%	ICU Level of Service
Analysis Period (min)		15	A

Appendix I

2031 Total Traffic Intersection Operations
Scenario D

Scenario D 2031 AM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗		↘	↑	↗
Volume (vph)	433	1161	9	31	846	266	9	126	31	239	166	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.97	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3515	1360	1557	3544	1315	1557	1856		1722	1780	1376
Flt Permitted	0.09	1.00	1.00	0.21	1.00	1.00	0.56	1.00		0.58	1.00	1.00
Satd. Flow (perm)	163	3515	1360	336	3544	1315	920	1856		1047	1780	1376
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	498	1334	10	36	972	306	10	145	36	275	191	328
RTOR Reduction (vph)	0	0	4	0	0	89	0	6	0	0	0	233
Lane Group Flow (vph)	498	1334	6	36	972	217	10	175	0	275	191	95
Confl. Peds. (#/hr)	45		15	15		45	32		6	6		32
Confl. Bikes (#/hr)			1			7						
Heavy Vehicles (%)	6%	3%	11%	14%	3%	12%	11%	0%	0%	3%	1%	12%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	0	0	0	16	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	86.6	86.6	86.6	46.6	46.6	46.6	40.4	40.4		40.4	40.4	40.4
Effective Green, g (s)	86.6	86.6	86.6	46.6	46.6	46.6	40.4	40.4		40.4	40.4	40.4
Actuated g/C Ratio	0.62	0.62	0.62	0.33	0.33	0.33	0.29	0.29		0.29	0.29	0.29
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	502	2174	841	111	1179	437	265	535		302	513	397
v/s Ratio Prot	c0.26	0.38			0.27			0.09			0.11	
v/s Ratio Perm	c0.35		0.00	0.11		0.16	0.01			c0.26		0.07
v/c Ratio	0.99	0.61	0.01	0.32	0.82	0.50	0.04	0.33		0.91	0.37	0.24
Uniform Delay, d1	42.1	16.4	10.2	34.9	42.9	37.3	35.8	39.1		48.1	39.7	38.0
Progression Factor	0.85	0.74	1.00	1.00	1.00	1.00	1.00	1.00		1.16	1.23	3.49
Incremental Delay, d2	29.5	0.8	0.0	7.6	6.6	4.0	0.1	0.7		30.4	0.9	0.6
Delay (s)	65.4	13.0	10.2	42.5	49.6	41.3	35.9	39.9		86.1	49.7	133.3
Level of Service	E	B	B	D	D	D	D	D		F	D	F
Approach Delay (s)		27.2			47.4			39.7			96.8	
Approach LOS		C			D			D			F	

Intersection Summary		
HCM 2000 Control Delay	47.5	HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio	0.98	
Actuated Cycle Length (s)	140.0	Sum of lost time (s) 16.0
Intersection Capacity Utilization	95.1%	ICU Level of Service F
Analysis Period (min)	15	

c Critical Lane Group

Scenario D 2031 AM Signalized Results

6: Stavebank Rd & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↖	↗		↖	↗	
Volume (vph)	10	1741	107	39	1186	19	66	28	26	7	12	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.98	1.00	
Frt		0.99			1.00		1.00	0.93		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3280			3191		1782	1682		1795	1580	
Flt Permitted		0.94			0.69		0.37	1.00		0.72	1.00	
Satd. Flow (perm)		3089			2197		692	1682		1357	1580	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	1913	118	43	1303	21	73	31	29	8	13	179
RTOR Reduction (vph)	0	3	0	0	1	0	0	24	0	0	80	0
Lane Group Flow (vph)	0	2039	0	0	1366	0	73	36	0	8	112	0
Confl. Peds. (#/hr)	39		19	19		39	3		8	8		3
Confl. Bikes (#/hr)			1			3			1			
Heavy Vehicles (%)	30%	3%	0%	0%	7%	0%	2%	0%	9%	0%	0%	3%
Bus Blockages (#/hr)	0	6	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		107.0			107.0		18.0	18.0		18.0	18.0	
Effective Green, g (s)		107.0			107.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio		0.76			0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2360			1679		88	216		174	203	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm		c0.66			0.62		c0.11			0.01		
v/c Ratio		0.86			0.81		0.83	0.16		0.05	0.55	
Uniform Delay, d1		11.5			10.3		59.5	54.3		53.5	57.2	
Progression Factor		1.00			0.32		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.5			3.1		48.9	0.8		0.2	5.4	
Delay (s)		16.0			6.4		108.4	55.1		53.7	62.6	
Level of Service		B			A		F	E		D	E	
Approach Delay (s)		16.0			6.4			84.3			62.3	
Approach LOS		B			A			F			E	

Intersection Summary

HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Scenario D 2031 AM Signalized Results

10: Hurontario St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Volume (vph)	102	0	23	17	5	33	18	786	15	19	689	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1694			1670		1600	3432		1671	3345	
Flt Permitted		0.72			0.88		0.35	1.00		0.32	1.00	
Satd. Flow (perm)		1279			1491		595	3432		563	3345	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	109	0	24	18	5	35	19	836	16	20	733	40
RTOR Reduction (vph)	0	40	0	0	30	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	93	0	0	28	0	19	851	0	20	769	0
Confl. Peds. (#/hr)	22		8	8		22	19		27	27		19
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	4%	0%	5%	0%	0%	3%	10%	6%	0%	5%	8%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6				2
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Effective Green, g (s)		11.0			10.0		47.0	47.0		47.0	47.0	
Actuated g/C Ratio		0.16			0.14		0.67	0.67		0.67	0.67	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		200			213		399	2304		378	2245	
v/s Ratio Prot								c0.25				0.23
v/s Ratio Perm		c0.07			0.02		0.03			0.04		
v/c Ratio		0.47			0.13		0.05	0.37		0.05	0.34	
Uniform Delay, d1		26.8			26.2		3.9	5.0		3.9	4.9	
Progression Factor		1.00			1.00		1.24	1.54		1.10	1.19	
Incremental Delay, d2		3.6			0.6		0.1	0.3		0.2	0.3	
Delay (s)		30.4			26.8		5.0	8.0		4.5	6.1	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		30.4			26.8			8.0			6.1	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Scenario D 2031 AM Signalized Results

13: Hurontario St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	291	28	56	10	25	214	89	806	39	251	640	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	3.0	7.0		7.0	7.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.96		1.00	0.91		1.00	1.00		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.96	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	0.87		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1659		1706	1477		1607	3377		1733	3078	
Flt Permitted	0.25	1.00		0.69	1.00		0.14	1.00		0.15	1.00	
Satd. Flow (perm)	454	1659		1242	1477		245	3377		273	3078	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	351	34	67	12	30	258	107	971	47	302	771	511
RTOR Reduction (vph)	0	47	0	0	234	0	0	2	0	0	71	0
Lane Group Flow (vph)	351	54	0	12	54	0	107	1016	0	302	1211	0
Confl. Peds. (#/hr)	48		29	29		48	27		27	27		27
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	2%	0%	0%	0%	0%	3%	11%	7%	3%	3%	10%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	40.9	40.9		13.1	13.1		69.2	60.5		85.1	73.4	
Effective Green, g (s)	40.9	40.9		13.1	13.1		69.2	60.5		85.1	73.4	
Actuated g/C Ratio	0.29	0.29		0.09	0.09		0.49	0.43		0.61	0.52	
Clearance Time (s)	3.0	7.0		7.0	7.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	5.0		5.0	5.0		3.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	359	484		116	138		205	1459		391	1613	
v/s Ratio Prot	c0.17	0.03			0.04		0.03	0.30		c0.12	0.39	
v/s Ratio Perm	c0.11			0.01			0.23			c0.35		
v/c Ratio	0.98	0.11		0.10	0.39		0.52	0.70		0.77	0.75	
Uniform Delay, d1	44.7	36.2		58.1	59.7		21.2	32.3		23.4	26.1	
Progression Factor	1.00	1.00		1.00	1.00		2.07	1.54		1.50	1.03	
Incremental Delay, d2	41.1	0.2		0.8	3.8		2.3	2.7		8.3	2.5	
Delay (s)	85.8	36.5		58.9	63.5		46.3	52.3		43.4	29.5	
Level of Service	F	D		E	E		D	D		D	C	
Approach Delay (s)		74.8			63.3			51.8			32.1	
Approach LOS		E			E			D			C	

Intersection Summary

HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Scenario D 2031 AM Signalized Results

29: Elizabeth St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑		↑	↑	
Volume (vph)	23	1782	25	47	1099	10	60	24	102	37	11	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.96		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.97	1.00	
Frt		1.00			1.00		1.00	0.88		1.00	0.87	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3319			3221		1704	1496		1192	1402	
Flt Permitted		0.91			0.66		0.69	1.00		0.49	1.00	
Satd. Flow (perm)		3026			2135		1244	1496		619	1402	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	1980	28	52	1221	11	67	27	113	41	12	74
RTOR Reduction (vph)	0	1	0	0	0	0	0	26	0	0	65	0
Lane Group Flow (vph)	0	2033	0	0	1284	0	67	114	0	41	21	0
Confl. Peds. (#/hr)	47		29	29		47	11		18	18		11
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	9%	4%	0%	10%	7%	10%	5%	11%	8%	49%	0%	15%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		111.2			111.2		16.8	16.8		16.8	16.8	
Effective Green, g (s)		111.2			111.2		16.8	16.8		16.8	16.8	
Actuated g/C Ratio		0.79			0.79		0.12	0.12		0.12	0.12	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2403			1695		149	179		74	168	
v/s Ratio Prot								c0.08			0.01	
v/s Ratio Perm		c0.67			0.60		0.05			0.07		
v/c Ratio		0.85			0.76		0.45	0.63		0.55	0.12	
Uniform Delay, d1		9.0			7.4		57.3	58.7		58.1	55.0	
Progression Factor		0.35			4.06		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			2.4		4.5	9.8		14.4	0.7	
Delay (s)		5.4			32.6		61.8	68.5		72.5	55.7	
Level of Service		A			C		E	E		E	E	
Approach Delay (s)		5.4			32.6			66.3			61.1	
Approach LOS		A			C			E			E	

Intersection Summary

HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Scenario D 2031 AM Signalized Results
35: Hurontario St & Eaglewood Blvd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Volume (vph)	61	1	28	47	2	114	40	1333	72	34	1220	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frbp, ped/bikes		1.00		1.00	0.98			0.99			1.00	
Flpb, ped/bikes		1.00		0.99	1.00			1.00			1.00	
Frt		0.96		1.00	0.85			0.99			0.99	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1745		1707	1551			3397			3322	
Flt Permitted		0.60		0.71	1.00			0.82			0.82	
Satd. Flow (perm)		1085		1277	1551			2805			2734	
Peak-hour factor, PHF	1.00	1.00	1.00	0.89	1.00	0.89	1.00	0.89	0.89	0.89	0.89	1.00
Adj. Flow (vph)	61	1	28	53	2	128	40	1498	81	38	1371	145
RTOR Reduction (vph)	0	12	0	0	58	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	78	0	53	72	0	0	1617	0	0	1554	0
Confl. Peds. (#/hr)				6		2			22	22		
Heavy Vehicles (%)	2%	2%	2%	6%	2%	4%	2%	6%	6%	3%	9%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.2		16.2	16.2			109.8			109.8	
Effective Green, g (s)		16.2		16.2	16.2			109.8			109.8	
Actuated g/C Ratio		0.12		0.12	0.12			0.78			0.78	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		125		147	179			2199			2144	
v/s Ratio Prot					0.05							
v/s Ratio Perm		c0.07		0.04				c0.58			0.57	
v/c Ratio		0.62		0.36	0.40			0.74			0.72	
Uniform Delay, d1		59.0		57.1	57.4			7.7			7.5	
Progression Factor		1.00		1.00	1.00			0.57			1.00	
Incremental Delay, d2		12.8		3.1	3.1			1.5			2.2	
Delay (s)		71.8		60.3	60.4			5.9			9.7	
Level of Service		E		E	E			A			A	
Approach Delay (s)		71.8			60.4			5.9			9.7	
Approach LOS		E			E			A			A	

Intersection Summary

HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Scenario D 2031 AM Unsignalized Results

8: Stavebank Rd & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	5	3	52	18	36	7	47	18	6	143	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	6	4	66	23	46	9	59	23	8	181	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	134	91	214
Volume Left (vph)	3	66	9	8
Volume Right (vph)	4	46	23	25
Hadj (s)	-0.14	-0.09	-0.03	-0.02
Departure Headway (s)	4.6	4.5	4.5	4.3
Degree Utilization, x	0.02	0.17	0.11	0.26
Capacity (veh/h)	709	741	768	795
Control Delay (s)	7.7	8.4	8.0	8.8
Approach Delay (s)	7.7	8.4	8.0	8.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)		15	

Scenario D 2031 AM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	1	46	12	2	88
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	26	1	60	16	3	114
Pedestrians	10		48			2
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		4			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	80			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	80			85	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	710	976			1511	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	75	117
Volume Left	26	0	3
Volume Right	1	16	0
cSH	719	1700	1511
Volume to Capacity	0.04	0.04	0.00
Queue Length 95th (m)	0.8	0.0	0.0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization		16.9%	ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 AM Unsignalized Results

14: Stavebank Rd & Park St

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	78	31	61	18	11	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	92	36	72	21	13	105
Pedestrians	10		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	226	95			103	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226	95			103	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	96			99	
cM capacity (veh/h)	740	948			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	128	93	118
Volume Left	92	0	13
Volume Right	36	21	0
cSH	790	1700	1434
Volume to Capacity	0.16	0.05	0.01
Queue Length 95th (m)	4.0	0.0	0.2
Control Delay (s)	10.4	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay		4.3	
Intersection Capacity Utilization		25.6%	ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 AM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↖						↘	
Volume (veh/h)	0	0	4	85	80	0	0	0	0	0	26	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	4	96	90	0	0	0	0	0	29	0
Pedestrians		40			21			9			1	
Lane Width (m)		3.7			3.7			0.0			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			2			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			13			345	291	30	305	295	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			13			345	291	30	305	295	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			94			100	100	100	100	94	100
cM capacity (veh/h)	1516			1611			538	586	1031	610	453	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	185	29
Volume Left	0	96	0
Volume Right	4	0	0
cSH	1700	1611	453
Volume to Capacity	0.00	0.06	0.06
Queue Length 95th (m)	0.0	1.3	1.4
Control Delay (s)	0.0	4.0	13.5
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	13.5
Approach LOS			B

Intersection Summary		
Average Delay		5.2
Intersection Capacity Utilization	35.7%	ICU Level of Service
Analysis Period (min)		15
		A

Scenario D 2031 AM Unsignalized Results
 19: Ann St & Queen St/GO Parking Access

9/30/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (veh/h)	1	6	33	7	159	305
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)	2	9	52	11	248	477
Pedestrians	24			86	7	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			7	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		151	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		151	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		67	46
cM capacity (veh/h)			1602		762	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	62	725
Volume Left	0	52	248
Volume Right	9	0	477
cSH	1700	1602	839
Volume to Capacity	0.01	0.03	0.86
Queue Length 95th (m)	0.0	0.7	75.8
Control Delay (s)	0.0	6.1	29.7
Lane LOS		A	D
Approach Delay (s)	0.0	6.1	29.7
Approach LOS			D

Intersection Summary			
Average Delay		27.5	
Intersection Capacity Utilization		46.7%	ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 AM Unsignalized Results
 20: Lakeshore Rd & Ann St

9/30/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	97	1686	1105	77	3	43
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	109	1894	1242	87	3	48
Pedestrians		3	4		32	
Lane Width (m)		3.6	3.7		3.7	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.75				0.81	0.75
vC, conflicting volume	1360				2486	699
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	804				962	0
tC, single (s)	4.4				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	80				98	94
cM capacity (veh/h)	539				161	790

