Port Hope Residential Subdivision Transportation Impact Study

Paradigm Transportation Solutions Limited

July 2017

Project Summary

Project Number
170014

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Port Hope Residential Subdivision Transportation Impact Study

Final Report

Signatures and Seals

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Limitations:
This licence is subject to the limitations as detailed on the certificate.
Association of Professional Engineers of Ontario
5 July 2017

Signature

Engineer's Seal

Disclaimer

Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study by Mason Homes for proposed development generally located west of Toronto Road-Victoria Street South, and south and north of Lakeshore Road, in the Municipality of Port Hope. The subject lands, which are referred to as “Phases 4 and 5” and “Partial Development North of Lakeshore Road”, are part of a larger residential community that was initially proposed by AON Inc. and subsequently approved by the Ontario Municipal Board (OMB) in the early 2000’s.

This Transportation Impact Study (TRIS) includes an analysis of existing traffic conditions, a description of the proposed development, traffic forecasts with and without the proposed development for a horizon year of 2022 (five years from date of study), and recommendations related to future transportation requirements, if needed, to support the development.

Proposed Development

Phases 4 and 5 lands are located south of Lakeshore Road and west of Victoria Street South. The subject site is currently occupied by the Port Hope Golf and Country Club, and a former residential/farm property now in the ownership of Mason Homes. The adjacent land uses are primarily recreational (Port Hope Golf and Country Club), and residential.

The proposed development in Phases 4 and 5 consists of 438 single detached homes. Vehicular access to the adjacent road network is proposed via a new street connection (Strachan Street) to Victoria Street South, and via the existing Strachan Street to the west of the subject site and its connection to Lakeshore Road. The site is estimated to be fully built-out and occupied by 2022.

The remainder of the larger development area is located north of Lakeshore Road, west of Toronto Road, and south of Clifton Road. Partial development for approved lands uses in this area may also occur by 2022. Therefore, to address the OMB approval condition requiring five-year update traffic studies, the development of several blocks in this area has also been considered in the current TRIS.

The development on the subject lands north of Lakeshore Road would include low, medium, and high density residential (14, 45, and 165 units, respectively), institutional (180-unit nursing-retirement home), and commercial land uses (1,000 square metres gross floor area with eight residential units on a second storey). Vehicular access to the adjacent road network would be provided by a northerly extension of Strachan Street and the existing Lakeshore Road/Strachan Street intersection.

Conclusions

The conclusions of the TRIS are as follows:

- Under base year 2017 conditions, the study area intersections operate at good overall levels of service (LOS C or better), and well within capacity;
- Under 2022 future background conditions, with future increases in traffic related to general background growth, the operations of the study area intersections are forecast to operate at similar levels of service to 2017 base year conditions (LOS C or better), and well within capacity;
- Under 2022 future total traffic conditions, with the addition of site generated traffic with Phases 4 and 5 alone or with the additional partial development of lands north of Lakeshore Road, the operations of the study area intersections are forecast to operate at similar levels of service to 2022 background conditions (LOS C or better) and well within capacity. The intersection of Lakeshore Road/Strachan Street, and Victoria Street South/Strachan Street are both forecast to operate at good overall levels of service and well within capacity;
- No road capacity or traffic control device improvements would be required on the external road network to accommodate the site generated traffic;
- The proposed local road intersections with the east-west extension of Strachan Street (collector road) provide sufficient spacing and sightlines to meet accepted guidelines, and all roads would have appropriate traffic volumes for their functional classifications;
- The proposed roundabout at the internal intersection of Strachan Street/Street B-Street D would have more than sufficient capacity to accommodate the site traffic and would serve as a traffic calming feature to discourage higher travel speeds through the existing and new residential areas south of Lakeshore Road;
- To provide a desirable level of public transit coverage for the proposed new development would require modifying Port Hope Transit's Route A to run along the new east-west section of Strachan Street and Lakeshore Road. Similarly, if the Municipality replaced the current fixed route transit system with an on-demand service in the future, the proposed internal road network would facilitate ease of access for transit vehicles;
- Pedestrian travel would be accommodated by the proposed sidewalk network within the development and its connections to the public sidewalk system. It is anticipated that at some future date the Municipality will complete the sidewalk system on Lakeshore Road as envisioned in section 13.3.1 and Figure 1 ("Typical Road Cross Section") of the Official Plan;

- Bicycle travel would be accommodated by the proposed collector (Strachan Street) and local roads (all other streets) within the development. The proposed Strachan Street cross section within Phases 4 and 5 could accommodate the delineation of painted on-road bicycle lanes as envisioned in the Municipality's 2014 "Road-Related Urban Cycling Facility Implementation Strategy', and this would facilitate the diversion of cycling traffic from the parallel, but physically constrained, Lakeshore Road corridor;
- The preparation of a Traffic Management Plan, which would be subject to review by the Municipality and the public, would assist in minimizing potential traffic conflicts and mitigating other adverse impacts related to Phases 4 and 5 construction activities; and
- The subject study addresses the five-year traffic impact of the development that is anticipated to occur, or has potential to occur, within the larger development area previously approved by the Ontario Municipal Board, and therefore, serves as the update traffic study required under the conditions of the Board's overall approval.

Recommendations

The recommendations of the TRIS are as follows:

- The proposed development of Phases 4 and 5, within the larger residential community that was initially proposed by AON Inc., be approved from a transportation perspective;
- Similarly, the potential partial development of lands north of Lakeshore Road be approved from a transportation perspective subject to the condition that emergency and service vehicle access requirements are to be addressed through subsequent steps in the development approval process;
- The subject study be accepted as the required five-year update to meet the conditions of approval for the overall development as established by the Ontario Municipal Board (OMB) in the early 2000's;
- A Traffic Management Plan be developed and reviewed with the Municipality and the public prior to the beginning of Phases 4 and 5 subdivision construction activities;
- The Municipality of Port Hope make the appropriate changes to transit routing, or to the transit system in general, to ensure that the subject lands would have a desirable level of access to public transit; and
- On-road bicycle lanes be included within the proposed cross section for Strachan Street to promote active transportation.

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Appendices

Figures

Tables

1 Introduction

1.1 Background

Paradigm Transportation Solutions Limited (Paradigm) was retained to complete a Transportation Impact Study (TRIS) for proposed development in the Municipality of Port Hope, Ontario. **Figure 1.1** illustrates the location of the subject lands, which are referred to as "Phases 4 and 5" and "Partial Development North of Lakeshore Road". These lands are part of a larger residential community that was initially proposed by AON Inc. and subsequently approved by the Ontario Municipal Board (OMB) in the early 2000's.

The original traffic study conducted to identify the transportation requirements of the new residential community was the April 2002 Tranplan Associates report, "Port Hope West Retirement Community Traffic Impact Study, Port Hope, Ontario", which was prepared for AON Inc. This study addressed the longer-term road network improvements for the phased development of 2,150 residential units, which were to be marketed towards "empty-nesters", independent seniors, and assisted living facilities for seniors. As a condition of the OMB approval for the development, a requirement was put in place for the developer to conduct updated traffic studies every five years (or every 500 units, whichever comes first).

Full development south of Lakeshore Road had originally been anticipated for 2010, but a much slower pace of development has occurred. In keeping with the originally proposed construction phasing, partial development has occurred first on the lands south of Lakeshore Road with Phases 1, 2, and 3 now approaching full build-out and occupancy (approximately 260 of 300 residential units built/occupied). The most recent update traffic study was conducted in 2010 by Tranplan Associates ("Penryn Village Residential Subdivision, Update Traffic Study, Municipality of Port Hope"), and it addressed this area of the overall development.

Phases 4 and 5 are also located south of Lakeshore Road and immediately west of Victoria Street South. The eastern portion of the subject lands is currently occupied by the Port Hope Golf & Country Club and the western portion by a former residential/farm property now in the ownership of Mason Homes. The proposed development is for low density residential land use (438 single detached homes), and the subdivision is expected to be built-out and fully occupied by 2022.

The remainder of the larger development area is located north of Lakeshore Road, west of Toronto Road, and south of Clifton Road. There is also potential for a portion of these lands to develop by 2022. Therefore, to address the OMB requirement regarding traffic study updates, several blocks in this area ("Partial Development North of Lakeshore Road") have also been considered in the current TRIS. The development on the subject lands north of Lakeshore Road would include low, medium, and high density

residential (14, 45, and 165 units, respectively), institutional (180-unit nursing-retirement home), and commercial land uses (1,000 square metres gross floor area with eight residential units on a second storey).

1.2 Purpose

As noted above, the most recent update traffic study was completed in 2010 for a horizon year of 2016, and the first three phases of development that were assessed in that study are now close to reaching full build-out. Therefore, the purpose of the current TRIS is twofold:

- To be a supporting document for the Phases 4 and 5 development application; and
- To satisfy the OMB condition for five-year traffic study updates, which in this case relates to the proposed development in Phases 4 and 5 as well as the potential for additional Zoning By-law approved development also occurring by 2022 in the area north of Lakeshore Road.