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	109	947	947	828	500	52
Volume Left	109	0	0	0	0	3
Volume Right	0	0	0	0	87	48
cSH	539	1700	1700	1700	1700	630
Volume to Capacity	0.20	0.56	0.56	0.49	0.29	0.08
Queue Length 95th (m)	5.2	0.0	0.0	0.0	0.0	1.9
Control Delay (s)	13.4	0.0	0.0	0.0	0.0	11.2
Lane LOS	B					B
Approach Delay (s)	0.7			0.0		11.2
Approach LOS						B

Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			57.6%		ICU Level of Service	B
Analysis Period (min)			15			

Scenario D 2031 AM Unsignalized Results

21: Ann St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	31	101	4	9	31	16	3	195	31	4	40	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	36	116	5	10	36	18	3	224	36	5	46	5


















Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	156	64	263	55
Volume Left (vph)	36	10	3	5
Volume Right (vph)	5	18	36	5
Hadj (s)	0.03	-0.01	0.50	0.00
Departure Headway (s)	4.9	4.9	5.0	4.8
Degree Utilization, x	0.21	0.09	0.37	0.07
Capacity (veh/h)	690	667	688	693
Control Delay (s)	9.1	8.4	10.9	8.2
Approach Delay (s)	9.1	8.4	10.9	8.2
Approach LOS	A	A	B	A

Intersection Summary			
Delay		9.8	
Level of Service		A	
Intersection Capacity Utilization	31.1%	ICU Level of Service	A
Analysis Period (min)		15	

Scenario D 2031 AM Unsignalized Results

22: Ann St & Park St

9/30/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	47	250	3	22	90	251	2	212	18	115	27	2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	68	362	4	32	130	364	3	307	26	167	39	3
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total (vph)	435	162	364	336	209							
Volume Left (vph)	68	32	0	3	167							
Volume Right (vph)	4	0	364	26	3							
Hadj (s)	0.04	0.17	-0.70	0.64	0.15							
Departure Headway (s)	7.9	8.5	7.6	8.7	8.9							
Degree Utilization, x	0.96	0.38	0.77	0.82	0.52							
Capacity (veh/h)	435	414	466	407	379							
Control Delay (s)	60.0	15.5	30.3	40.4	21.2							
Approach Delay (s)	60.0	25.7		40.4	21.2							
Approach LOS	F	D		E	C							
Intersection Summary												
Delay			38.3									
Level of Service			E									
Intersection Capacity Utilization			55.0%	ICU Level of Service	B							
Analysis Period (min)			15									

Scenario D 2031 AM Unsignalized Results
 23: Helene St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Volume (veh/h)	201	1722	4	12	1119	7	1	0	36	2	0	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	218	1872	4	13	1216	8	1	0	39	2	0	52
Pedestrians		1			1			16			36	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.76			0.63			0.76	0.76	0.63	0.76	0.76	0.76
vC, conflicting volume	1260			1892			3014	3613	955	2695	3611	649
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	698			1254			1566	2358	0	1145	2355	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	67			96			97	100	94	97	100	93
cM capacity (veh/h)	665			352			37	17	682	76	17	784

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1154	940	621	616	40	54
Volume Left	218	0	13	0	1	2
Volume Right	0	4	0	8	39	52
cSH	665	1700	352	1700	466	572
Volume to Capacity	0.33	0.55	0.04	0.36	0.09	0.10
Queue Length 95th (m)	10.0	0.0	0.8	0.0	2.0	2.2
Control Delay (s)	10.2	0.0	1.2	0.0	13.5	12.0
Lane LOS	B		A		B	B
Approach Delay (s)	5.6		0.6		13.5	12.0
Approach LOS					B	B

Intersection Summary

Average Delay	4.0
Intersection Capacity Utilization	99.5%
ICU Level of Service	F
Analysis Period (min)	15

Scenario D 2031 AM Unsignalized Results

24: Helene St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	9	51	4	4	22	5	28	185	36	4	46	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	57	4	4	24	6	31	206	40	4	51	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	71	34	277	66
Volume Left (vph)	10	4	31	4
Volume Right (vph)	4	6	40	10
Hadj (s)	-0.01	0.08	-0.06	0.01
Departure Headway (s)	4.7	4.8	4.2	4.5
Degree Utilization, x	0.09	0.05	0.32	0.08
Capacity (veh/h)	705	682	839	765
Control Delay (s)	8.2	8.1	9.1	7.9
Approach Delay (s)	8.2	8.1	9.1	7.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.7	
Level of Service		A	
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)		15	

Scenario D 2031 AM Unsignalized Results

25: Helene St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	135	4	16	59	6	4	116	106	84	30	4
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	173	5	21	76	8	5	149	136	108	38	5

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	181	104	290	151
Volume Left (vph)	3	21	5	108
Volume Right (vph)	5	8	136	5
Hadj (s)	0.01	0.08	-0.27	0.14
Departure Headway (s)	5.2	5.4	4.6	5.2
Degree Utilization, x	0.26	0.15	0.37	0.22
Capacity (veh/h)	637	603	737	640
Control Delay (s)	10.0	9.3	10.3	9.6
Approach Delay (s)	10.0	9.3	10.3	9.6
Approach LOS	A	A	B	A

Intersection Summary			
Delay		9.9	
Level of Service		A	
Intersection Capacity Utilization	48.2%		ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 AM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↖				↑	
Volume (veh/h)	0	0	0	108	44	24	120	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Hourly flow rate (vph)	0	0	0	177	72	39	197	0	0	0	0	0
Pedestrians		47			115			1			6	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			10			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	117			1			494	473	116	567	453	145
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	117			1			494	473	116	567	453	145
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			54	100	100	100	100	100
cM capacity (veh/h)	1476			1627			426	437	848	358	448	867

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	289	197	0
Volume Left	0	177	197	0
Volume Right	0	39	0	0
cSH	1700	1627	426	1700
Volume to Capacity	0.00	0.11	0.46	0.00
Queue Length 95th (m)	0.0	2.6	16.6	0.0
Control Delay (s)	0.0	4.9	20.5	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.9	20.5	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		11.2	
Intersection Capacity Utilization	33.3%		ICU Level of Service
Analysis Period (min)		15	A

Scenario D 2031 AM Unsignalized Results

30: Elizabeth St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	38	15	11	59	4	27	16	9	10	104	11
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	0	48	19	14	75	5	34	20	11	13	132	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	67	94	66	158
Volume Left (vph)	0	14	34	13
Volume Right (vph)	19	5	11	14
Hadj (s)	-0.13	0.05	0.04	0.36
Departure Headway (s)	4.4	4.6	4.5	4.7
Degree Utilization, x	0.08	0.12	0.08	0.21
Capacity (veh/h)	767	737	756	728
Control Delay (s)	7.8	8.2	7.9	8.9
Approach Delay (s)	7.8	8.2	7.9	8.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	29.6%		ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 AM Unsignalized Results

31: Elizabeth St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↔	↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	50	13	22	79	1	6	0	23	42	82	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	54	14	24	86	1	7	0	25	46	89	18

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	68	111	32	46	108
Volume Left (vph)	0	24	7	46	0
Volume Right (vph)	14	1	25	0	18
Hadj (s)	-0.01	0.09	-0.37	0.55	0.33
Departure Headway (s)	4.5	4.5	4.3	5.5	5.3
Degree Utilization, x	0.09	0.14	0.04	0.07	0.16
Capacity (veh/h)	766	752	798	626	655
Control Delay (s)	7.9	8.3	7.4	7.7	8.1
Approach Delay (s)	7.9	8.3	7.4	8.0	
Approach LOS	A	A	A	A	

Intersection Summary				
Delay			8.0	
Level of Service			A	
Intersection Capacity Utilization		30.3%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario D 2031 AM Unsignalized Results
 41: Ann St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	31	75	0	5	5	466	61	0	37	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.71	1.00	0.71	1.00	0.71	0.71	0.71	0.71	1.00
Hourly flow rate (vph)	0	0	31	106	0	7	5	656	86	0	52	0
Pedestrians					9			1			5	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	773	813	53	802	770	713	52			751		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	773	813	53	802	770	713	52			751		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	100	100	97	64	100	98	100			100		
cM capacity (veh/h)	307	309	1013	290	327	430	1554			861		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	113	747	52
Volume Left	0	106	5	0
Volume Right	31	7	86	0
cSH	1013	296	1554	861
Volume to Capacity	0.03	0.38	0.00	0.00
Queue Length 95th (m)	0.7	12.0	0.1	0.0
Control Delay (s)	8.7	24.4	0.1	0.0
Lane LOS	A	C	A	
Approach Delay (s)	8.7	24.4	0.1	0.0
Approach LOS	A	C		

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization	50.5%		ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 AM Unsignalized Results
42: Park St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	31	364	0	5	359	199	4	0	19	2	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	1.00	1.00	0.78	0.78	1.00	1.00	1.00	0.78	1.00	0.78
Hourly flow rate (vph)	40	467	0	5	460	255	4	0	19	3	0	6
Pedestrians					1						9	
Lane Width (m)					3.7						3.7	
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)					57							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	724			467			1150	1281	468	1173	1153	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	696			467			1138	1273	468	1161	1140	564
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			98	100	97	98	100	99
cM capacity (veh/h)	871			1095			163	152	595	154	183	506

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	506	720	23	9
Volume Left	40	5	4	3
Volume Right	0	255	19	6
cSH	871	1095	407	306
Volume to Capacity	0.05	0.00	0.06	0.03
Queue Length 95th (m)	1.0	0.1	1.3	0.6
Control Delay (s)	1.3	0.1	14.4	17.1
Lane LOS	A	A	B	C
Approach Delay (s)	1.3	0.1	14.4	17.1
Approach LOS			B	C

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		49.7%	ICU Level of Service
Analysis Period (min)		15	A

Scenario D 2031 PM Signalized Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	358	976	13	62	1037	275	10	169	43	309	223	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1667	3614	1414	1742	3614	1440	1732	1847		1731	1921	1455
Flt Permitted	0.11	1.00	1.00	0.29	1.00	1.00	0.57	1.00		0.58	1.00	1.00
Satd. Flow (perm)	195	3614	1414	528	3614	1440	1033	1847		1064	1921	1455
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)	365	996	13	63	1058	281	10	172	44	315	228	389
RTOR Reduction (vph)	0	0	6	0	0	109	0	9	0	0	0	241
Lane Group Flow (vph)	365	996	7	63	1058	172	10	207	0	315	228	148
Confl. Peds. (#/hr)	69		57	57		69	43		29	29		43
Confl. Bikes (#/hr)			2			1						2
Heavy Vehicles (%)	7%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	53.7	53.7	53.7	33.0	33.0	33.0	33.3	33.3		33.3	33.3	33.3
Effective Green, g (s)	53.7	53.7	53.7	33.0	33.0	33.0	33.3	33.3		33.3	33.3	33.3
Actuated g/C Ratio	0.54	0.54	0.54	0.33	0.33	0.33	0.33	0.33		0.33	0.33	0.33
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	365	1940	759	174	1192	475	343	615		354	639	484
v/s Ratio Prot	c0.18	0.28			0.29			0.11				0.12
v/s Ratio Perm	c0.36		0.00	0.12		0.12	0.01			c0.30		0.10
v/c Ratio	1.00	0.51	0.01	0.36	0.89	0.36	0.03	0.34		0.89	0.36	0.31
Uniform Delay, d1	29.7	14.8	10.8	25.5	31.7	25.5	22.5	25.0		31.6	25.2	24.8
Progression Factor	1.14	1.40	1.00	1.00	1.00	1.00	1.00	1.00		0.53	0.51	0.28
Incremental Delay, d2	43.6	0.8	0.0	5.8	10.0	2.1	0.1	0.7		22.8	0.7	0.7
Delay (s)	77.4	21.5	10.8	31.2	41.7	27.6	22.5	25.7		39.6	13.5	7.7
Level of Service	E	C	B	C	D	C	C	C		D	B	A
Approach Delay (s)		36.3			38.4			25.6			19.9	
Approach LOS		D			D			C			B	

Intersection Summary

HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Scenario D 2031 PM Signalized Results

6: Stavebank Rd & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↗	↖		↗	↖	
Volume (vph)	93	1315	146	64	1379	37	134	20	71	25	20	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			0.99		1.00	0.96		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.97	1.00		0.97	1.00	
Frt		0.99			1.00		1.00	0.88		1.00	0.86	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3306			3350		1770	1632		1767	1546	
Flt Permitted		0.60			0.67		0.34	1.00		0.70	1.00	
Satd. Flow (perm)		1975			2244		630	1632		1294	1546	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	97	1370	152	67	1436	39	140	21	74	26	21	261
RTOR Reduction (vph)	0	8	0	0	2	0	0	39	0	0	31	0
Lane Group Flow (vph)	0	1611	0	0	1540	0	140	56	0	26	251	0
Confl. Peds. (#/hr)	101		82	82		101	36		23	23		36
Confl. Bikes (#/hr)			3			4			1			3
Heavy Vehicles (%)	0%	1%	0%	5%	2%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Effective Green, g (s)		66.0			66.0		19.0	19.0		19.0	19.0	
Actuated g/C Ratio		0.66			0.66		0.19	0.19		0.19	0.19	
Clearance Time (s)		8.0			8.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1303			1481		119	310		245	293	
v/s Ratio Prot								0.03				0.16
v/s Ratio Perm		c0.82			0.69		c0.22			0.02		
v/c Ratio		1.24			1.04		1.18	0.18		0.11	0.86	
Uniform Delay, d1		17.0			17.0		40.5	34.0		33.5	39.2	
Progression Factor		1.00			1.22		1.00	1.00		1.00	1.00	
Incremental Delay, d2		113.2			31.8		137.6	0.6		0.4	22.9	
Delay (s)		130.2			52.5		178.1	34.6		33.9	62.1	
Level of Service		F			D		F	C		C	E	
Approach Delay (s)		130.2			52.5			120.1			59.7	
Approach LOS		F			D			F			E	

Intersection Summary

HCM 2000 Control Delay	91.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	137.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Scenario D 2031 PM Signalized Results

10: Hurontario St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Volume (vph)	114	5	58	20	6	44	18	830	18	25	937	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.98			1.00		0.99	1.00		0.97	1.00	
Frt		0.96			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1704			1654		1767	3490		1658	3471	
Flt Permitted		0.76			0.88		0.25	1.00		0.30	1.00	
Satd. Flow (perm)		1339			1470		464	3490		528	3471	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	118	5	60	21	6	45	19	856	19	26	966	62
RTOR Reduction (vph)	0	21	0	0	37	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	162	0	0	35	0	19	874	0	26	1025	0
Confl. Peds. (#/hr)	23		18	18		23	17		43	43		17
Confl. Bikes (#/hr)						1			2			2
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%	0%	4%	0%	4%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Effective Green, g (s)		19.0			18.0		69.0	69.0		69.0	69.0	
Actuated g/C Ratio		0.19			0.18		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		254			264		320	2408		364	2394	
v/s Ratio Prot								0.25				c0.30
v/s Ratio Perm		c0.12			0.02		0.04			0.05		
v/c Ratio		0.64			0.13		0.06	0.36		0.07	0.43	
Uniform Delay, d1		37.3			34.4		5.0	6.4		5.1	6.8	
Progression Factor		1.00			1.00		1.56	1.71		0.29	0.20	
Incremental Delay, d2		7.1			0.5		0.3	0.3		0.2	0.3	
Delay (s)		44.4			34.9		8.1	11.3		1.7	1.6	
Level of Service		D			C		A	B		A	A	
Approach Delay (s)		44.4			34.9			11.2			1.6	
Approach LOS		D			C			B			A	

Intersection Summary

HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Scenario D 2031 PM Signalized Results

13: Hurontario St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	→		↖	→		↖	↕		↖	↕	
Volume (vph)	345	37	85	14	34	175	47	895	22	130	1009	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98		1.00	0.96		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	0.97	1.00		0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.90		1.00	0.87		1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1717	1679		1751	1605		1785	3491		1751	3340	
Flt Permitted	0.59	1.00		0.67	1.00		0.08	1.00		0.22	1.00	
Satd. Flow (perm)	1062	1679		1243	1605		152	3491		396	3340	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	367	39	90	15	36	186	50	952	23	138	1073	426
RTOR Reduction (vph)	0	30	0	0	43	0	0	2	0	0	41	0
Lane Group Flow (vph)	367	99	0	15	179	0	50	973	0	138	1458	0
Confl. Peds. (#/hr)	32		18	18		32	24		22	22		24
Confl. Bikes (#/hr)			1			3			3			1
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	5%	1%	3%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	36.7	36.7		36.7	36.7		49.3	49.3		49.3	49.3	
Effective Green, g (s)	36.7	36.7		36.7	36.7		49.3	49.3		49.3	49.3	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.49	0.49		0.49	0.49	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	389	616		456	589		74	1721		195	1646	
v/s Ratio Prot		0.06			0.11			0.28			c0.44	
v/s Ratio Perm	c0.35			0.01			0.33			0.35		
v/c Ratio	0.94	0.16		0.03	0.30		0.68	0.57		0.71	0.89	
Uniform Delay, d1	30.6	21.3		20.3	22.5		19.3	17.8		19.7	22.8	
Progression Factor	1.00	1.00		1.00	1.00		0.49	0.47		1.00	1.00	
Incremental Delay, d2	32.1	0.3		0.1	0.6		38.2	1.3		19.5	7.4	
Delay (s)	62.7	21.6		20.3	23.2		47.6	9.6		39.2	30.2	
Level of Service	E	C		C	C		D	A		D	C	
Approach Delay (s)		52.0			23.0			11.4			31.0	
Approach LOS		D			C			B			C	

Intersection Summary

HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	108.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Scenario D 2031 PM Signalized Results
 29: Elizabeth St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↖	↗		↖	↗	
Volume (vph)	26	1313	41	35	1278	46	69	50	84	54	23	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99			0.99		1.00	0.91		1.00	0.94	
Flpb, ped/bikes		1.00			1.00		0.94	1.00		0.89	1.00	
Frt		1.00			0.99		1.00	0.91		1.00	0.88	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3361			3345		1721	1579		1185	1585	
Flt Permitted		0.89			0.86		0.68	1.00		0.61	1.00	
Satd. Flow (perm)		2994			2870		1234	1579		756	1585	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	28	1397	44	37	1360	49	73	53	89	57	24	94
RTOR Reduction (vph)	0	2	0	0	2	0	0	43	0	0	40	0
Lane Group Flow (vph)	0	1467	0	0	1444	0	73	99	0	57	78	0
Confl. Peds. (#/hr)	104		72	72		104	47		97	97		47
Confl. Bikes (#/hr)			9			6						1
Heavy Vehicles (%)	0%	2%	3%	0%	2%	5%	0%	0%	0%	37%	0%	0%
Parking (#/hr)		0			0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Effective Green, g (s)		73.5			73.5		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.74			0.74		0.14	0.14		0.14	0.14	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2200			2109		178	228		109	229	
v/s Ratio Prot								0.06				0.05
v/s Ratio Perm		0.49			c0.50		0.06			c0.08		
v/c Ratio		0.67			0.68		0.41	0.44		0.52	0.34	
Uniform Delay, d1		6.9			7.1		38.9	39.0		39.6	38.4	
Progression Factor		0.30			0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.4		3.2	2.8		8.4	1.8	
Delay (s)		2.2			5.5		42.1	41.8		47.9	40.3	
Level of Service		A			A		D	D		D	D	
Approach Delay (s)		2.2			5.5			41.9			42.8	
Approach LOS		A			A			D			D	

Intersection Summary		
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.66	A
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	101.2%	12.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		G

Scenario D 2031 PM Signalized Results
35: Hurontario St & Eaglewood Blvd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Volume (vph)	108	14	21	48	5	45	21	1488	63	74	1682	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)		7.0		7.0	7.0			7.0			7.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			*1.00	
Frbp, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.86			0.99			1.00	
Flt Protected		0.96		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1779		1825	1629			3513			3716	
Flt Permitted		0.75		0.70	1.00			0.89			0.67	
Satd. Flow (perm)		1376		1346	1629			3142			2488	
Peak-hour factor, PHF	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.97	0.97	0.97	0.97	1.00
Adj. Flow (vph)	108	14	21	49	5	46	21	1534	65	76	1734	41
RTOR Reduction (vph)	0	5	0	0	39	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	138	0	49	12	0	0	1618	0	0	1851	0
Confl. Peds. (#/hr)									17	17		
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	3%	0%	0%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		18.4		18.4	18.4			87.6			87.6	
Effective Green, g (s)		18.4		18.4	18.4			87.6			87.6	
Actuated g/C Ratio		0.15		0.15	0.15			0.73			0.73	
Clearance Time (s)		7.0		7.0	7.0			7.0			7.0	
Vehicle Extension (s)		5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)		210		206	249			2293			1816	
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.10		0.04				0.51			c0.74	
v/c Ratio		0.66		0.24	0.05			0.71			1.02	
Uniform Delay, d1		47.8		44.6	43.3			9.0			16.2	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		9.6		1.2	0.2			1.9			26.1	
Delay (s)		57.4		45.9	43.5			10.9			42.3	
Level of Service		E		D	D			B			D	
Approach Delay (s)		57.4			44.7			10.9			42.3	
Approach LOS		E			D			B			D	

Intersection Summary

HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	125.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Scenario D 2031 PM Unsignalized Results

8: Stavebank Rd & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	19	42	1	49	20	23	28	96	34	13	229	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	22	48	1	56	23	26	32	109	39	15	260	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	70	105	180	308
Volume Left (vph)	22	56	32	15
Volume Right (vph)	1	26	39	33
Hadj (s)	0.05	-0.04	-0.07	-0.05
Departure Headway (s)	5.3	5.1	4.7	4.5
Degree Utilization, x	0.10	0.15	0.23	0.39
Capacity (veh/h)	612	634	731	759
Control Delay (s)	8.9	9.0	9.1	10.4
Approach Delay (s)	8.9	9.0	9.1	10.4
Approach LOS	A	A	A	B

Intersection Summary			
Delay		9.6	
Level of Service		A	
Intersection Capacity Utilization	37.5%		ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 PM Unsignalized Results
 9: Stavebank Rd & GO Parking Access

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	17	85	9	3	90
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	68	22	109	12	4	115
Pedestrians	8		24			4
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		2			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	127			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	127			129	
tC, single (s)	6.4	6.2			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.5	
p0 queue free %	90	98			100	
cM capacity (veh/h)	702	919			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	121	119
Volume Left	68	0	4
Volume Right	22	12	0
cSH	745	1700	1278
Volume to Capacity	0.12	0.07	0.00
Queue Length 95th (m)	2.9	0.0	0.1
Control Delay (s)	10.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		19.1%	ICU Level of Service
Analysis Period (min)		15	A

Scenario D 2031 PM Unsignalized Results

14: Stavebank Rd & Park St

9/30/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	98	30	103	38	23	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	109	33	114	42	26	181
Pedestrians	19					11
Lane Width (m)	3.7					3.7
Walking Speed (m/s)	1.2					1.2
Percent Blockage	2					1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	166			176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	166			176	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	96			98	
cM capacity (veh/h)	599	862			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	142	157	207
Volume Left	109	0	26
Volume Right	33	42	0
cSH	645	1700	1390
Volume to Capacity	0.22	0.09	0.02
Queue Length 95th (m)	5.9	0.0	0.4
Control Delay (s)	12.2	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.2	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		39.8%	ICU Level of Service
Analysis Period (min)		15	A

Scenario D 2031 PM Unsignalized Results
 18: Elizabeth St/Bus Exit & GO Parking Access/Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻						↻	
Volume (veh/h)	0	1	14	107	8	0	0	0	0	0	24	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	0	1	18	141	11	0	0	0	0	0	32	0
Pedestrians		26			8			18				
Lane Width (m)		3.7			3.7			0.0				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	11			38			362	321	37	311	330	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			38			362	321	37	311	330	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			91			100	100	100	100	92	100
cM capacity (veh/h)	1622			1586			513	546	1035	598	418	1018

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	20	151	32
Volume Left	0	141	0
Volume Right	18	0	0
cSH	1700	1586	418
Volume to Capacity	0.01	0.09	0.08
Queue Length 95th (m)	0.0	2.0	1.7
Control Delay (s)	0.0	7.0	14.3
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	14.3
Approach LOS			B

Intersection Summary		
Average Delay		7.5
Intersection Capacity Utilization	28.8%	ICU Level of Service
Analysis Period (min)		15
		A

Scenario D 2031 PM Unsignalized Results
 19: Ann St & Queen St/GO Parking Access

9/30/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	1	131	62	149	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	1	177	84	201	54
Pedestrians				5	93	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		532	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		532	99
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			87		48	94
cM capacity (veh/h)			1392		388	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1	261	255
Volume Left	0	177	201
Volume Right	1	0	54
cSH	1700	1392	440
Volume to Capacity	0.00	0.13	0.58
Queue Length 95th (m)	0.0	3.1	25.1
Control Delay (s)	0.0	5.7	23.9
Lane LOS		A	C
Approach Delay (s)	0.0	5.7	23.9
Approach LOS			C

Intersection Summary			
Average Delay		14.7	
Intersection Capacity Utilization		35.0%	ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 PM Unsignalized Results
 20: Lakeshore Rd & Ann St

9/30/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	43	1460	1337	62	6	61
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	1640	1502	70	7	69
Pedestrians			2		67	
Lane Width (m)			3.7		3.7	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		6	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		232	73			
pX, platoon unblocked	0.72				0.81	0.72
vC, conflicting volume	1639				2523	853
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1107				1402	15
tC, single (s)	4.6				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	86				92	91
cM capacity (veh/h)	348				87	724

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	48	820	820	1001	570	75
Volume Left	48	0	0	0	0	7
Volume Right	0	0	0	0	70	69
cSH	348	1700	1700	1700	1700	438
Volume to Capacity	0.14	0.48	0.48	0.59	0.34	0.17
Queue Length 95th (m)	3.3	0.0	0.0	0.0	0.0	4.3
Control Delay (s)	17.0	0.0	0.0	0.0	0.0	14.9
Lane LOS	C					B
Approach Delay (s)	0.5			0.0		14.9
Approach LOS						B

Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			51.1%		ICU Level of Service	A
Analysis Period (min)			15			

Scenario D 2031 PM Unsignalized Results

21: Ann St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	13	145	5	7	64	9	14	85	31	15	87	10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	13	149	5	7	66	9	14	88	32	15	90	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	168	82	134	115
Volume Left (vph)	13	7	14	15
Volume Right (vph)	5	9	32	10
Hadj (s)	0.01	-0.02	0.25	-0.03
Departure Headway (s)	4.6	4.7	4.9	4.7
Degree Utilization, x	0.22	0.11	0.18	0.15
Capacity (veh/h)	727	709	693	720
Control Delay (s)	8.9	8.3	9.0	8.5
Approach Delay (s)	8.9	8.3	9.0	8.5
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.7	
Level of Service		A	
Intersection Capacity Utilization	28.6%		ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 PM Unsignalized Results

22: Ann St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	26	161	9	49	243	111	7	71	33	235	60	11
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	31	194	11	59	293	134	8	86	40	283	72	13

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	236	352	134	134	369
Volume Left (vph)	31	59	0	8	283
Volume Right (vph)	11	0	134	40	13
Hadj (s)	0.01	0.08	-0.70	0.33	0.13
Departure Headway (s)	6.8	6.8	6.0	7.4	6.5
Degree Utilization, x	0.44	0.67	0.22	0.27	0.67
Capacity (veh/h)	479	506	568	420	525
Control Delay (s)	15.0	21.4	9.6	13.2	21.6
Approach Delay (s)	15.0	18.1		13.2	21.6
Approach LOS	C	C		B	C

Intersection Summary				
Delay			18.0	
Level of Service			C	
Intersection Capacity Utilization		60.1%	ICU Level of Service	B
Analysis Period (min)		15		

Scenario D 2031 PM Unsignalized Results

23: Helene St & Lakeshore Rd

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Volume (veh/h)	55	1396	3	29	1376	47	2	1	20	10	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	56	1410	3	29	1390	47	2	1	20	10	0	43
Pedestrians		3						72			119	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						6			10	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		119			186							
pX, platoon unblocked	0.73			0.80			0.83	0.83	0.80	0.83	0.83	0.73
vC, conflicting volume	1556			1485			2395	3210	779	2428	3187	841
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1024			1102			1179	2159	216	1219	2132	45
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			94			98	96	97	86	100	94
cM capacity (veh/h)	450			480			82	28	595	74	29	669

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	761	708	724	742	23	54
Volume Left	56	0	29	0	2	10
Volume Right	0	3	0	47	20	43
cSH	450	1700	480	1700	245	266
Volume to Capacity	0.12	0.42	0.06	0.44	0.09	0.20
Queue Length 95th (m)	2.9	0.0	1.4	0.0	2.2	5.1
Control Delay (s)	3.8	0.0	1.8	0.0	21.2	21.9
Lane LOS	A		A		C	C
Approach Delay (s)	2.0		0.9		21.2	21.9
Approach LOS					C	C

Intersection Summary

Average Delay		1.9				
Intersection Capacity Utilization		92.2%		ICU Level of Service		F
Analysis Period (min)		15				

Scenario D 2031 PM Unsignalized Results

24: Helene St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	99	12	16	58	6	28	48	51	16	51	29
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)	13	115	14	19	67	7	33	56	59	19	59	34

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	142	93	148	112
Volume Left (vph)	13	19	33	19
Volume Right (vph)	14	7	59	34
Hadj (s)	-0.03	0.02	-0.20	-0.13
Departure Headway (s)	4.6	4.7	4.4	4.5
Degree Utilization, x	0.18	0.12	0.18	0.14
Capacity (veh/h)	731	712	769	743
Control Delay (s)	8.6	8.3	8.4	8.2
Approach Delay (s)	8.6	8.3	8.4	8.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	29.4%		ICU Level of Service
Analysis Period (min)		15	A

Scenario D 2031 PM Unsignalized Results

25: Helene St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	97	4	62	178	12	8	28	32	69	33	8
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	5	117	5	75	214	14	10	34	39	83	40	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	127	304	82	133
Volume Left (vph)	5	75	10	83
Volume Right (vph)	5	14	39	10
Hadj (s)	-0.02	0.02	-0.26	0.08
Departure Headway (s)	4.8	4.6	4.9	5.1
Degree Utilization, x	0.17	0.39	0.11	0.19
Capacity (veh/h)	692	739	663	639
Control Delay (s)	8.8	10.6	8.5	9.3
Approach Delay (s)	8.8	10.6	8.5	9.3
Approach LOS	A	B	A	A

Intersection Summary			
Delay		9.7	
Level of Service		A	
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)		15	

Scenario D 2031 PM Unsignalized Results
 26: Helene St/Bus Entrance & Queen St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↔		↑				↑	
Volume (veh/h)	0	0	0	112	72	24	31	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	0	0	0	170	109	36	47	0	2	0	0	0
Pedestrians		69			94			22			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		6			8			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	161			22			558	523	116	578	505	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	161			22			558	523	116	578	505	212
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			87	100	100	100	100	100
cM capacity (veh/h)	1410			1576			367	399	850	348	408	773

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	315	48	0
Volume Left	0	170	47	0
Volume Right	0	36	2	0
cSH	1700	1576	373	1700
Volume to Capacity	0.00	0.11	0.13	0.00
Queue Length 95th (m)	0.0	2.5	3.1	0.0
Control Delay (s)	0.0	4.5	16.1	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	4.5	16.1	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		Err%	ICU Level of Service
Analysis Period (min)		15	H