1.3 Scope and Methodology

A meeting was held with staff of the Municipality of Port Hope on 25 January 2017 to discuss the scope and methodology of the TRIS. The information exchanged at that meeting, and obtained through a review of the Municipality of Port Hope's Traffic Study Guidelines[1], has been used as the basis for this study.

The scope is as follows:

- A study area comprising the following key intersections (also illustrated in **Figure 1.1**):
  - Marsh Road and Rapley Boulevard;
  - Toronto Road and Marsh Road-Jocelyn Street;
  - Toronto Road and Victoria Street North;
  - Toronto Road/Victoria Street South and Ridout Street;
  - Victoria Street South and Strachan Street;
  - Lakeshore Road and Strachan Street;
- Traffic forecasts for a five-year horizon year (2022);
- Analysis time periods of the weekday AM and PM peak hours;
- Consideration of transit and active transportation modes; and
- A review of the internal street system.

[1] Port Hope Development Guide. Municipality of Port Hope. Section 4.1: Traffic Study. 30 April 2014.

The methodology is as follows:

- Establish existing transportation conditions for the road network, transit system, and active transportation facilities;
- Develop AM and PM peak hour background traffic forecasts for a 2022 horizon year based on the application of a growth rate;
- Develop AM and PM peak hour site generated traffic forecasts for the full build-out of Phases 4 and 5, and separately for partial development of lands north of Lakeshore Road;
- Combine the background traffic forecasts with the site generated traffic forecasts to determine the total future traffic volumes for the following two scenarios:
  - Scenario A - development of Phases 4 and 5 exclusively;
  - Scenario B - development of Phases 4 and 5, and the subject lands north of Lakeshore Road;
- Analyze the peak hour operation of the study area intersections for the future background and total traffic peak hour forecasts, and determine the net impact of site traffic on operational performance;
- Identify gaps in the transit and active transportation networks as related to the subject development; and
- Determine the required improvements to the transportation system to address any identified deficiencies.

NTS
Image Source: openstreetmap.org (2017)

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Location of Subject Lands and Study Area

2 Proposed Development

2.1 Phases 4 and 5

As noted previously, the Phases 4 and 5 lands are located south of Lakeshore Road and west of Victoria Street South. The adjacent development includes newer residential to the west (previous phases of the new residential community) and older, established residential neighbourhoods to the north and east. The Port Hope Golf and Country Club golf course lands are to the south.

The proposed development in Phases 4 and 5 consists of 438 single detached homes. **Figure 2.1** illustrates the concept site plan.

Vehicular access between the development and the existing arterial and collector road network will be provided by the construction of a new section of Strachan Street. This new section will facilitate a connection to the west where part of Strachan Street was built to serve Phases 1, 2, and 3 and to provide access to Lakeshore Road, and a connection to the east to an intersection with Victoria Street South directly opposite an existing, older section of Strachan Street.

Consistent with its designation in the Municipality's Official Plan[2], Strachan Street will provide a collector road function. The proposed cross section within a 23.0 metre right-of-way would be constructed to the Municipality's collector road standard of providing one travel lane in each direction, bike lanes adjacent to the travel lanes, and boulevards and sidewalks on both sides of the road. The key dimensions of the cross section would be as follows:

- 10.0 metre pavement width, which could accommodate on-street bike lanes on both sides of either 1.5 or 1.8 metre width;
- 2.5 metre parking layby on one side on some section (elaborate on where these are and their purpose); and
- 1.5 metre sidewalks on both sides.

The remaining roads in the subdivision would be constructed to local road standards with the following design characteristics:

- Range of right-of-way including 14.5 metres, 17.0 metres, and 20.0 metres;
- Corresponding pavement widths of 7.1 metres (one-way as noted in typical cross section drawing?), 8.6 metres, and 8.5 metres; and

[2] Municipality of Port Hope. Official Plan. Schedule D-1: Transportation System Urban Area Detail. 10 August 2016.

- Each local road cross section would include a 2.5 metre parking layby and a 1.5 metre sidewalk on one side of the travelling lanes.

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Site Plan

Port Hope Residential Development TRIS
17-000014

Figure 2.1

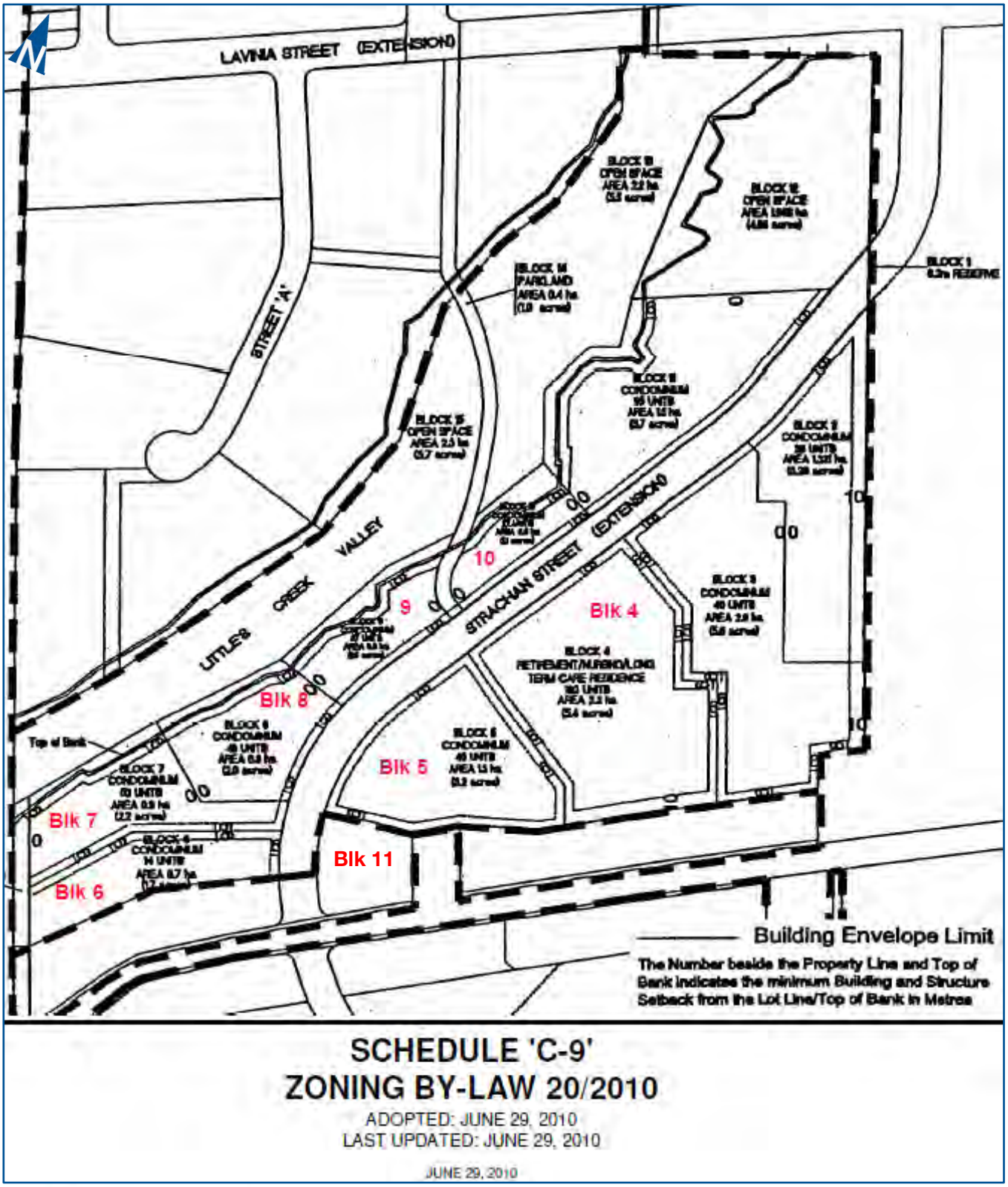
2.2 Partial Development North of Lakeshore Road

Based on information provided by WND Associates (planning consultant), it was assumed that development could also occur by 2022 in Blocks 4 to 11 inclusive on the lands located immediately north of the Lakeshore Road/Strachan Street intersection. This represents partial development of the approved land uses north of Lakeshore Road and south of the corridor for the future Lavinia Street extension. **Figure 2.2** illustrates the location of the subject lands and the development blocks under consideration. Vehicular access to this area would be provided by the planned northerly extension of Strachan Street.