Scenario D 2031 PM Unsignalized Results

30: Elizabeth St & High St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	74	19	26	56	6	33	38	44	5	129	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	79	20	28	60	6	35	40	47	5	137	19

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	102	94	122	162
Volume Left (vph)	3	28	35	5
Volume Right (vph)	20	6	47	19
Hadj (s)	-0.11	0.02	-0.16	0.25
Departure Headway (s)	4.6	4.7	4.4	4.8
Degree Utilization, x	0.13	0.12	0.15	0.21
Capacity (veh/h)	725	705	768	715
Control Delay (s)	8.3	8.4	8.2	9.1
Approach Delay (s)	8.3	8.4	8.2	9.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	41.8%		ICU Level of Service A
Analysis Period (min)		15	

Scenario D 2031 PM Unsignalized Results

31: Elizabeth St & Park St

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕		↔	↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	58	9	67	105	0	21	0	29	25	92	29
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	1	76	12	88	138	0	28	0	38	33	121	38

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	89	226	66	33	159
Volume Left (vph)	1	88	28	33	0
Volume Right (vph)	12	0	38	0	38
Hadj (s)	-0.05	0.08	-0.23	0.50	0.22
Departure Headway (s)	4.8	4.8	4.9	5.9	5.6
Degree Utilization, x	0.12	0.30	0.09	0.05	0.25
Capacity (veh/h)	689	712	681	578	611
Control Delay (s)	8.5	9.8	8.3	8.0	9.2
Approach Delay (s)	8.5	9.8	8.3	9.0	
Approach LOS	A	A	A	A	

Intersection Summary				
Delay			9.2	
Level of Service			A	
Intersection Capacity Utilization		46.3%	ICU Level of Service	A
Analysis Period (min)		15		

Scenario D 2031 PM Unsignalized Results
 41: Ann St & GO Parking Access

9/30/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	0	16	141	0	12	9	174	12	0	141	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.76	1.00	0.76	1.00	0.76	0.76	0.76	0.76	1.00
Hourly flow rate (vph)	0	0	16	186	0	16	9	229	16	0	186	0
Pedestrians					9			1			2	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	458	457	187	466	449	248	186			254		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	458	457	187	466	449	248	186			254		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	100	100	98	62	100	98	99			100		
cM capacity (veh/h)	496	493	855	491	498	788	1389			1313		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	201	254	186
Volume Left	0	186	9	0
Volume Right	16	16	16	0
cSH	855	506	1389	1313
Volume to Capacity	0.02	0.40	0.01	0.00
Queue Length 95th (m)	0.4	13.2	0.1	0.0
Control Delay (s)	9.3	16.7	0.3	0.0
Lane LOS	A	C	A	
Approach Delay (s)	9.3	16.7	0.3	0.0
Approach LOS	A	C		

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization	39.2%		ICU Level of Service A
Analysis Period (min)	15		

Scenario D 2031 PM Unsignalized Results
42: Park St & GO Parking Access

9/30/2015



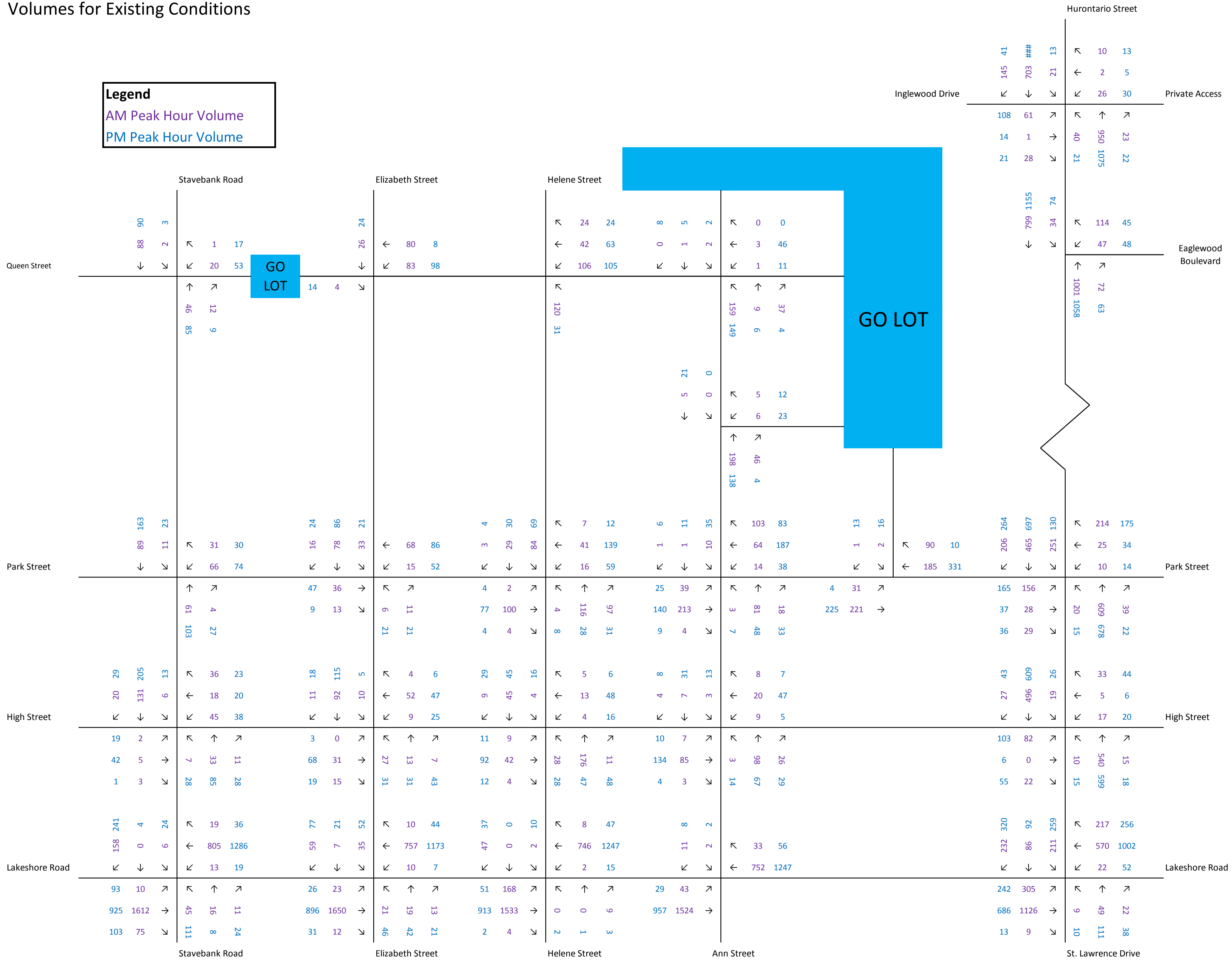
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	446	0	21	418	70	2	0	9	16	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	1.00	1.00	0.90	0.90	1.00	1.00	1.00	0.90	1.00	0.90
Hourly flow rate (vph)	4	496	0	21	464	78	2	0	9	18	0	23
Pedestrians		4			1							13
Lane Width (m)		3.7			3.7							3.7
Walking Speed (m/s)		1.2			1.2							1.2
Percent Blockage		0			0							1
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					57							
pX, platoon unblocked	1.00						1.00	1.00		1.00	1.00	1.00
vC, conflicting volume	555			496			1077	1102	497	1073	1063	520
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	553			496			1076	1101	497	1072	1062	518
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	100	98	91	100	96
cM capacity (veh/h)	1013			1068			182	204	573	189	215	552
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	500	563	11	41								
Volume Left	4	21	2	18								
Volume Right	0	78	9	23								
cSH	1013	1068	412	301								
Volume to Capacity	0.00	0.02	0.03	0.14								
Queue Length 95th (m)	0.1	0.4	0.6	3.3								
Control Delay (s)	0.1	0.5	14.0	18.8								
Lane LOS	A	A	B	C								
Approach Delay (s)	0.1	0.5	14.0	18.8								
Approach LOS			B	C								
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			52.7%		ICU Level of Service				A			
Analysis Period (min)			15									

Appendix J

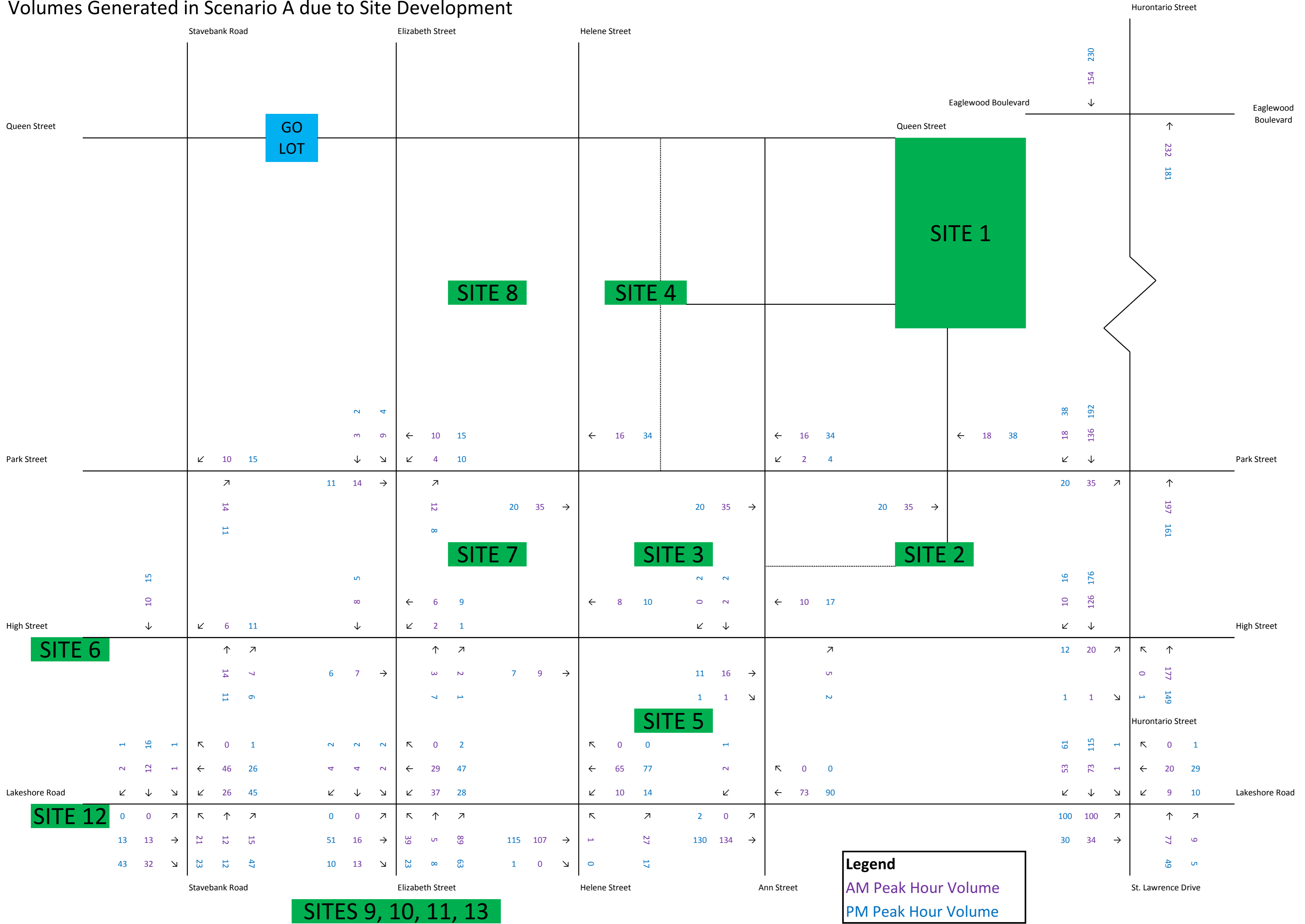
Volume Diagrams

Volumes for Existing Conditions

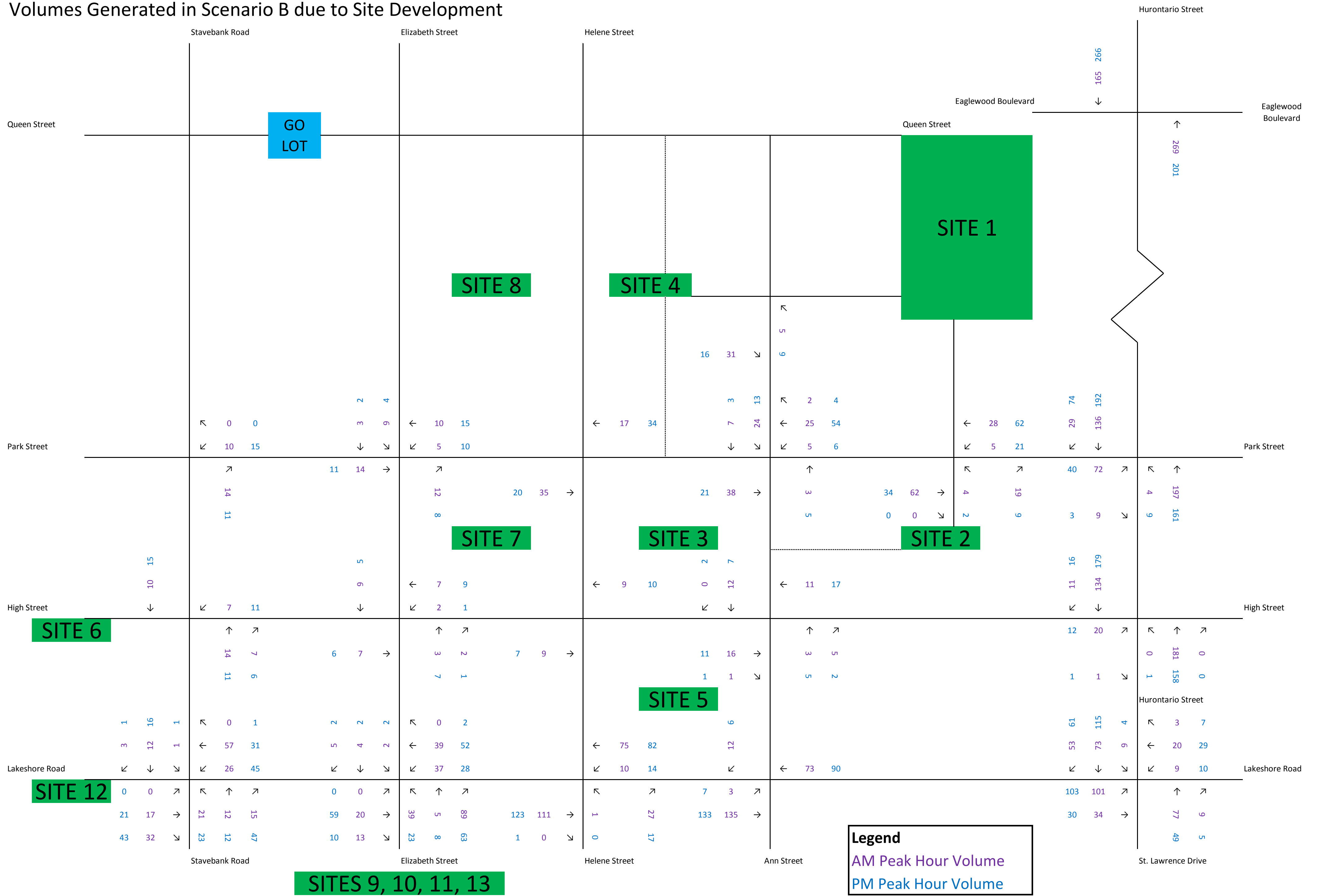
Legend
 AM Peak Hour Volume
 PM Peak Hour Volume



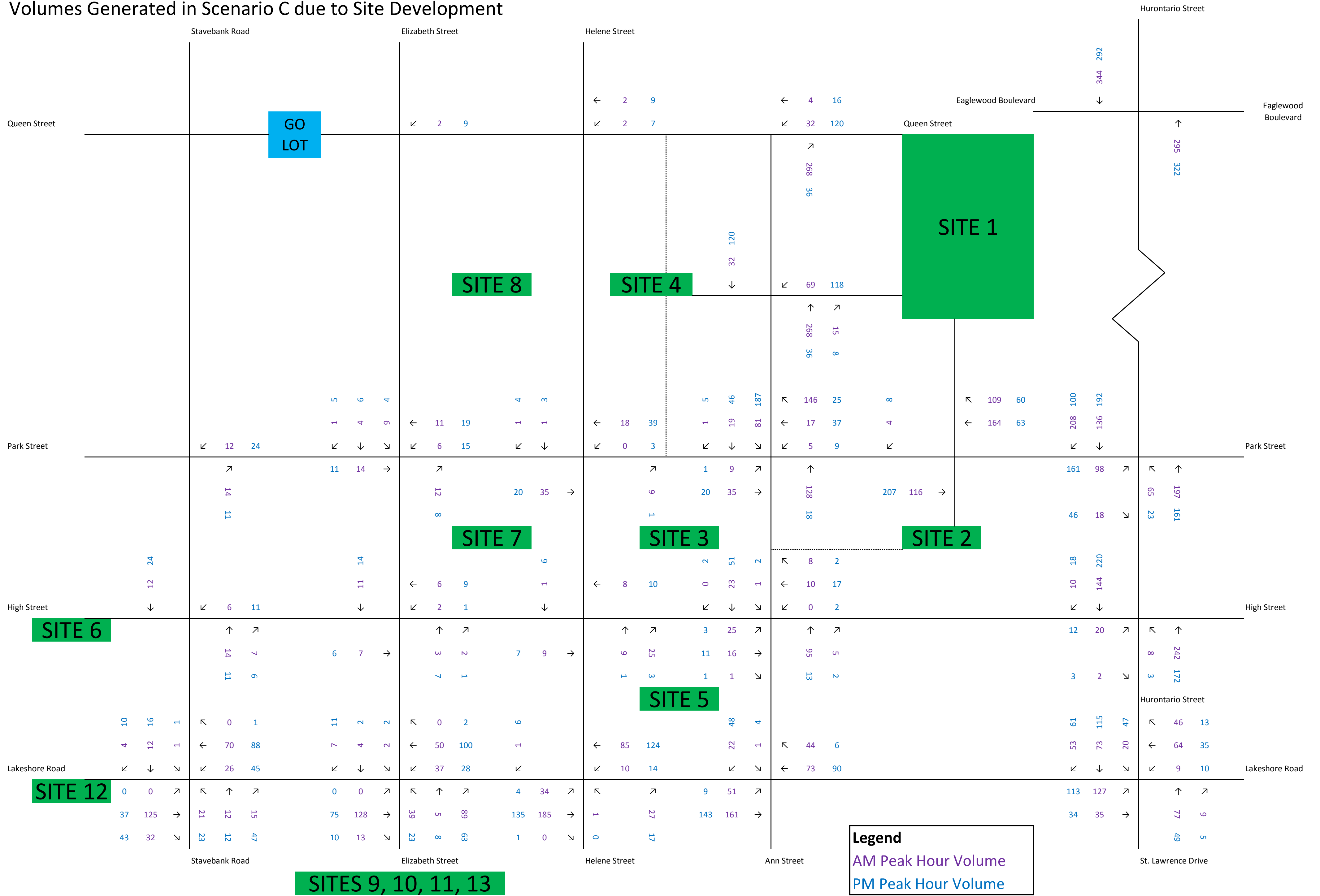
Volumes Generated in Scenario A due to Site Development



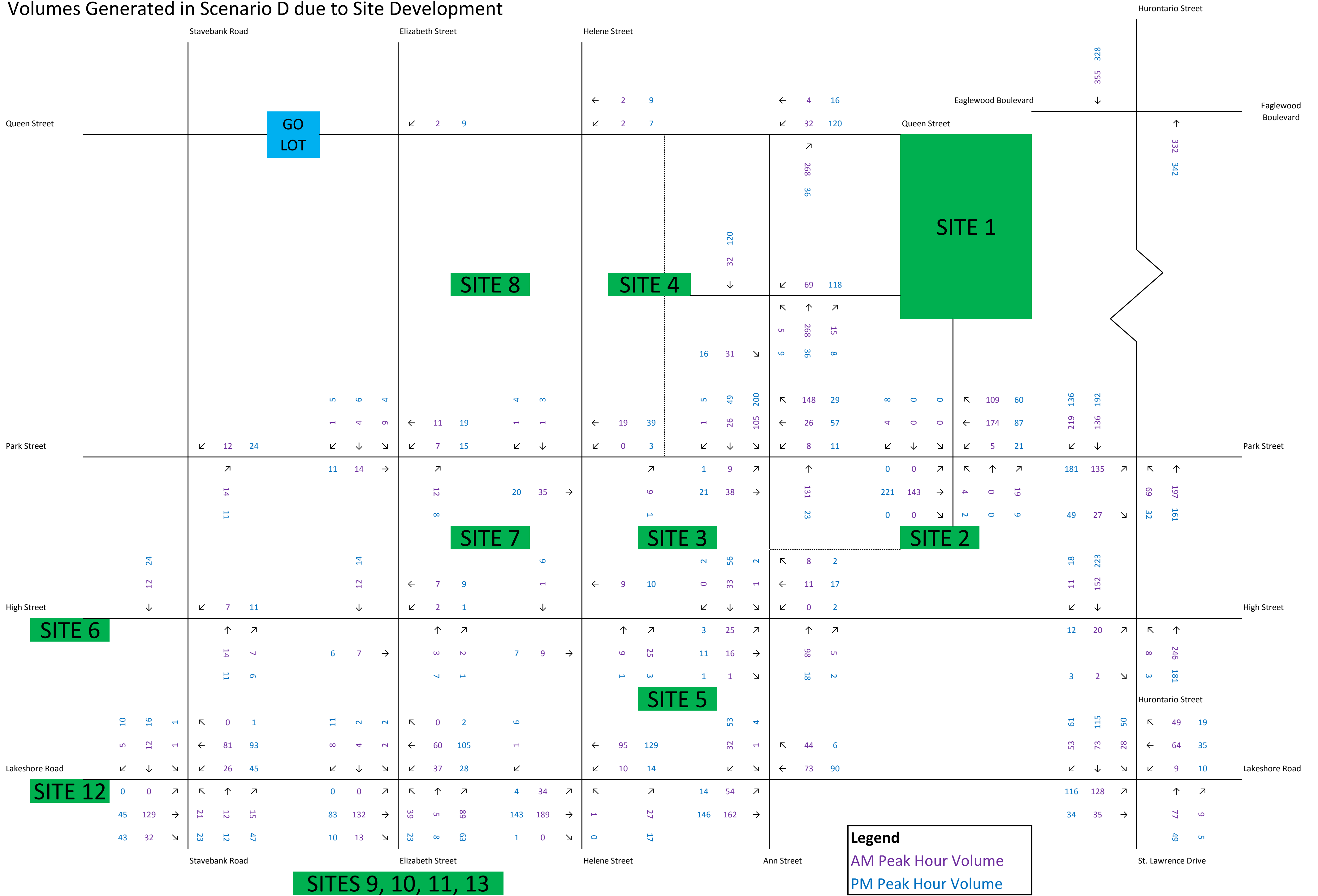
Volumes Generated in Scenario B due to Site Development



Volumes Generated in Scenario C due to Site Development

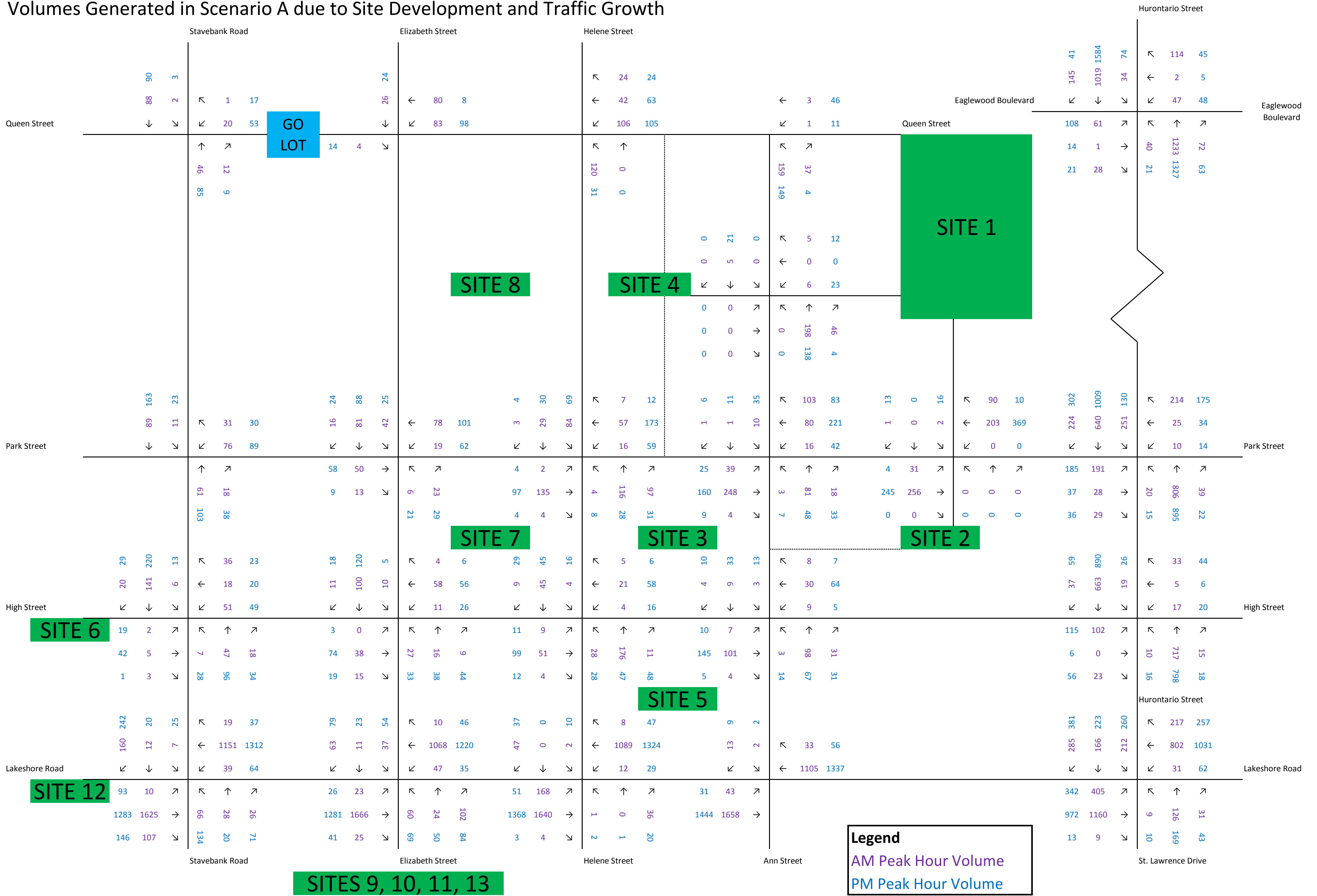


Volumes Generated in Scenario D due to Site Development



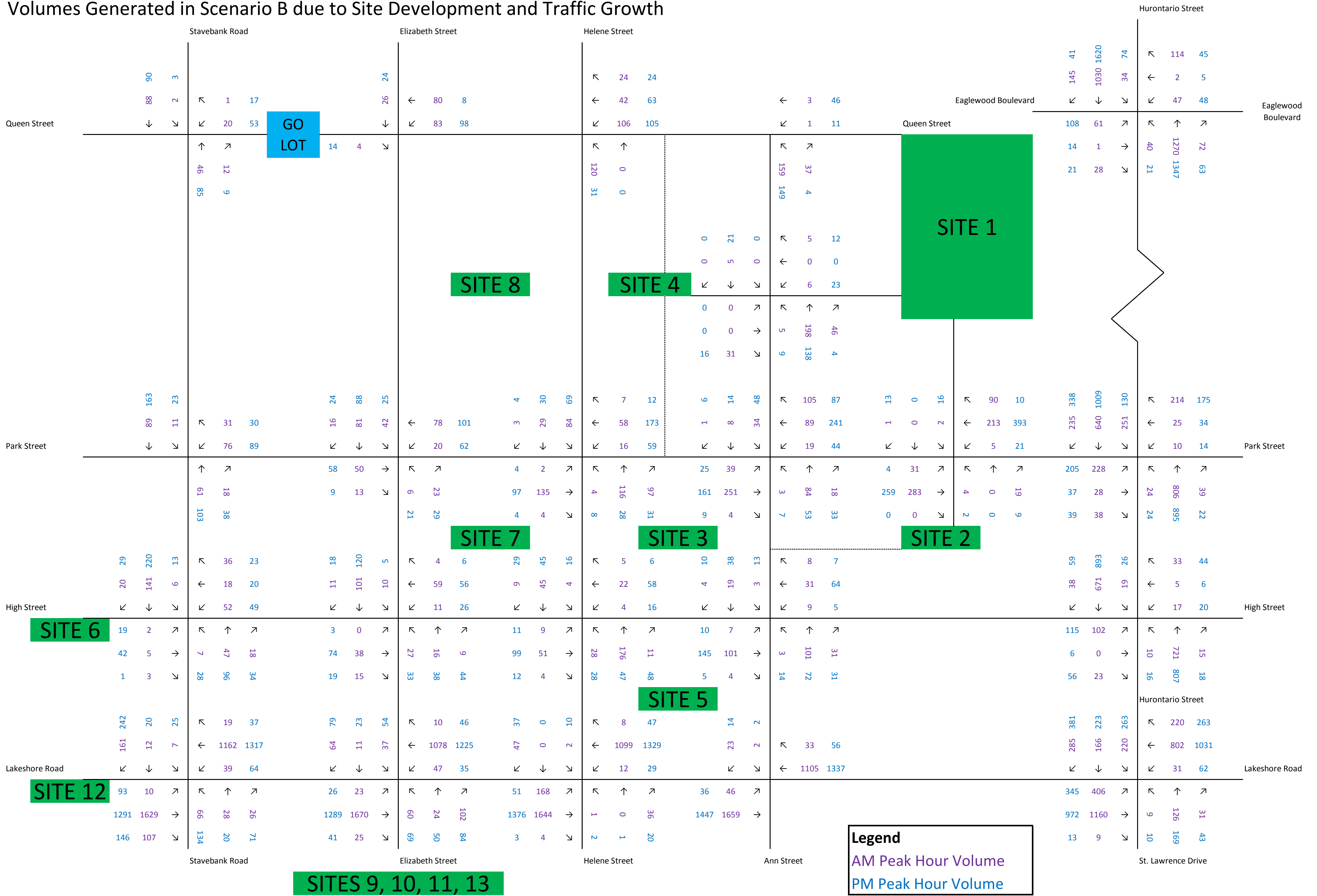
Legend
 AM Peak Hour Volume
 PM Peak Hour Volume