The approved land uses in Blocks 4 to 11 according to Zoning By-law 20/2010 (Schedules 'C-8' and 'C-9') would include:

- 14 low density residential units (Block 6);
- 45 medium density residential units (Block 5);
- 165 high density residential units (Blocks 7, 8, 9, and 10);
- 180 units in an "institutional urban" zone with permitted uses such as a nursing home, long term care facility, retirement home. For the purposes of the TRIS, and to be consistent with the land uses stated in the 2010 Update Traffic Study, 75 Assisted Living units and 105 Retirement Residence units in a combined building were assumed (Block 4); and
- A mixed retail-commercial-residential development with 1,000 square metres (10,760 square feet) gross floor area of commercial (maximum under the Zoning By-law, and including up to 260 square metres gross leasable area for a retail store), and eight second floor residential units on the second storey.

It should be noted that the proposed development on these lands is being analyzed only to assess traffic impact on the external road network. It is recognized that since these lands are shown with the Strachan Street extension as the sole point of access, the need for alternative access for emergency and maintenance services will have to resolved at a later date.



Partial Development (Blocks 4 to 11) North of Lakeshore Road

3 Existing Conditions

3.1 Roads and Traffic Control

The characteristics of the existing roads and intersections in the study area are described as follows:

- **Jocelyn Street (Northumberland Road 70)** is an east-west, two-lane road that operates under the jurisdiction of the County of Northumberland. The road is classified as an arterial road in both the Official Plans of the Municipality of Port Hope[3] and the County[4]. Within the study area, the posted maximum speed limit is 50 kilometres per hour. A sidewalk is provided on the north side of the roadway, and bike lanes (paved shoulder) on the north and south sides of the road are provided approximately 300 and 135 metres east of Toronto Road, respectively;
- **Toronto Road** is a north-south, two-lane undivided road, with a centre two-way left turn lane that operates under the jurisdiction of the Municipality of Port Hope. The road is classified as an arterial in the Municipality's Official Plan. Within the study area, the posted maximum speed limit is 60 kilometres per hour. The posted maximum speed limit is reduced to 50 kilometres per hour in the vicinity of St. Anthony Catholic School. A sidewalk is provided on the east side of the road within the entirety of the study area. Parking is prohibited on both sides of the roadway between Ridout Street and Marsh Road-Jocelyn Street;
- **Lakeshore Road/Ridout Street** is an east-west, two-lane undivided road that operates under the jurisdiction of the Municipality of Port Hope. The road is classified as an arterial in the Municipality's Official Plan, and forms a signed segment of the Waterfront Trail. Within the study area, the posted maximum speed limit is 50 kilometres per hour. Sidewalks are provided on the north and south sides of the roadway terminating approximately 250 metres, and 130 metres, respectively west of Toronto Road. Bike lanes are not provided on either side of the roadway, and street parking is restricted on both sides from Shortt Street to 20 metres west of Baulch Road. Section C13.3.1 of the Official Plan is a special provision related to Lakeshore Road as related to the potential to alter the road allowance to a lesser standard in response to historical/cultural requirements;
- **Victoria Street North** is a north-south, two-lane undivided road that operates under the jurisdiction of the Municipality of Port Hope. The road is classified as a collector in the Municipality's Official Plan.

[3] Municipality of Port Hope. Official Plan. Schedule D-1: Transportation System Urban Area Detail. 26 September 2006.
[4] Northumberland County. Official Plan, Schedule C: Transportation. 10 November 2016.

Within the study area, the posted maximum speed limit is 50 kilometres per hour. Sidewalks are provided on both sides of the roadway. Parking is prohibited on both sides from Toronto Road to Charles Street.

- **Marsh Road** is an east-west, two-lane, undivided road that operates under the jurisdiction of the Municipality of Port Hope. The road is classified as a collector in the Municipality's Official Plan. Within the study area, the posted maximum speed limit is 50 kilometres per hour. Sidewalks are provided on both sides of the roadway, and parking is permitted on both sides of the roadway;
- **Victoria Street South** is a north-south, undivided road that operates under the jurisdiction of the Municipality of Port Hope. The road is classified as a collector road from Strachan Street to Ridout Street, and as a local road south of Strachan Street. The posted maximum speed limit is not posted and assumed to be 50 kilometres per hour as regulated in the Ontario Highway Traffic Act. A sidewalk is provided on the east side of the road. Parking is permitted on either side of the roadway;
- The intersection of Toronto Road/Marsh Road-Jocelyn Street (CR 70) is currently signalized and auxiliary left turn lanes are provided on each approach. An auxiliary right turn lane is provided on the westbound approach. Pedestrian push buttons are provided for pedestrians to cross Toronto Road and Marsh Road-Jocelyn Street (CR 70), and delineated crosswalks are provided on all approaches; and
- The intersection of Toronto Road/Ridout Street-Lakeshore Road is currently signalized and an auxiliary left turn lane is provided on the southbound approach, and an auxiliary right turn lane is provided on the westbound approach. Pedestrian push buttons are not installed at the intersection as the walk phase incorporated into the traffic control signal timing plan provide the walk phase automatically on a cycle-by-cycle basis. Delineated crosswalks are provided on all approaches.

Figure 3.1 illustrates the existing lane arrangements and traffic control devices at the study area intersections.

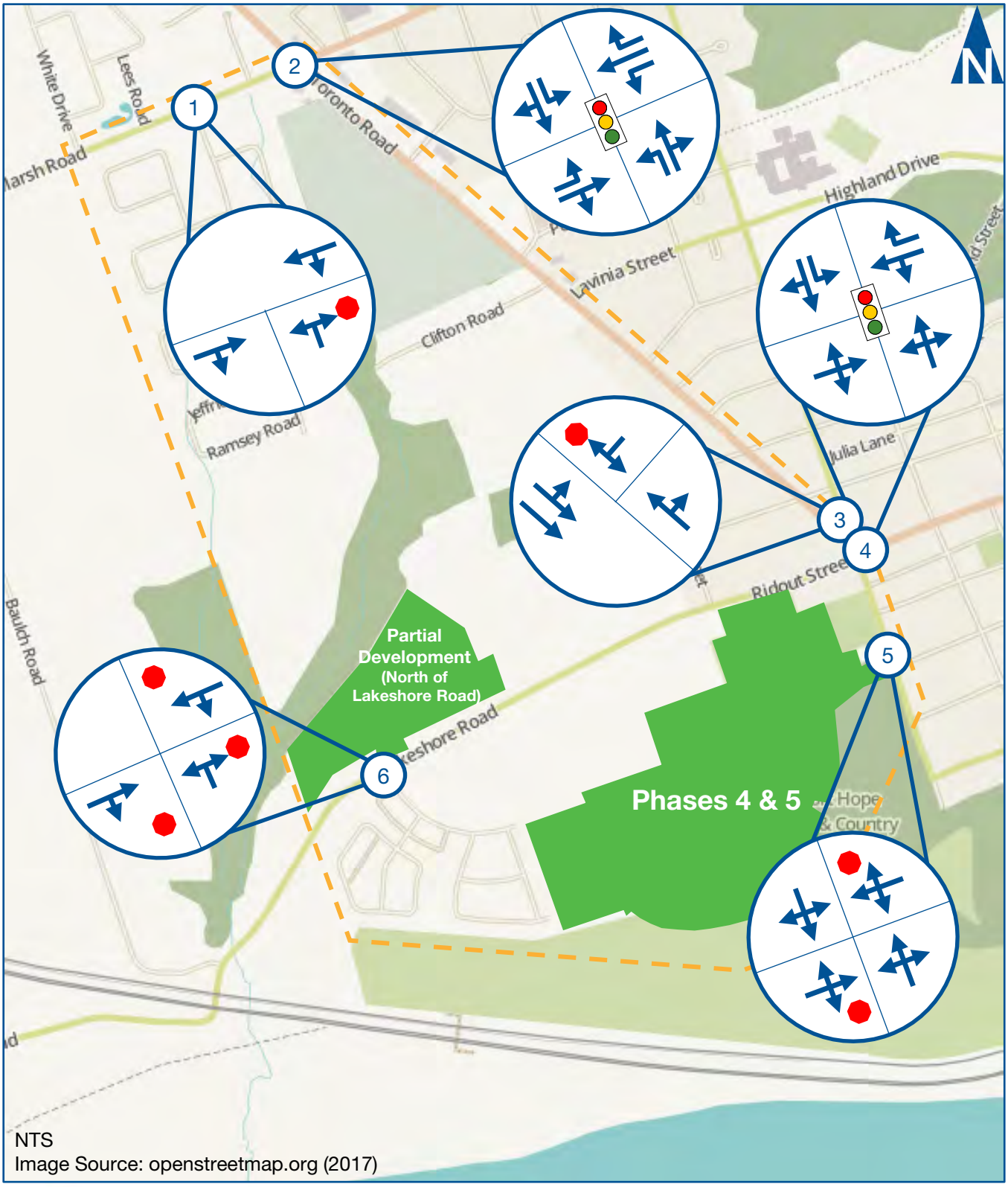


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Image Source: openstreetmap.org (2017)

Existing Lane Configurations and Traffic Control

3.2 Transit

Two public transit routes provide bus service within the urban area of the Municipality of Port Hope as well aa to the Town of Cobourg's Northumberland Mall, Walmart, and Northumberland Hills Hospital. **Figure 3.2** illustrates the existing transit routes, which include Route A, and Route B serving the west and east sides of the Municipality, respectively.