Volumes Generated in Scenario A due to Site Development and Traffic Growth

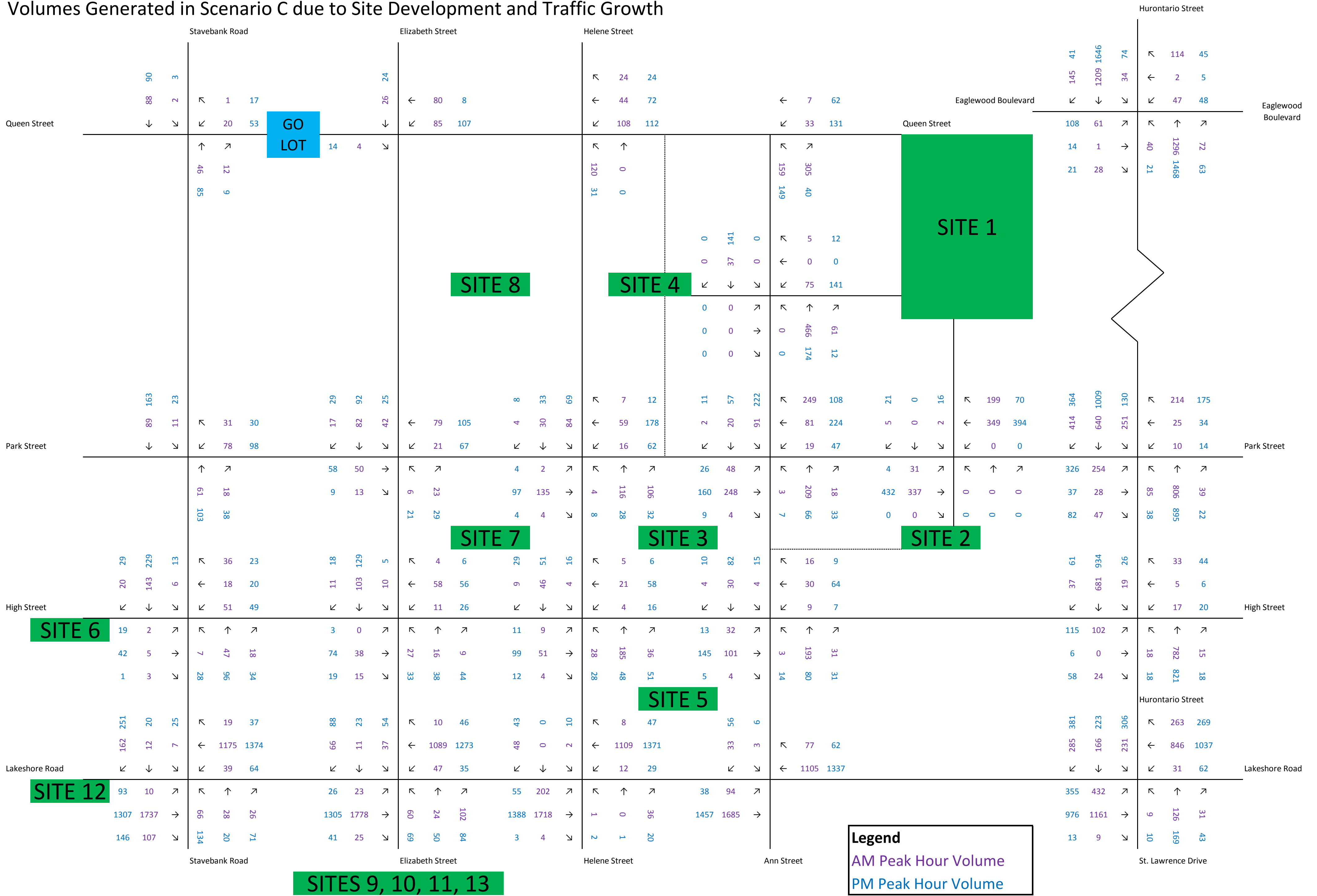


Legend
 AM Peak Hour Volume
 PM Peak Hour Volume

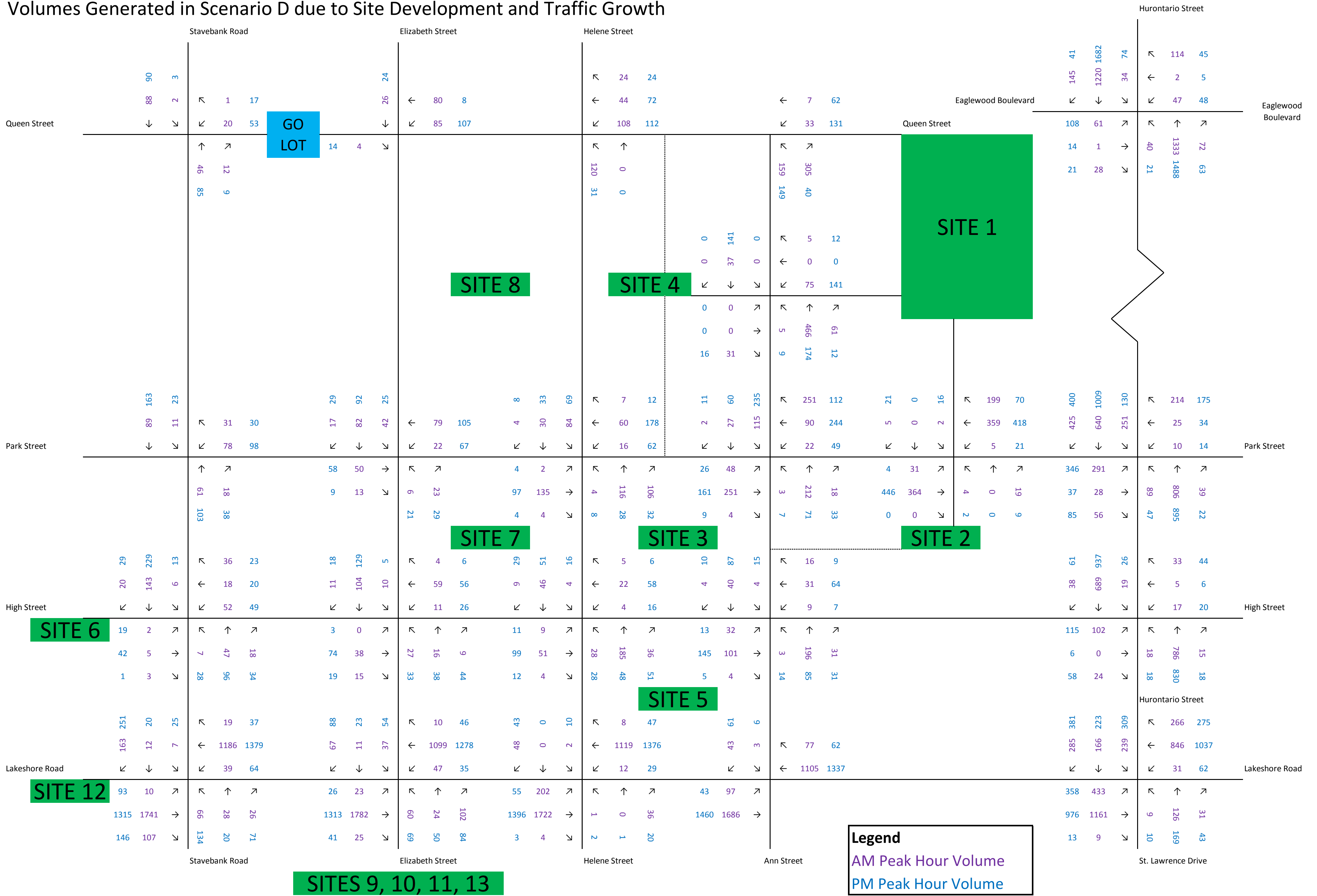
Volumes Generated in Scenario B due to Site Development and Traffic Growth



Volumes Generated in Scenario C due to Site Development and Traffic Growth



Volumes Generated in Scenario D due to Site Development and Traffic Growth



Appendix K

Queuing Reports

Scenario A 2031 AM Queuing Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	466	1333	10	36	922	249	10	181	244	191	328
v/c Ratio	0.89	0.60	0.01	0.30	0.72	0.45	0.04	0.35	0.87	0.39	0.54
Control Delay	40.1	14.6	0.3	45.0	44.2	22.4	35.1	39.8	54.5	25.2	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	40.1	14.6	0.3	45.0	44.2	22.4	35.1	39.8	54.5	25.2	7.9
Queue Length 50th (m)	82.8	135.3	0.0	7.0	113.0	26.6	1.8	34.2	26.4	20.0	8.9
Queue Length 95th (m)	#133.7	108.0	m0.0	16.9	132.3	48.5	5.7	50.4	#49.6	38.2	20.7
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	538	2230	874	120	1277	548	278	576	316	546	649
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	79
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	0.60	0.01	0.30	0.72	0.45	0.04	0.31	0.77	0.35	0.58

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Scenario A 2031 AM Queuing Results
 6: Stavebank Rd & Lakeshore Rd

9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1915	1329	73	60	8	189
v/c Ratio	0.81	0.76	0.79	0.25	0.05	0.66
Control Delay	14.8	5.7	107.8	32.5	50.7	39.4
Queue Delay	0.3	0.2	0.0	0.0	0.0	0.0
Total Delay	15.1	5.9	107.8	32.5	50.7	39.4
Queue Length 50th (m)	144.2	9.1	18.2	7.1	1.8	22.9
Queue Length 95th (m)	199.3	44.8	#37.7	19.1	6.4	45.7
Internal Link Dist (m)	79.6	97.7		79.2		96.9
Turn Bay Length (m)						
Base Capacity (vph)	2359	1741	117	300	222	338
Starvation Cap Reductn	0	65	0	0	0	0
Spillback Cap Reductn	89	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.79	0.62	0.20	0.04	0.56

Intersection Summary

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

Scenario A 2031 AM Queuing Results
 10: Hurontario St & High St

9/30/2015



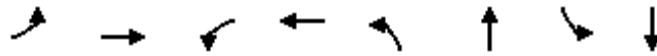
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	132	58	11	779	20	744
v/c Ratio	0.50	0.21	0.03	0.32	0.05	0.31
Control Delay	23.1	14.4	6.9	8.1	9.3	11.2
Queue Delay	1.3	0.3	0.0	0.1	0.0	0.0
Total Delay	24.5	14.7	6.9	8.2	9.3	11.2
Queue Length 50th (m)	9.2	2.4	0.0	50.7	2.2	63.7
Queue Length 95th (m)	20.8	9.6	m1.7	m63.8	m4.8	87.1
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	503	555	437	2435	438	2374
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	223	258	0	397	0	13
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.20	0.03	0.38	0.05	0.32

Intersection Summary

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

Scenario A 2031 AM Queuing Results
 13: Hurontario St & Park St

9/30/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	230	69	12	288	24	1018	302	1040
v/c Ratio	0.96	0.12	0.03	0.45	0.13	0.73	0.79	0.55
Control Delay	95.3	17.6	30.6	7.8	30.6	41.1	35.7	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
Total Delay	95.3	17.6	30.6	7.8	30.6	41.9	35.7	26.4
Queue Length 50th (m)	55.0	5.8	2.0	5.1	4.5	138.3	51.8	109.2
Queue Length 95th (m)	#85.9	13.9	5.8	17.6	11.1	147.5	67.7	118.6
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	267	624	446	686	187	1392	408	1875
Starvation Cap Reductn	0	0	0	0	0	138	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	0.86	0.11	0.03	0.42	0.13	0.81	0.74	0.55

Intersection Summary

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

Scenario A 2031 AM Queuing Results
 29: Elizabeth St & Lakeshore Rd

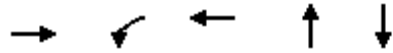
9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1905	1250	67	140	41	82
v/c Ratio	0.79	0.71	0.44	0.66	0.55	0.35
Control Delay	4.9	32.3	64.7	58.2	82.9	19.4
Queue Delay	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	32.3	64.7	58.2	82.9	19.4
Queue Length 50th (m)	5.0	171.5	16.1	25.9	10.0	2.8
Queue Length 95th (m)	10.4	189.4	29.2	44.9	21.3	16.4
Internal Link Dist (m)	97.7	95.5		59.1		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2400	1752	207	275	102	289
Starvation Cap Reductn	166	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.71	0.32	0.51	0.40	0.28
Intersection Summary						

Scenario A 2031 AM Queuing Results
 35: Hurontario St & Eaglewood Blvd

9/30/2015



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	90	53	130	1506	1328
v/c Ratio	0.66	0.36	0.52	0.67	0.62
Control Delay	70.7	62.0	29.8	21.5	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	62.0	29.8	21.5	8.5
Queue Length 50th (m)	18.8	12.7	11.3	178.1	64.3
Queue Length 95th (m)	34.5	23.7	29.0	211.6	98.4
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	189	209	323	2254	2142
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.25	0.40	0.67	0.62
Intersection Summary					

Scenario A 2031 PM Queuing Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

10/1/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	349	992	13	63	1052	262	10	216	265	228	389
v/c Ratio	0.92	0.49	0.02	0.34	0.83	0.43	0.03	0.38	0.83	0.39	0.55
Control Delay	55.8	20.4	2.5	32.1	37.5	13.5	22.5	26.5	36.7	13.3	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	55.8	20.4	2.5	32.1	37.5	13.5	22.5	26.5	36.7	13.3	4.9
Queue Length 50th (m)	53.4	65.2	0.0	8.5	92.7	14.1	1.2	26.5	26.3	13.8	6.2
Queue Length 95th (m)	#102.4	90.0	m0.0	19.8	#125.5	34.4	4.5	43.8	#74.7	27.5	4.0
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	381	2039	817	185	1266	603	344	636	354	653	742
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	83
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	0.92	0.49	0.02	0.34	0.83	0.43	0.03	0.34	0.75	0.35	0.59

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Scenario A 2031 PM Queuing Results
 6: Stavebank Rd & Lakeshore Rd

10/1/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1585	1473	140	95	26	273
v/c Ratio	1.18	0.99	1.11	0.27	0.11	0.83
Control Delay	109.7	39.3	153.3	19.9	34.9	54.3
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	109.8	39.3	153.3	19.9	34.9	54.3
Queue Length 50th (m)	~179.8	105.5	~28.6	6.5	3.9	39.7
Queue Length 95th (m)	#219.0	#178.0	#62.6	18.9	10.5	#78.1
Internal Link Dist (m)	80.7	97.7		68.6		96.9
Turn Bay Length (m)						
Base Capacity (vph)	1341	1492	126	352	245	330
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	34	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.99	1.11	0.27	0.11	0.83

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Scenario A 2031 PM Queuing Results
 10: Hurontario St & High St

10/1/2015



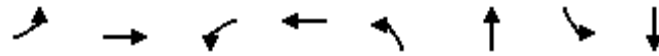
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	181	72	16	842	26	978
v/c Ratio	0.66	0.24	0.05	0.35	0.07	0.41
Control Delay	42.7	16.8	9.8	11.4	1.3	1.3
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.1
Total Delay	42.7	16.8	9.8	11.8	1.3	1.4
Queue Length 50th (m)	25.8	4.1	1.2	48.7	0.2	3.7
Queue Length 95th (m)	42.3	13.5	m3.1	m65.8	m0.4	5.5
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	472	516	342	2410	380	2399
Starvation Cap Reductn	0	0	0	964	0	468
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.14	0.05	0.58	0.07	0.51

Intersection Summary

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

Scenario A 2031 PM Queuing Results
 13: Hurontario St & Park St

10/1/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	196	77	15	222	16	975	138	1394
v/c Ratio	0.83	0.17	0.05	0.47	0.11	0.46	0.48	0.67
Control Delay	62.7	16.1	26.1	18.9	5.9	5.9	21.5	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	62.7	16.1	26.1	18.9	5.9	6.0	21.5	21.1
Queue Length 50th (m)	32.6	5.3	2.0	17.0	0.5	18.5	20.2	132.8
Queue Length 95th (m)	#58.8	14.6	6.2	34.4	m1.6	22.8	m23.7	m142.0
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	287	551	390	553	150	2139	285	2094
Starvation Cap Reductn	0	0	0	0	0	329	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	0.68	0.14	0.04	0.40	0.11	0.54	0.48	0.67

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Scenario A 2031 PM Queuing Results
 29: Elizabeth St & Lakeshore Rd