Route A originates and terminates at the Port Hope Town Hall, and within the study area, it runs along Toronto Road and Victoria Street South adjacent to the east boundary of the proposed development. Service is provided Monday to Friday from 7:00 AM to 8:00 AM and Saturday from 9:00 AM to 4:00 PM. Headways are approximately one hour during all service hours. Ho service is provided on Sundays or holidays.

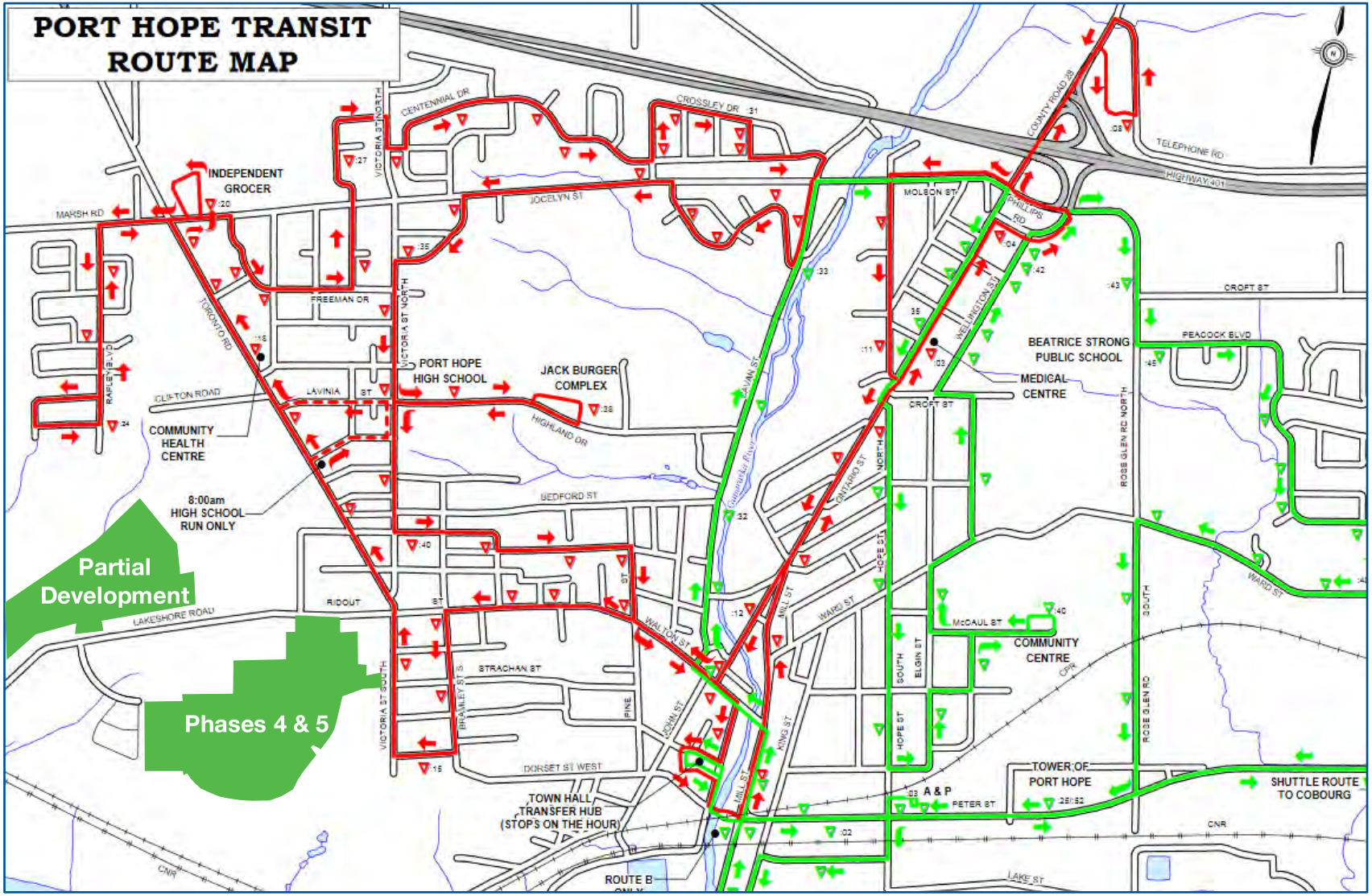
3.3 Active Transportation

As noted previously, sidewalks are currently provided on many of the study area roadways, however dedicated cycling facilities are limited to a small segment of Jocelyn Street (CR 70). Cyclists on other study area roadways are required to utilize the shoulder, if available, or share the road with other road users.

The segments of Lakeshore Road, and Victoria Street South within the study area form part of the Waterfront Trail within the Municipality. **Figure 3.3** illustrates the existing Waterfront Trail Map for the Port Hope area as it relates to the location of the subject site. Waterfront Trail signs were identified on Lakeshore Road and Victoria Street South during the site visit, and were noted to be in good condition and conspicuous to road users.

The walk phases incorporated in the signal timing plan for the Toronto Road/ Marsh Road-Jocelyn Street (CR 70) intersection are push button actuated, and have separate pedestrian signal heads to facilitate controlled pedestrian crossings. The existing volume of pedestrians at this intersection during the weekday AM and weekday PM peak hours is approximately one to nine crossings on each crosswalk (June 2016 data).

The walk phases incorporated in the signal timing plan for the Toronto Road/ Ridout Street are actuated in conjunction with the green indication for vehicles. Pedestrian push buttons are not provided; however, separate pedestrian signal heads are installed to facilitate controlled pedestrian crossings. The existing volume of pedestrians at this intersection during the weekday AM and weekday PM peak hours is approximately one 1 to nine crossings on each crosswalk (June 2016 data).



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Existing Transit Services

NTS

Image Source: waterfrontrail.org (2017)

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Existing Active Transportation Facilities

3.4 Collision Data

Collision data from 2012 to 2016 (inclusive) was provided by the Port Hope Police Service through Municipal staff, and it showed that 606 collisions occurred within the entire Municipality. A review of the annual data indicated that the number of collisions increased year-to-year from 2012 to 2014, but decreased year-to-year between 2014 and 2016. **Table 3.1** provides a breakdown of collision severity between 2012 and 2016. It is noted that PD-type (Property Damage only) was the most common type, and that there were no fatalities.

TABLE 3.1: COLLISION TYPES (2012 TO 2016)

Collision Type	2012	2013	2014	2015	2016
Fatal Injury	0%	0%	0%	0%	0%
Non-Fatal Injury	12%	13%	13%	14%	17%
PD Only	85%	84%	86%	86%	82%
Non-Reportable	1%	2%	1%	0%	1%
Other	2%	2%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

For the five-year period 2012 to 2016, approximately 30 collisions were reported in the study area, which represents approximately five percent of the total collisions in the whole Municipality, and an average of approximately six collisions per year. Six of the 30 collisions resulted in injuries which is a higher percentage (20%) than that shown in the Municipality totals. This may reflect the dominance of the arterial roads within the study area, and their typical characteristics of higher volume and higher speed.

One of these injury collisions involved a pedestrian at the Toronto Road/ Bruton Street intersection. There was also one collision with a cyclist at the intersection of Toronto Road/Marsh Road-Jocelyn Street in 2016, but information was not available as to whether this resulted in an injury. None of the collisions noted within the study area involved individuals under the influence of alcohol or drugs. Due to the relatively small number of collisions in the study area, no specific trends can be determined from the data reviewed.

3.5 Traffic Volumes

Traffic data for the majority of the study area intersections was provided by Tranplan Associates. The counts were conducted on Thursday, 9 June 2016 from 7:00 AM to 10:00 AM and 3:00 PM to 5:00 PM. All traffic movements, including pedestrian crossings were counted in 15-minute intervals and vehicles were classified by type. Additionally, Paradigm staff conducted peak hour turning movement counts at the intersection of Victoria Street South/Strachan Street on Thursday, 2 February 2017 from 8:00 AM to 9:00 AM, and 3:15 PM to 4:15 PM. These times were selected to match with the

most common peak hours found in the Tranplan data. **Appendix A** contains the detailed turning movement count reports.

Since the Port Hope Golf & Country Club was not in operation during the February traffic counts, the traffic that would be generated by an 18-hole golf course was estimated based on trip generation information contained in the Trip Generation Manual (9th Edition) published by the Institute of Transportation Engineers (ITE)[5] for land use code 430 (Golf Course). This resulted in the addition of approximately 35 trips in the AM peak hour and 50 trips in the PM peak hour to the Victoria Street South/Strachan Street intersection.