10/1/2015



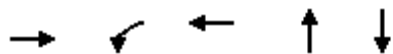
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1435	1384	73	142	57	108
v/c Ratio	0.65	0.66	0.41	0.52	0.52	0.39
Control Delay	2.4	5.7	43.8	29.9	54.8	23.7
Queue Delay	3.8	1.1	0.0	0.0	0.0	0.0
Total Delay	6.2	6.8	43.8	29.9	54.8	23.7
Queue Length 50th (m)	2.3	21.4	12.0	14.5	9.6	8.7
Queue Length 95th (m)	m26.7	28.1	22.6	29.3	20.1	21.2
Internal Link Dist (m)	97.7	95.5		57.3		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2207	2109	261	374	158	376
Starvation Cap Reductn	668	0	0	0	0	0
Spillback Cap Reductn	0	452	0	0	0	8
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.84	0.28	0.38	0.36	0.29

Intersection Summary

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

Scenario A 2031 PM Queuing Results
 35: Hurontario St & Eaglewood Blvd

10/1/2015



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	143	49	51	1454	1750
v/c Ratio	0.60	0.22	0.16	0.67	0.95
Control Delay	46.1	36.2	12.4	18.8	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	36.2	12.4	18.8	28.8
Queue Length 50th (m)	22.5	7.6	0.8	106.8	124.6
Queue Length 95th (m)	37.7	15.9	9.1	124.8	#207.5
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	322	308	410	2184	1835
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.16	0.12	0.67	0.95

Intersection Summary

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

Scenario B 2031 AM Queuing Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	467	1333	10	36	922	253	10	181	253	191	328
v/c Ratio	0.90	0.60	0.01	0.31	0.74	0.47	0.04	0.34	0.87	0.38	0.53
Control Delay	42.0	14.2	0.3	46.2	45.7	23.4	34.3	38.9	53.6	24.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	42.0	14.2	0.3	46.2	45.7	23.4	34.3	38.9	53.6	24.7	7.3
Queue Length 50th (m)	83.7	131.7	0.0	7.0	114.3	27.9	1.8	33.8	26.3	18.9	6.7
Queue Length 95th (m)	#136.4	107.4	m0.0	17.1	133.8	50.5	5.6	49.8	#53.9	40.1	22.9
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	532	2204	864	118	1243	536	286	589	326	559	657
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	79
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	0.88	0.60	0.01	0.31	0.74	0.47	0.03	0.31	0.78	0.34	0.57

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Scenario B 2031 AM Queuing Results
 6: Stavebank Rd & Lakeshore Rd

9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1919	1341	73	60	8	190
v/c Ratio	0.81	0.77	0.79	0.25	0.05	0.67
Control Delay	15.0	5.8	108.1	32.4	50.6	40.5
Queue Delay	0.3	0.2	0.0	0.0	0.0	0.0
Total Delay	15.3	6.0	108.1	32.4	50.6	40.5
Queue Length 50th (m)	145.3	5.9	18.2	7.1	1.8	23.7
Queue Length 95th (m)	200.5	46.3	#37.9	19.1	6.4	46.6
Internal Link Dist (m)	79.6	97.7		79.2		96.9
Turn Bay Length (m)						
Base Capacity (vph)	2357	1737	116	300	222	336
Starvation Cap Reductn	0	62	0	0	0	0
Spillback Cap Reductn	102	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.80	0.63	0.20	0.04	0.57

Intersection Summary

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

Scenario B 2031 AM Queuing Results
 10: Hurontario St & High St

9/30/2015



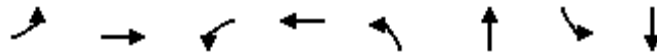
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	132	58	11	783	20	754
v/c Ratio	0.50	0.21	0.03	0.32	0.05	0.32
Control Delay	23.1	14.4	7.4	8.5	9.2	11.8
Queue Delay	1.6	0.4	0.0	0.1	0.0	0.0
Total Delay	24.7	14.8	7.4	8.6	9.2	11.8
Queue Length 50th (m)	9.2	2.4	0.8	51.0	2.2	67.9
Queue Length 95th (m)	20.8	9.6	m1.8	m65.7	m4.4	88.3
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	485	534	433	2435	435	2374
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	220	254	0	439	0	19
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.21	0.03	0.39	0.05	0.32

Intersection Summary

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

Scenario B 2031 AM Queuing Results
 13: Hurontario St & Park St

9/30/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	275	80	12	288	29	1018	302	1053
v/c Ratio	0.97	0.13	0.03	0.42	0.17	0.81	0.85	0.60
Control Delay	90.3	14.7	29.0	7.2	33.0	46.7	46.4	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0
Total Delay	90.3	14.7	29.0	7.2	33.0	48.9	46.4	29.6
Queue Length 50th (m)	67.2	5.6	2.0	4.9	5.7	139.4	53.2	114.1
Queue Length 95th (m)	#103.3	14.1	5.7	17.1	12.6	147.0	#78.2	122.2
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	295	646	460	703	167	1261	369	1759
Starvation Cap Reductn	0	0	0	0	0	129	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	0.93	0.12	0.03	0.41	0.17	0.90	0.82	0.60

Intersection Summary

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

Scenario B 2031 AM Queuing Results
 29: Elizabeth St & Lakeshore Rd

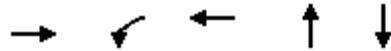
9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1910	1261	67	140	41	83
v/c Ratio	0.79	0.72	0.45	0.67	0.56	0.36
Control Delay	5.3	32.6	65.5	58.5	85.2	19.5
Queue Delay	0.6	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	32.6	65.5	58.5	85.2	19.5
Queue Length 50th (m)	5.1	173.2	16.1	25.6	10.0	2.8
Queue Length 95th (m)	9.8	190.2	29.4	45.0	21.5	16.5
Internal Link Dist (m)	97.7	95.5		59.1		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2403	1756	198	265	96	280
Starvation Cap Reductn	184	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.72	0.34	0.53	0.43	0.30
Intersection Summary						

Scenario B 2031 AM Queuing Results
 35: Hurontario St & Eaglewood Blvd

9/30/2015



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	90	53	130	1548	1340
v/c Ratio	0.66	0.36	0.53	0.69	0.63
Control Delay	70.7	62.0	32.4	21.0	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	62.0	32.4	21.0	8.7
Queue Length 50th (m)	18.8	12.7	12.8	179.9	65.7
Queue Length 95th (m)	34.5	23.7	30.5	m216.7	100.7
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	189	209	318	2257	2132
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.25	0.41	0.69	0.63

Intersection Summary

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

Scenario B 2031 PM Queuing Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	352	992	13	63	1052	268	10	216	268	228	389
v/c Ratio	0.92	0.49	0.02	0.34	0.84	0.45	0.03	0.38	0.84	0.39	0.55
Control Delay	56.0	20.5	2.4	32.2	37.9	13.5	22.5	26.5	37.6	13.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	56.0	20.5	2.4	32.2	37.9	13.5	22.5	26.5	37.6	13.7	4.8
Queue Length 50th (m)	53.8	65.1	0.0	8.5	92.7	14.4	1.2	26.5	23.4	12.1	4.3
Queue Length 95th (m)	#104.1	90.1	m0.0	19.8	#125.5	35.0	4.5	43.8	#76.2	29.3	6.1
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	384	2035	815	184	1257	602	344	636	354	653	742
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	83
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	0.92	0.49	0.02	0.34	0.84	0.45	0.03	0.34	0.76	0.35	0.59

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Scenario B 2031 PM Queuing Results
 6: Stavebank Rd & Lakeshore Rd

9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1594	1478	140	95	26	273
v/c Ratio	1.19	0.99	1.11	0.27	0.11	0.83
Control Delay	113.3	40.9	153.3	20.2	34.9	54.8
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	113.4	40.9	153.3	20.2	34.9	54.8
Queue Length 50th (m)	~182.0	106.2	~28.6	6.6	3.9	39.9
Queue Length 95th (m)	#221.1	#179.2	#62.6	19.1	10.5	#78.4
Internal Link Dist (m)	80.7	97.7		68.6		96.9
Turn Bay Length (m)						
Base Capacity (vph)	1339	1488	126	351	245	329
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	35	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.99	1.11	0.27	0.11	0.83

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Scenario B 2031 PM Queuing Results
 10: Hurontario St & High St

9/30/2015



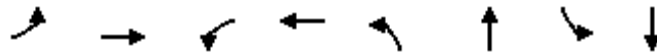
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	181	72	16	851	26	981
v/c Ratio	0.66	0.24	0.05	0.35	0.07	0.41
Control Delay	42.7	16.8	9.8	11.5	1.4	1.2
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.1
Total Delay	42.7	16.8	9.8	11.9	1.4	1.4
Queue Length 50th (m)	25.8	4.1	1.3	49.5	0.2	4.0
Queue Length 95th (m)	42.3	13.5	m3.1	m66.5	m0.4	5.8
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	472	516	340	2410	377	2399
Starvation Cap Reductn	0	0	0	961	0	495
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.14	0.05	0.59	0.07	0.52

Intersection Summary

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

Scenario B 2031 PM Queuing Results
 13: Hurontario St & Park St

9/30/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	217	80	15	222	26	975	138	1433
v/c Ratio	0.85	0.16	0.04	0.45	0.20	0.47	0.51	0.70
Control Delay	62.5	15.1	25.1	18.5	8.0	6.4	21.9	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	62.5	15.1	25.1	18.5	8.0	6.6	21.9	22.0
Queue Length 50th (m)	35.8	5.1	1.9	17.1	0.9	18.9	20.3	138.1
Queue Length 95th (m)	#65.2	14.4	6.1	34.5	m2.6	23.1	m22.3	m142.2
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	302	568	402	565	131	2083	273	2035
Starvation Cap Reductn	0	0	0	0	0	309	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	0.72	0.14	0.04	0.39	0.20	0.55	0.51	0.70

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Scenario B 2031 PM Queuing Results
 29: Elizabeth St & Lakeshore Rd

9/30/2015



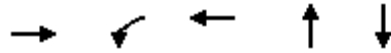
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1443	1389	73	142	57	108
v/c Ratio	0.65	0.66	0.41	0.52	0.52	0.39
Control Delay	2.4	5.7	43.8	30.2	54.8	24.0
Queue Delay	4.1	1.2	0.0	0.0	0.0	0.0
Total Delay	6.5	6.9	43.8	30.2	54.8	24.0
Queue Length 50th (m)	2.4	22.2	12.0	14.6	9.6	8.8
Queue Length 95th (m)	m26.5	101.3	22.6	29.5	20.1	21.4
Internal Link Dist (m)	97.7	95.5		57.3		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2207	2109	261	373	158	376
Starvation Cap Reductn	669	0	0	0	0	0
Spillback Cap Reductn	0	459	0	0	0	8
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.84	0.28	0.38	0.36	0.29

Intersection Summary

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

Scenario B 2031 PM Queuing Results
 35: Hurontario St & Eaglewood Blvd

9/30/2015



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	143	49	51	1475	1787
v/c Ratio	0.60	0.22	0.16	0.68	0.98
Control Delay	46.1	36.2	12.4	18.7	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	36.2	12.4	18.7	33.4
Queue Length 50th (m)	22.5	7.6	0.8	107.2	134.0
Queue Length 95th (m)	37.7	15.9	9.1	124.6	#215.1
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	322	308	410	2182	1826
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.16	0.12	0.68	0.98

Intersection Summary

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

Scenario C 2031 AM Queuing Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	497	1334	10	36	972	302	10	181	266	191	328
v/c Ratio	0.96	0.61	0.01	0.32	0.82	0.57	0.04	0.34	0.91	0.38	0.53
Control Delay	56.7	13.5	0.2	46.8	50.2	26.4	35.4	39.2	77.2	41.0	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	56.7	13.5	0.2	46.8	50.2	26.4	35.4	39.2	77.2	41.0	13.7
Queue Length 50th (m)	102.9	118.3	0.0	7.1	123.3	36.4	1.8	34.0	38.4	27.3	24.3
Queue Length 95th (m)	m#159.6	98.3	m0.0	16.9	141.5	61.5	5.7	50.9	#100.6	55.4	38.5
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	519	2199	862	112	1185	528	273	563	312	534	642
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	79
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	0.96	0.61	0.01	0.32	0.82	0.57	0.04	0.32	0.85	0.36	0.58

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Scenario C 2031 AM Queuing Results
 6: Stavebank Rd & Lakeshore Rd

9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2038	1355	73	60	8	191
v/c Ratio	0.86	0.81	0.82	0.25	0.05	0.67
Control Delay	17.1	6.2	114.1	33.8	51.9	40.7
Queue Delay	0.5	0.3	0.0	0.0	0.0	0.0
Total Delay	17.6	6.5	114.1	33.8	51.9	40.7
Queue Length 50th (m)	179.0	18.6	18.0	7.2	1.8	23.2
Queue Length 95th (m)	224.1	50.0	#41.2	19.7	6.5	46.9
Internal Link Dist (m)	79.6	97.7		79.2		96.9
Turn Bay Length (m)						
Base Capacity (vph)	2365	1683	104	275	203	316
Starvation Cap Reductn	0	56	0	0	0	0
Spillback Cap Reductn	83	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.83	0.70	0.22	0.04	0.60

Intersection Summary

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

Scenario C 2031 AM Queuing Results
 10: Hurontario St & High St

9/30/2015



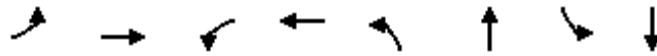
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	133	58	19	848	20	763
v/c Ratio	0.50	0.21	0.04	0.35	0.05	0.32
Control Delay	23.2	14.4	7.0	8.6	5.6	5.8
Queue Delay	1.3	0.3	0.0	0.4	0.0	0.0
Total Delay	24.5	14.7	7.0	9.0	5.6	5.8
Queue Length 50th (m)	9.3	2.4	1.3	55.4	1.1	30.2
Queue Length 95th (m)	21.0	9.6	m2.6	m68.7	m2.8	53.2
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	487	534	428	2434	402	2373
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	204	222	0	937	0	38
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.19	0.04	0.57	0.05	0.33

Intersection Summary

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

Scenario C 2031 AM Queuing Results
 13: Hurontario St & Park St

9/30/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	306	91	12	288	102	1018	302	1269
v/c Ratio	0.80	0.17	0.10	0.77	0.67	0.69	0.79	0.66
Control Delay	53.6	14.1	55.9	24.3	75.8	53.5	41.4	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	11.5	0.0	0.0
Total Delay	53.6	14.1	55.9	24.3	75.8	65.0	41.4	20.9
Queue Length 50th (m)	64.5	6.3	2.9	7.3	25.4	133.4	48.9	87.3
Queue Length 95th (m)	69.7	13.8	7.6	24.2	#50.8	146.6	#83.8	121.2
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	414	703	214	467	153	1483	384	1917
Starvation Cap Reductn	0	0	0	0	0	450	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	0.74	0.13	0.06	0.62	0.67	0.99	0.79	0.66

Intersection Summary

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

Scenario C 2031 AM Queuing Results
 29: Elizabeth St & Lakeshore Rd

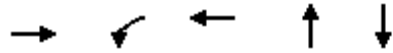
9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2030	1273	67	140	41	85
v/c Ratio	0.84	0.75	0.45	0.68	0.55	0.37
Control Delay	5.9	36.9	65.6	62.3	84.5	19.6
Queue Delay	0.9	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	36.9	65.6	62.3	84.5	19.6
Queue Length 50th (m)	5.1	175.8	16.0	27.1	9.9	2.7
Queue Length 95th (m)	9.2	193.3	29.7	47.1	21.6	17.0
Internal Link Dist (m)	97.7	95.5		59.1		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2405	1696	187	249	92	272
Starvation Cap Reductn	158	0	0	0	0	0
Spillback Cap Reductn	0	6	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.75	0.36	0.56	0.45	0.31
Intersection Summary						

Scenario C 2031 AM Queuing Results
 35: Hurontario St & Eaglewood Blvd

9/30/2015



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	90	53	130	1577	1541
v/c Ratio	0.66	0.36	0.53	0.72	0.72
Control Delay	70.7	62.0	34.2	6.7	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	62.0	34.2	6.7	10.6
Queue Length 50th (m)	18.8	12.7	13.8	30.2	87.2
Queue Length 95th (m)	34.5	23.7	31.6	33.2	133.8
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	189	209	314	2199	2155
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.25	0.41	0.72	0.72
Intersection Summary					