Figure 3.4A and **Figure 3.4B** illustrate the base year traffic volumes. The traffic volumes between intersections have not been balanced due to the presence of intervening local roads and driveways that would allow traffic to turn on or off the road network between the study area intersections.

3.6 Traffic Observations

Paradigm staff made observations throughout the day including the weekday AM and PM peak hours on Thursday, 2 February 2017. It was noted that a good level of service was generally being provided in the study area, and at all study area intersections. It was also noted that some pedestrian traffic was observed along Lakeshore Road west of Toronto Road-Victoria Street South, and the lack of sidewalks on this roadway requires pedestrians to share the road with vehicular traffic as shown in the photo below.

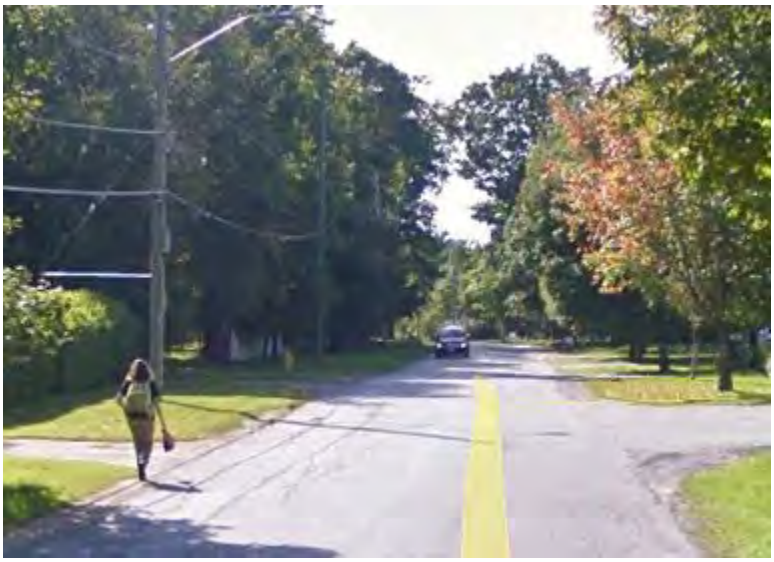
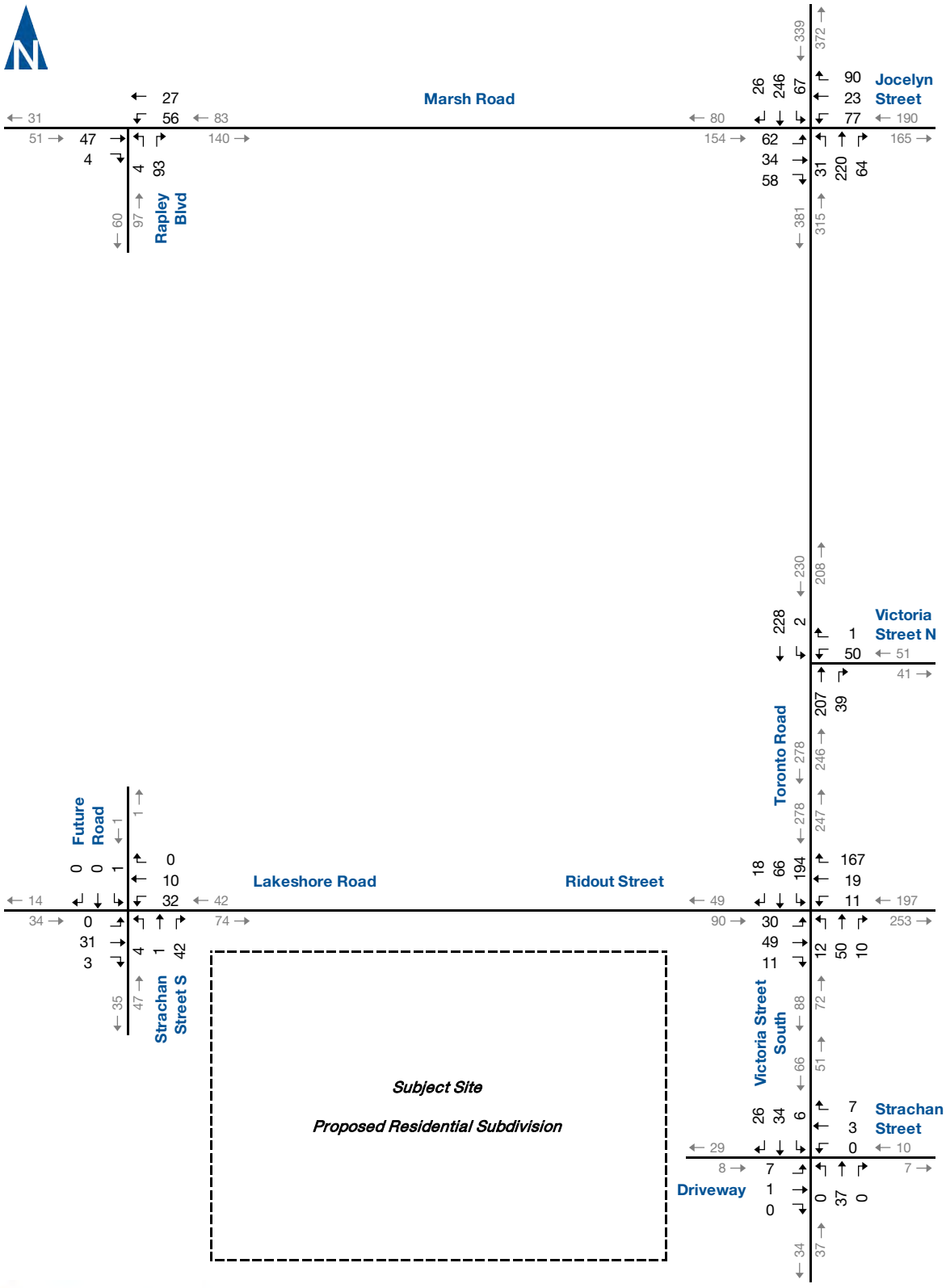


Photo: Lakeshore Road west of Toronto Road-Victoria Street South

[5] Trip Generation Manual. 9th Edition. Institute of Transportation Engineers. Washington D.C. 2012.

The following observations of road and traffic conditions near the subject site were noted:

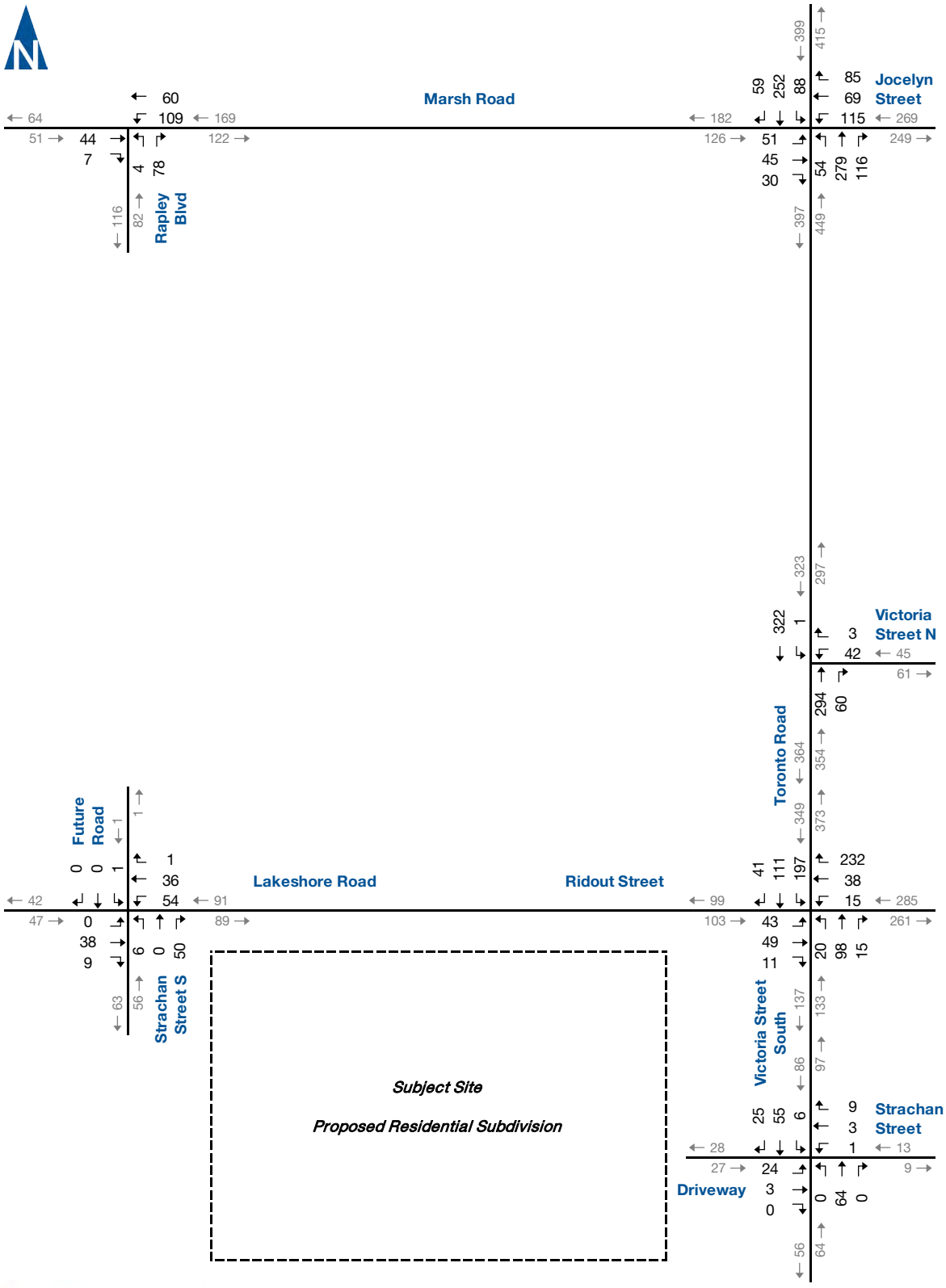
- Lakeshore Road has a rural cross section with pavement width at approximately 5.5 to 6.0 metres to the west of its intersection with Toronto Road-Victoria Street South. This relatively narrow width continues westerly until the area of the newer subdivision where the pavement width is approximately 7.0 metres. The roadway surface was noted to be in good condition west of Shortt Street, except for some minor longitudinal and transverse cracking. The roadway was noted to be in poorer condition east of Shortt Street, with significant areas of fatigue cracking and rutting on the south side of the roadway, and patching failure on the north side of the roadway. In the older section, the sidewalk on the north side of the is approximately 1.15 metres wide, and the sidewalk on the south side is approximately 1.6 metres wide. The newer sections of sidewalk appear to be 1.5 metres wide;
- Victoria Street South has a rural cross section with pavement width at approximately 7.0 metres north of Sullivan Street (first intersecting street south of Ridout Street), and approximately 6.0 to 6.5 metres south of Sullivan Street. The roadway surface was noted to be in good condition south of Strachan Street. The existing southbound approach on Victoria Street South at Strachan Street includes a combination of rutting, fatigue cracking, and patch failure. Additional cracking was noted on both sides of the roadway north of Strachan Street to Sullivan Street, and then solely on the west side of the roadway north of Ridout Street. Sidewalks were approximately 1.0 to 1.1 metres wide on the east side of Victoria Street South north of Strachan Street;
- Signage in the area was noted to be in adequate condition, as were pavement marking delineating the directional function of lanes (i.e. right arrows, shared through/left arrows, etc.). Maximum speed limit signs are not posted; therefore, the statutory 50 km/h limit would apply. Consideration could be given to posting speed limit signs as has been done on the nearby section of Lakeshore Road.



Base Year Traffic Volumes
AM Peak Hour

Port Hope Residential Development TRIS
17-000014

Figure 3.4A



Base Year Traffic Volumes
PM Peak Hour

Port Hope Residential Development TRIS
17-000014

Figure 3.4B

3.7 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay related to the number of vehicles desiring to make a through or turning movement, compared to the estimated capacity for that movement. The capacity is based on several criteria including, but not limited to, vehicle headways, intersection geometry, vehicle composition, opposing traffic flows, and for signalized intersections, signal timing. Capacity is evaluated in terms of the ratio of demand flow to capacity with an at-capacity condition represented by a v/c ratio of 1.00 (i.e. volume demand equals capacity).

Table 3.2 summarizes the level of service criteria for signalized and stop controlled intersections. The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity ratio is greater than 1.0, the movement is classed as LOS F and improvements are usually implemented, if they are feasible. LOS E is generally used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on capacity and safety considerations. It is also recognized that the guidelines for determining when improvements are necessary can vary in different municipalities.

TABLE 3.2: VEHICLE LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersections Average Total Delay (sec/veh)	Unsignalized Intersections Average Total Delay (sec/veh)
A	< = 10	< = 10
B	> 10 & < = 20	> 10 & < = 15
C	> 20 & < = 35	> 15 & < = 25
D	> 35 & < = 55	> 25 & < = 35
E	> 55 & < = 80	> 35 & < = 50
F	> 80	> 50

The operations of the study area intersections were evaluated using Synchro 9.1 with Highway Capacity Manual (HCM) 2000 procedures, and with the existing turning movement count volumes and signal timings. The key parameters used in the analysis include:

- Existing lane configurations noted during the site visit on 2 February 2017;
- Heavy vehicles percentages derived from the existing turning movement counts;
- Peak hour factors derived from the existing turning movement counts. It is noted that this factor adjusts the hourly volumes to

better represent conditions during the peak 15 minutes of intersection operations;

- Signal timing plans for the intersections of Toronto Road/Marsh Road-Jocelyn Street (CR 70), and Toronto Road/Ridout Street as provided by the Municipality of Port Hope, and confirmed in the field; and
- Synchro default values for all other inputs.

Appendix B contains the signal timing plans provided by the Municipality of Port Hope.

Table 3.2 summarizes the results of the analysis for the existing weekday AM and PM peak hour intersection operations, indicating the existing levels of service, average delays, volume to capacity ratios (v/c), and 95th percentile queues experienced in the study area. **Appendix C** provides the detailed supporting Synchro reports.

The Municipality of Port Hope Traffic Study guidelines do not provide criteria to define critical movements in an operational analysis. Therefore, information in the Ministry of Transportation of Ontario (MTO) TIS guidelines[6] has been used to define a critical movement as when the v/c ratio for an individual movement exceeds 0.85 at signalized and/or unsignalized intersections. Also, as adopted from various municipal guidelines, a critical turning movement would be one where the 95th percentile queue length exceeds the available storage lane length.

The key results are as follows:

AM Peak Hour

- No movements or intersections are critical in terms of operations or queuing.

PM Peak Hour

- No movements or intersections are critical in terms of operations or queuing.

[6] Ministry of Transportation Ontario. Traffic Impact Study Guidelines. September 2014.