Scenario C 2031 PM Queuing Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	362	996	13	63	1058	274	10	216	312	228	389
v/c Ratio	0.97	0.51	0.02	0.36	0.89	0.47	0.03	0.35	0.89	0.36	0.54
Control Delay	67.6	22.3	2.5	33.0	42.3	13.9	21.8	24.8	43.9	14.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	67.6	22.3	2.5	33.0	42.3	13.9	21.8	24.8	43.9	14.1	4.1
Queue Length 50th (m)	-58.9	66.6	0.0	8.5	93.4	14.8	1.2	26.1	31.4	12.5	0.0
Queue Length 95th (m)	#110.7	93.1	m0.0	19.9	#126.7	35.6	4.4	43.1	#91.8	27.2	2.6
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	373	1947	782	174	1192	581	360	655	371	672	743
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	82
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	0.97	0.51	0.02	0.36	0.89	0.47	0.03	0.33	0.84	0.34	0.59

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Scenario C 2031 PM Queuing Results
 6: Stavebank Rd & Lakeshore Rd

9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1610	1537	140	95	26	282
v/c Ratio	1.23	1.03	1.18	0.27	0.11	0.87
Control Delay	129.7	51.7	176.1	20.9	34.9	60.6
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	129.8	51.7	176.1	20.9	34.9	60.6
Queue Length 50th (m)	~187.9	~105.7	~29.9	6.9	3.9	42.8
Queue Length 95th (m)	#227.1	#192.0	#63.9	19.4	10.5	#84.2
Internal Link Dist (m)	80.7	97.7		68.6		96.9
Turn Bay Length (m)						
Base Capacity (vph)	1311	1486	119	349	245	325
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	37	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.26	1.03	1.18	0.27	0.11	0.87

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Scenario C 2031 PM Queuing Results
 10: Hurontario St & High St

9/30/2015



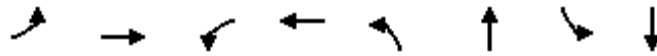
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	183	72	19	865	26	1025
v/c Ratio	0.67	0.24	0.06	0.36	0.07	0.43
Control Delay	42.9	16.8	11.2	12.5	2.1	1.8
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.3
Total Delay	42.9	16.8	11.2	13.0	2.1	2.0
Queue Length 50th (m)	26.1	4.1	1.6	50.8	0.3	5.6
Queue Length 95th (m)	42.7	13.5	m4.0	m67.4	m0.5	9.6
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	446	487	321	2408	370	2397
Starvation Cap Reductn	0	0	0	977	0	671
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.15	0.06	0.60	0.07	0.59

Intersection Summary

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

Scenario C 2031 PM Queuing Results
 13: Hurontario St & Park St

9/30/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	346	126	15	222	40	975	138	1460
v/c Ratio	0.92	0.20	0.03	0.36	0.53	0.55	0.68	0.85
Control Delay	61.4	14.1	19.9	17.3	37.4	9.3	40.6	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	61.4	14.1	19.9	17.3	37.4	9.5	40.6	27.1
Queue Length 50th (m)	56.1	9.0	1.7	18.6	1.7	22.6	18.8	115.2
Queue Length 95th (m)	#103.2	20.1	5.4	35.2	#21.5	26.5	#49.3	#147.8
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	401	667	473	652	75	1757	202	1721
Starvation Cap Reductn	0	0	0	0	0	215	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	0.86	0.19	0.03	0.34	0.53	0.63	0.68	0.85

Intersection Summary

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

Scenario C 2031 PM Queuing Results
 29: Elizabeth St & Lakeshore Rd

9/30/2015



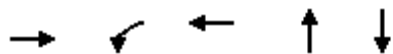
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1460	1440	73	142	57	118
v/c Ratio	0.66	0.68	0.41	0.52	0.52	0.44
Control Delay	2.5	6.1	43.9	30.8	54.8	27.4
Queue Delay	5.5	1.8	0.0	0.0	0.0	0.0
Total Delay	8.0	7.9	43.9	30.8	54.8	27.5
Queue Length 50th (m)	2.5	23.6	12.0	15.0	9.6	11.4
Queue Length 95th (m)	m26.0	m114.1	22.6	29.8	20.1	24.6
Internal Link Dist (m)	97.7	95.5		57.3		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2199	2113	259	371	158	370
Starvation Cap Reductn	673	0	0	0	0	0
Spillback Cap Reductn	0	481	0	0	0	7
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.88	0.28	0.38	0.36	0.33

Intersection Summary

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

Scenario C 2031 PM Queuing Results
 35: Hurontario St & Eaglewood Blvd

9/30/2015



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	143	49	51	1599	1814
v/c Ratio	0.67	0.24	0.18	0.70	0.99
Control Delay	60.3	45.8	15.1	11.5	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	60.3	45.8	15.1	11.5	37.2
Queue Length 50th (m)	28.2	9.4	0.9	89.3	~174.5
Queue Length 95th (m)	46.5	19.3	10.7	126.6	#251.3
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	268	258	349	2299	1824
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.19	0.15	0.70	0.99

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Scenario D 2031 AM Queuing Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	498	1334	10	36	972	306	10	181	275	191	328
v/c Ratio	0.98	0.61	0.01	0.32	0.82	0.58	0.04	0.33	0.91	0.37	0.52
Control Delay	62.2	13.6	0.2	46.9	50.5	26.8	34.8	38.4	88.0	50.3	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	62.2	13.6	0.2	46.9	50.5	26.8	34.8	38.4	88.0	50.3	16.5
Queue Length 50th (m)	105.4	117.7	0.0	7.1	123.3	37.2	1.8	33.6	56.1	36.4	24.2
Queue Length 95th (m)	m#162.3	98.3	m0.0	16.9	141.5	62.4	5.7	50.4	#103.5	61.9	46.1
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	506	2175	853	111	1179	526	282	576	321	546	649
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	80
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	0.98	0.61	0.01	0.32	0.82	0.58	0.04	0.31	0.86	0.35	0.58

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Scenario D 2031 AM Queuing Results
 6: Stavebank Rd & Lakeshore Rd

9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2042	1367	73	60	8	192
v/c Ratio	0.86	0.81	0.83	0.25	0.05	0.68
Control Delay	17.3	6.9	114.9	33.8	51.9	41.8
Queue Delay	0.5	0.3	0.0	0.0	0.0	0.0
Total Delay	17.8	7.2	114.9	33.8	51.9	41.8
Queue Length 50th (m)	181.2	23.4	18.0	7.2	1.8	23.9
Queue Length 95th (m)	224.8	51.5	#41.3	19.7	6.5	48.0
Internal Link Dist (m)	79.6	97.7		79.2		96.9
Turn Bay Length (m)						
Base Capacity (vph)	2364	1679	103	275	203	315
Starvation Cap Reductn	0	54	0	0	0	0
Spillback Cap Reductn	80	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.84	0.71	0.22	0.04	0.61

Intersection Summary

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

Scenario D 2031 AM Queuing Results
 10: Hurontario St & High St

9/30/2015



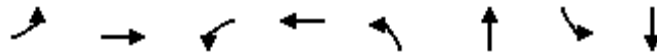
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	133	58	19	852	20	773
v/c Ratio	0.50	0.21	0.05	0.35	0.05	0.33
Control Delay	23.2	14.4	7.2	8.8	6.4	6.7
Queue Delay	1.3	0.3	0.0	0.4	0.0	0.0
Total Delay	24.5	14.7	7.2	9.2	6.4	6.7
Queue Length 50th (m)	9.3	2.4	1.3	55.5	1.0	30.1
Queue Length 95th (m)	21.0	9.6	m2.7	m68.9	m2.8	65.7
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	487	534	422	2434	399	2373
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	206	225	0	976	0	83
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.19	0.05	0.58	0.05	0.34

Intersection Summary

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

Scenario D 2031 AM Queuing Results
 13: Hurontario St & Park St

9/30/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	351	101	12	288	107	1018	302	1282
v/c Ratio	0.94	0.19	0.10	0.77	0.50	0.70	0.76	0.76
Control Delay	74.4	13.9	56.0	24.3	37.4	54.6	38.6	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	19.4	0.0	0.0
Total Delay	74.4	13.9	56.0	24.3	37.4	74.1	38.6	27.7
Queue Length 50th (m)	77.8	6.4	2.9	7.3	16.5	133.9	48.5	95.6
Queue Length 95th (m)	#89.5	14.8	7.6	24.2	29.6	146.2	77.0	121.4
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	375	657	213	467	212	1462	414	1684
Starvation Cap Reductn	0	0	0	0	0	462	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	0.94	0.15	0.06	0.62	0.50	1.02	0.73	0.76

Intersection Summary

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

Scenario D 2031 AM Queuing Results
 29: Elizabeth St & Lakeshore Rd

9/30/2015

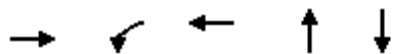


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2034	1284	67	140	41	86
v/c Ratio	0.85	0.76	0.45	0.68	0.55	0.37
Control Delay	6.0	37.4	65.8	62.3	84.5	19.4
Queue Delay	1.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	37.5	65.8	62.3	84.5	19.4
Queue Length 50th (m)	5.1	169.8	16.0	27.1	9.9	2.7
Queue Length 95th (m)	9.7	194.7	29.8	47.1	21.6	17.0
Internal Link Dist (m)	97.7	95.5		59.1		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2403	1696	186	249	92	273
Starvation Cap Reductn	156	0	0	0	0	0
Spillback Cap Reductn	0	10	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.76	0.36	0.56	0.45	0.32

Intersection Summary

Scenario D 2031 AM Queuing Results
 35: Hurontario St & Eaglewood Blvd

9/30/2015



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	90	53	130	1619	1554
v/c Ratio	0.66	0.36	0.55	0.74	0.72
Control Delay	70.7	62.0	37.0	6.6	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	62.0	37.0	6.6	10.9
Queue Length 50th (m)	18.8	12.7	15.3	29.7	89.7
Queue Length 95th (m)	34.5	23.7	33.1	m33.0	137.6
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	189	209	309	2202	2144
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.25	0.42	0.74	0.72

Intersection Summary

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

Scenario D 2031 PM Queuing Results
 3: St Lawrence Dr/Hurontario St & Lakeshore Rd

9/30/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	365	996	13	63	1058	281	10	216	315	228	389
v/c Ratio	0.98	0.51	0.02	0.36	0.89	0.48	0.03	0.35	0.89	0.36	0.54
Control Delay	71.2	22.4	2.5	33.0	42.3	14.0	21.8	24.7	44.1	14.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	71.2	22.4	2.5	33.0	42.3	14.0	21.8	24.7	44.1	14.2	4.0
Queue Length 50th (m)	-60.1	66.7	0.0	8.5	93.4	15.3	1.2	26.1	31.4	12.5	0.0
Queue Length 95th (m)	#112.2	93.2	m0.0	19.9	#126.7	36.5	4.4	43.1	#93.4	27.6	2.5
Internal Link Dist (m)		49.6			158.9			53.2		96.2	
Turn Bay Length (m)			35.0	40.0		35.0	25.0		30.0		
Base Capacity (vph)	371	1941	780	174	1192	584	361	655	372	672	743
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	82
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	0.98	0.51	0.02	0.36	0.89	0.48	0.03	0.33	0.85	0.34	0.59

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Scenario D 2031 PM Queuing Results
 6: Stavebank Rd & Lakeshore Rd

9/30/2015



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1619	1542	140	95	26	282
v/c Ratio	1.24	1.04	1.18	0.27	0.11	0.87
Control Delay	133.1	53.9	176.1	21.2	34.9	61.2
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	133.2	53.9	176.1	21.2	34.9	61.2
Queue Length 50th (m)	~189.9	~153.1	~29.9	7.1	3.9	43.0
Queue Length 95th (m)	#229.1	#193.6	#63.9	19.6	10.5	#84.5
Internal Link Dist (m)	80.7	97.7		68.6		96.9
Turn Bay Length (m)						
Base Capacity (vph)	1310	1481	119	348	245	324
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	38	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.27	1.04	1.18	0.27	0.11	0.87

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Scenario D 2031 PM Queuing Results
 10: Hurontario St & High St

9/30/2015



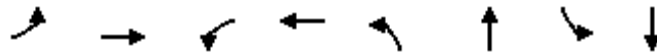
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	183	72	19	875	26	1028
v/c Ratio	0.67	0.24	0.06	0.36	0.07	0.43
Control Delay	42.9	16.8	11.2	12.6	2.2	1.8
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.3
Total Delay	42.9	16.8	11.2	13.1	2.2	2.1
Queue Length 50th (m)	26.1	4.1	1.6	51.5	0.3	6.0
Queue Length 95th (m)	42.7	13.5	m3.9	m68.0	m0.5	m9.7
Internal Link Dist (m)	58.5	69.2		96.2		96.1
Turn Bay Length (m)			25.0		30.0	
Base Capacity (vph)	446	487	320	2408	367	2397
Starvation Cap Reductn	0	0	0	974	0	690
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.15	0.06	0.61	0.07	0.60

Intersection Summary

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

Scenario D 2031 PM Queuing Results
 13: Hurontario St & Park St

9/30/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	367	129	15	222	50	975	138	1499
v/c Ratio	0.94	0.20	0.03	0.35	0.68	0.57	0.71	0.89
Control Delay	65.0	14.1	19.9	17.0	55.8	9.9	43.7	30.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	65.0	14.1	19.9	17.0	55.8	10.1	43.7	30.2
Queue Length 50th (m)	61.1	9.4	1.7	18.6	7.3	22.5	19.0	120.3
Queue Length 95th (m)	#111.5	20.7	5.4	35.2	#27.0	26.3	#50.1	#167.1
Internal Link Dist (m)		33.4		72.0		96.1		287.8
Turn Bay Length (m)	55.0		50.0		35.0		60.0	
Base Capacity (vph)	403	666	472	652	74	1720	195	1685
Starvation Cap Reductn	0	0	0	0	0	214	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.19	0.03	0.34	0.68	0.65	0.71	0.89

Intersection Summary

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

Scenario D 2031 PM Queuing Results
 29: Elizabeth St & Lakeshore Rd

9/30/2015



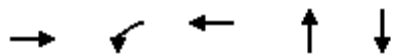
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1469	1446	73	142	57	118
v/c Ratio	0.67	0.68	0.41	0.52	0.52	0.44
Control Delay	2.6	6.2	43.9	31.1	54.8	27.7
Queue Delay	6.0	2.0	0.0	0.0	0.0	0.0
Total Delay	8.6	8.2	43.9	31.1	54.8	27.8
Queue Length 50th (m)	2.5	24.0	12.0	15.1	9.6	11.5
Queue Length 95th (m)	m25.7	m114.3	22.6	30.0	20.1	24.8
Internal Link Dist (m)	97.7	95.5		57.3		96.5
Turn Bay Length (m)						
Base Capacity (vph)	2201	2111	259	371	158	370
Starvation Cap Reductn	674	0	0	0	0	0
Spillback Cap Reductn	0	485	0	0	0	7
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.89	0.28	0.38	0.36	0.33

Intersection Summary

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

Scenario D 2031 PM Queuing Results
 35: Hurontario St & Eaglewood Blvd

9/30/2015



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	143	49	51	1620	1851
v/c Ratio	0.67	0.24	0.18	0.71	1.02
Control Delay	60.3	45.8	15.1	11.8	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	60.3	45.8	15.1	11.8	43.9
Queue Length 50th (m)	28.2	9.4	0.9	91.8	~214.1
Queue Length 95th (m)	46.5	19.3	10.7	130.5	#260.5
Internal Link Dist (m)	38.5		105.3	287.8	41.4
Turn Bay Length (m)					
Base Capacity (vph)	268	258	349	2297	1816
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.19	0.15	0.71	1.02

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.