TABLE 3.2: BASE YEAR PEAK HOUR TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Rapley Blvd & Marsh Road	TWSC	LOS		A	>	A	<	A		A	A		A	A	Approach Not Applicable				
			Delay		0	>	0	<	5		5	10		9	9					
			V/C		0.03	>		<	0.04			0.01		0.10						
			Q		0	>		<	1			0		3						
			Ex		-	>		<	-			-		-						
			Avail.		-	>		<	-			-		-						
	2 - Toronto Road & Marsh Road/Jocelyn Street	TCS	LOS	C	C	>	C	C	C	C	C	A	B	>	B	A	B	>	B	B
			Delay	22	27	>	25	22	26	26	24	9	14	>	14	7	12	>	11	16
			V/C	0.21	0.24	>		0.28	0.10	0.07		0.06	0.42	>		0.15	0.35	>		0.35
			Q	15	-	>		17	-	11		6	-	>		11	-	>		
			Ex	15	-	>		30	-	-		25	-	>		30	-	>		
			Avail.	0	-	>		13	-	-		19	-	>		19	-	>		
	3 - Toronto Road & Victoria Street North	AWSC	LOS	Approach Not Applicable				B		B	B		A	>	A	A			A	
			Delay					11		11	11		0	>	0	0			0	
			V/C					0.09		0.09			0.17	>		0.00				
			Q					2		2			-	>		0				
			Ex					-		-			-	>		-				
			Avail.					-		-			-	>		-				
	4 - Toronto Road/Victoria Street South & Ridout Street	TCS	LOS	<	B	>	B	<	A	B	B	<	B	>	B	B	B	>	B	B
			Delay	<	11	>	11	<	10	11	10	<	10	>	10	15	11	>	13	12
			V/C	<	0.15	>		<	0.05	0.13		<	0.11	>		0.45	0.12	>		0.30
			Q	<	13	>		<	6	8		<	11	>		30	12	>		
			Ex	<	-	>		<	-	-		<	-	>		-	-	>		
			Avail.	<	-	>		<	-	-		<	-	>		-	-	>		
	5 - Victoria Street South & Strachan Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	9	>	9	<	9	>	9	<	0	>	0	<	1	>	1	
			V/C	<	0.01	>		<	0.01	>		<	0.00	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	6 - Lakeshore Road & Strachan Street South	AWSC	LOS		A	>	A	<	A		A	<	A	>	A	Approach Not Applicable				
			Delay		7	>	7	<	8		8	<	7	>	7					
			V/C		0.05	>		<	0.06			<	0.06	>						
			Q		-	>		<	-			<	-	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
PM Peak Hour	1 - Rapley Blvd & Marsh Road	TWSC	LOS		A	>	A	<	A		A	B		A	A	Approach Not Applicable				
			Delay		0	>	0	<	5		5	12		9	9					
			V/C		0.04	>		<	0.09			0.01		0.11						
			Q		0	>		<	3			0		3						
			Ex		-	>		<	-			-		-						
			Avail.		-	>		<	-			-		-						
	2 - Toronto Road & Marsh Road/Jocelyn Street	TCS	LOS	C	C	>	C	C	C	C	C	A	B	>	B	A	B	>	B	B
			Delay	24	28	>	26	21	25	24	23	8	15	>	14	7	12	>	11	16
			V/C	0.20	0.27	>		0.36	0.23	0.06		0.10	0.50	>		0.18	0.36	>		0.44
			Q	12	-	>		23	-	20		9	-	>		13	-	>		
			Ex	15	-	>		30	-	-		25	-	>		30	-	>		
			Avail.	3	-	>		7	-	-		16	-	>		17	-	>		
	3 - Toronto Road & Victoria Street North	AWSC	LOS	Approach Not Applicable				B		B	B		A	>	A	A			A	
			Delay					11		11	11		0	>	0	0			0	
			V/C					0.08		0.08			0.22	>		0.00				
			Q					2		2			-	>		0				
			Ex					-		-			-	>		-				
			Avail.					-		-			-	>		-				
	4 - Toronto Road/Victoria Street South & Ridout Street	TCS	LOS	<	B	>	B	<	B	B	B	<	B	>	B	B	B	>	B	B
			Delay	<	11	>	11	<	10	11	11	<	11	>	11	13	11	>	12	11
			V/C	<	0.16	>		<	0.08	0.16		<	0.19	>		0.38	0.19	>		0.27
			Q	<	15	>		<	9	11		<	18	>		30	18	>		
			Ex	<	-	>		<	-	-		<	-	>		-	-	>		
			Avail.	<	-	>		<	-	-		<	-	>		-	-	>		
	5 - Victoria Street South & Strachan Street	TWSC	LOS	<	B	>	B	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	10	>	10	<	9	>	9	<	0	>	0	<	1	>	1	
			V/C	<	0.05	>		<	0.02	>		<	0.00	>		<	0.01	>		
			Q	<	1	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	6 - Lakeshore Road & Strachan Street South	AWSC	LOS		A	>	A	<	A		A	<	A	>	A	Approach Not Applicable				
			Delay		8	>	8	<	8		8	<	7	>	7					
			V/C		0.07	>		<	0.13			<	0.07	>						
			Q		-	>		<	-			<	-	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

<- Shared Left/Through Lane
>- Shared Right/Through Lane
UM - Unopposed Movement

4 Forecasts

4.1 Horizon Year

A horizon year of 2022, five years from the date of study (2017) has been used to for traffic forecasting and analyses purposes. It is assumed that the development will be fully built-out and occupied by 2022.

4.2 Future Background Traffic

4.2.1 Traffic Growth

Part of the future background traffic volume on the study area roadways has been estimated by applying a growth rate to the base year traffic volumes. The growth rate was derived based on historical traffic data and population forecasts within the Municipality as described below.

A series of traffic impact studies were previously completed by Tranplan Associates in April 2002 for the planned development of the entirety of the lands under the control of the AON Inc. joint venture. An updated study was completed in January 2010[7] for the now nearly completed residential lands immediately west of the subject site and south of Lakeshore Road[8]. For forecasting, these studies utilized a background traffic compound growth rate of 2% per year. To revisit this growth rate, the 2001 and 2009 historic traffic volumes contained in these studies for the Toronto Road-Victoria Street South/Lakeshore Road-Ridout Street intersection were compared with the most recent traffic data collected in June 2016 and with the forecast 2016 volumes in the 2010 update study. This is a key intersection in the study area and is a good indicator of historic changes in traffic in this part of Port Hope.

Table 4.1 summarizes the total traffic volume entering the subject intersection during the PM peak hour for the conditions described above.

TABLE 4.1: PM PEAK HOUR INTERSECTION VOLUMES – TORONTO ROAD-VICTORIA STREET SOUTH/LAKESHORE ROAD-RIDOUT STREET

Year	Total Intersection Traffic Volumes
2001 (observed)	772
2009 (observed)	672
2016 (observed)	824
2016 (estimated)	1193

[7] Penryn Village Residential Subdivision, Update Traffic Study, Port Hope, Ontario. Prepared for AON Inc. by Tranplan Associates, January 2010.
[8] Port Hope West Retirement Community Traffic Impact Study, Port Hope, Ontario. Prepared for AON Inc. by Tranplan Associates, April, 2002.

An examination of the observed traffic volumes shows that the PM peak hour traffic growth rate at this intersection is relatively low at approximately half a percent (0.5%) per year from 2001 to 2016. It is also noted that the 2016 traffic forecast for this intersection contained in the 2010 update study is substantially higher than the actual observed traffic volumes (45% higher). This is an indication of much slower growth occurring in Port Hope compared to the anticipated growth indicated in the 2010 update study.

In addition to considering changes in historical traffic volumes, a review of population data for the Municipality of Port Hope indicates that the Municipality experienced absolute negative growth of 1.1% between 2006 and 2011[9], and absolute positive growth of 3.3%[10] between 2011 and 2016. A regression analysis of these three data points yields an annual population growth rate of approximately 0.2% per year.

The data shows the 2% annual traffic growth rate used in the 2010 update study overestimated the traffic conditions for the 2016 horizon year, and that the observed recent growth up to 2016 in both PM peak hour traffic and the population of the Municipality has been 0.5% or less per year. Notwithstanding these findings, a growth rate of 2% per year has been applied to the base year (2016) traffic to forecast future background traffic volumes for the 2022 horizon year. This represents both a conservative approach to forecasting (errs on the high side) and one that is consistent with the past studies.

4.2.2 Other Development

Further to the general traffic growth rate discussed above, potential traffic from approved, but not yet constructed or occupied developments has been included in the background traffic estimates. This represents new vehicular trips that would not be captured in the application of the general growth rate.

Paradigm staff noted during the site visit on 2 February 2017 that construction was still underway on approximately 35 residential dwellings as part of the ongoing Phase 3 development located generally in the southeast quadrant of the Lakeshore Road/Strachan Street intersection. The trips associated with this development have been estimated and assigned as follows:

- A rate of 0.45 vehicle trips per unit was applied to estimate both the AM and PM peak hour trip generation. This rate was based on the information provided by Tranplan Associates and was used in the 2010 update study to estimate the trip generation for “empty-nester” type residential development;

[9] Census Profile. Statistics Canada. *Focus on Geography Series, 2011 Census.* Catalogue no. 98-310-XWE2011004

[10] Census Profile. Statistics Canada. *Port Hope, MU.* 2016 Census. Catalogue no. 98-316-X2016001

- The inbound/outbound split of trips in the AM and PM peak hour was based on trip generation contained in the 9th Edition of the Institute of Transportation Engineers (ITE) publication, "Trip Generation Manual" [11] for single-family detached housing (Land Use Code 210); and
- The AM and PM peak hour trips were assigned to the Lakeshore Road/Strachan Street intersection and distributed to the study area road network according to existing traffic patterns (described in more detail in **Section 4.4**).

4.2.3 Port Hope Project

The Port Hope Project involves the clean up of approximately 1.2 million cubic metres of historic low-level radioactive waste within the Municipality of Port Hope, and the relocation of this waste to a new site located south of Highway 401, and west of Balch Road.[12]

Figure 4.1 illustrates the key sites and the three transportation haul routes. Within the subject study area, the central haul route is anticipated to utilize Strachan Street and Toronto Road. The available project information indicates that the clean up and use of this haul route will be completed in 2019.[13] Based on the information provided, the use of this haul route would increase daily truck traffic by 0.8%, and 8.4% on Toronto Road and Strachan Street, respectively. Notwithstanding these truck percentage increases, the traffic generated by this project is estimated to have a negligible impact on traffic volumes on the study area roadways (approximately one to two trucks in the weekday AM and weekday PM peak hours respectively). Therefore, these forecast volumes have not been included in the background traffic forecasts as they would be less than the typical variation in hourly traffic volumes on a day-to-day basis.

4.2.4 Background Traffic Volumes

Figure 4.2A and **Figure 4.2B** illustrate the future AM and PM background traffic volumes for the 2022 horizon year, respectively. The background traffic forecasts represent a combination of a 2% per year growth rate (2016 to 2022) and the additional trips that would be generated by the occupancy of 35 residential units on the Phase 3 lands that are currently under construction.

[11] Trip Generation Manual. 9th Edition. Institute of Transportation Engineers. 2012.
[12] Port Hope Area Initiative. What is the Port Hope Project? 29 November 2016.
[13] Port Hope Area Initiative. Port Hope Project Schedule and Budget. 31 January 2017.

PORT HOPE PROJECT

Key sites and transportation routes

North

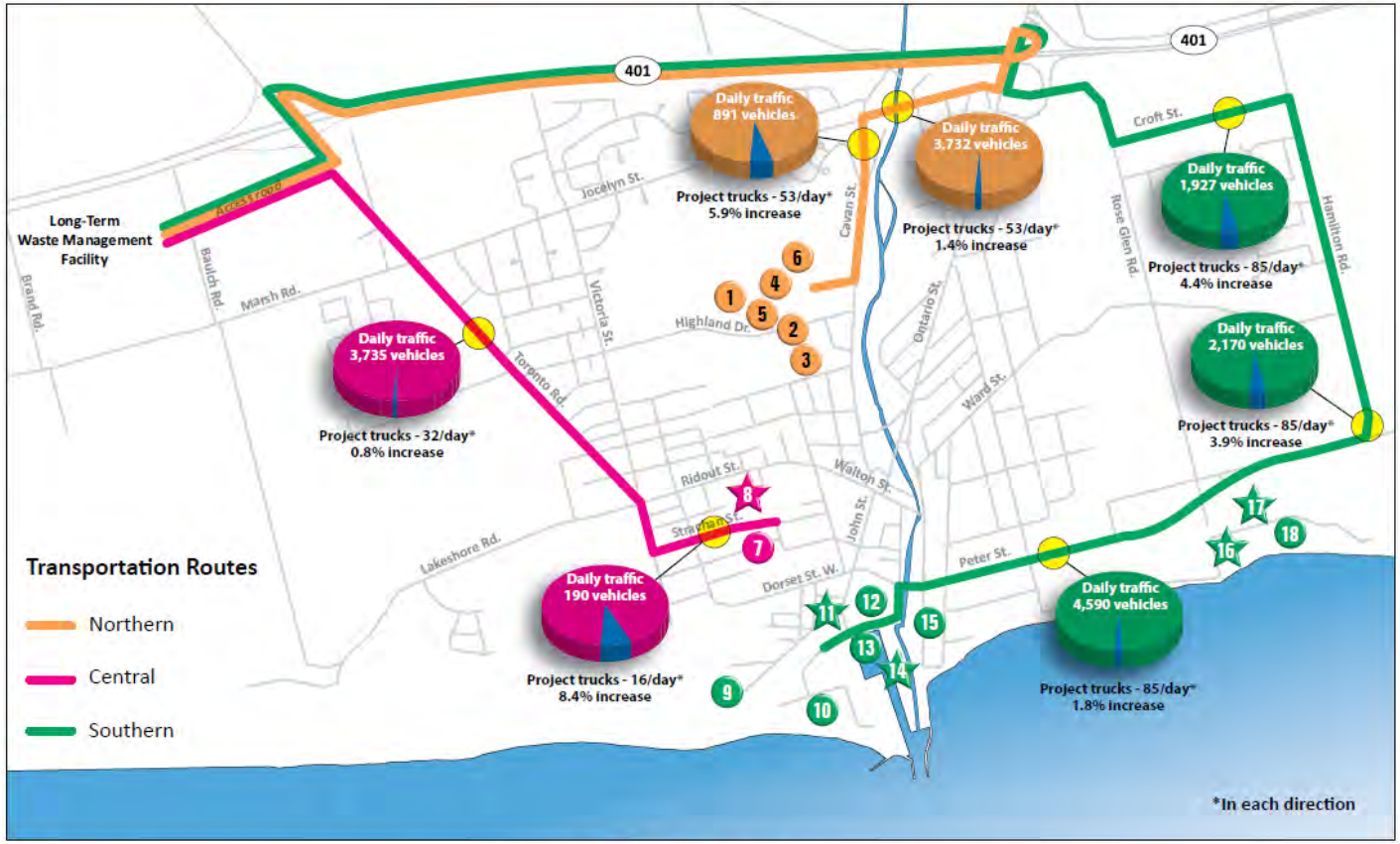
1 Highland Dr. Landfill
2 Highland Dr. Roadbed
3 Highland Dr. South Ravine
4 Pine St. Extension Consolidation Site
5 Pine St. Extension Roadbed
6 Pine St. Extension Temporary Storage Site

Central

7 Strachan St. Ravine Consolidation Site
8 Lions Recreation Centre Park

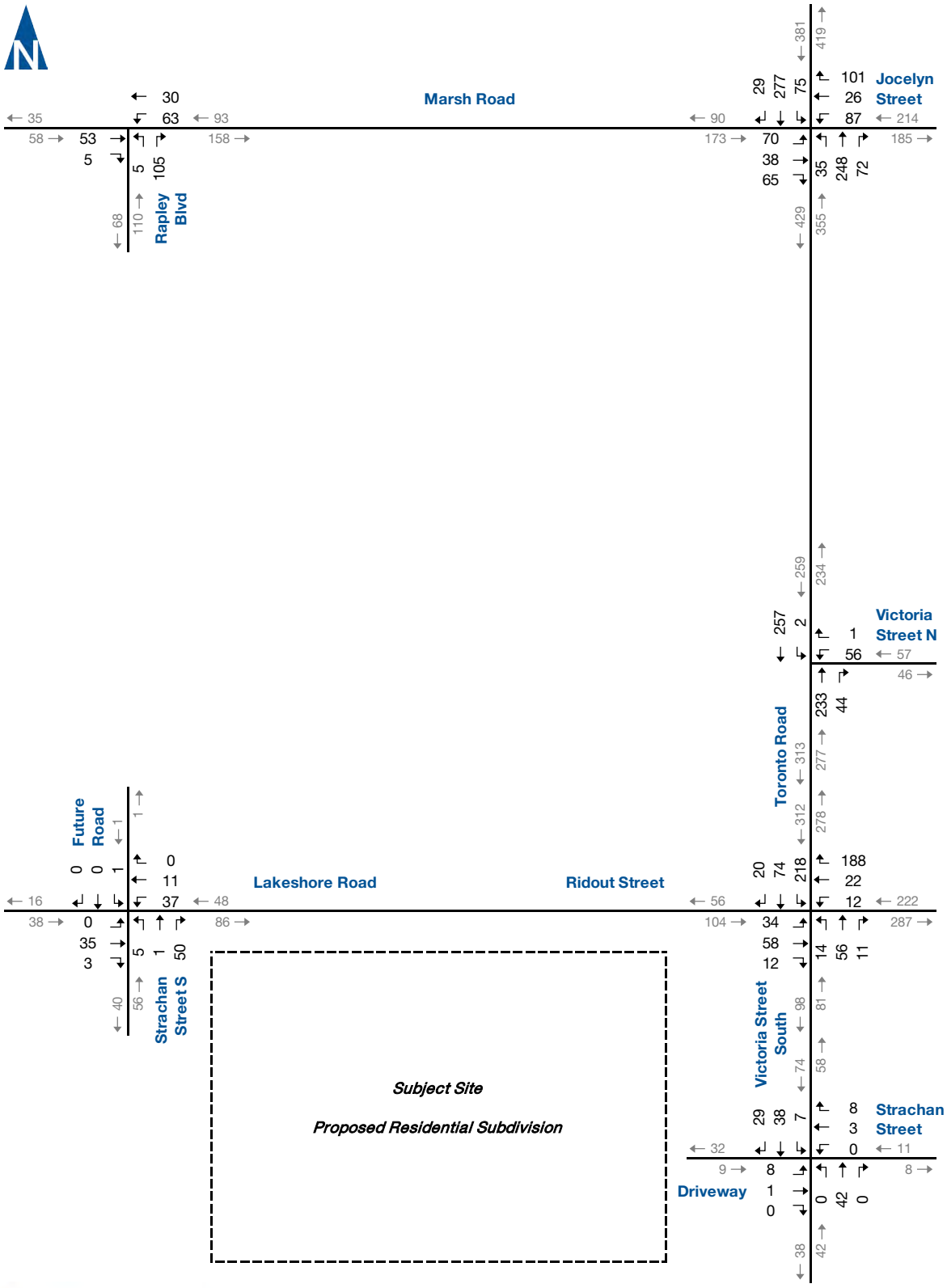
Waterfront

9 Alexander St. Ravine
10 West Beach/Former Waterworks
11 Former Coal Gasification Plant
12 CN/CP Viaducts Area
13 Port Hope Harbour
14 Centre Pier
15 Mill St. South
16 Chemetron Lagoon
17 Sewage Treatment Plant Sludge
18 Sewage Treatment Plant Temporary Storage Site (closed)



paradigm TRANSPORTATION SOLUTIONS LIMITED

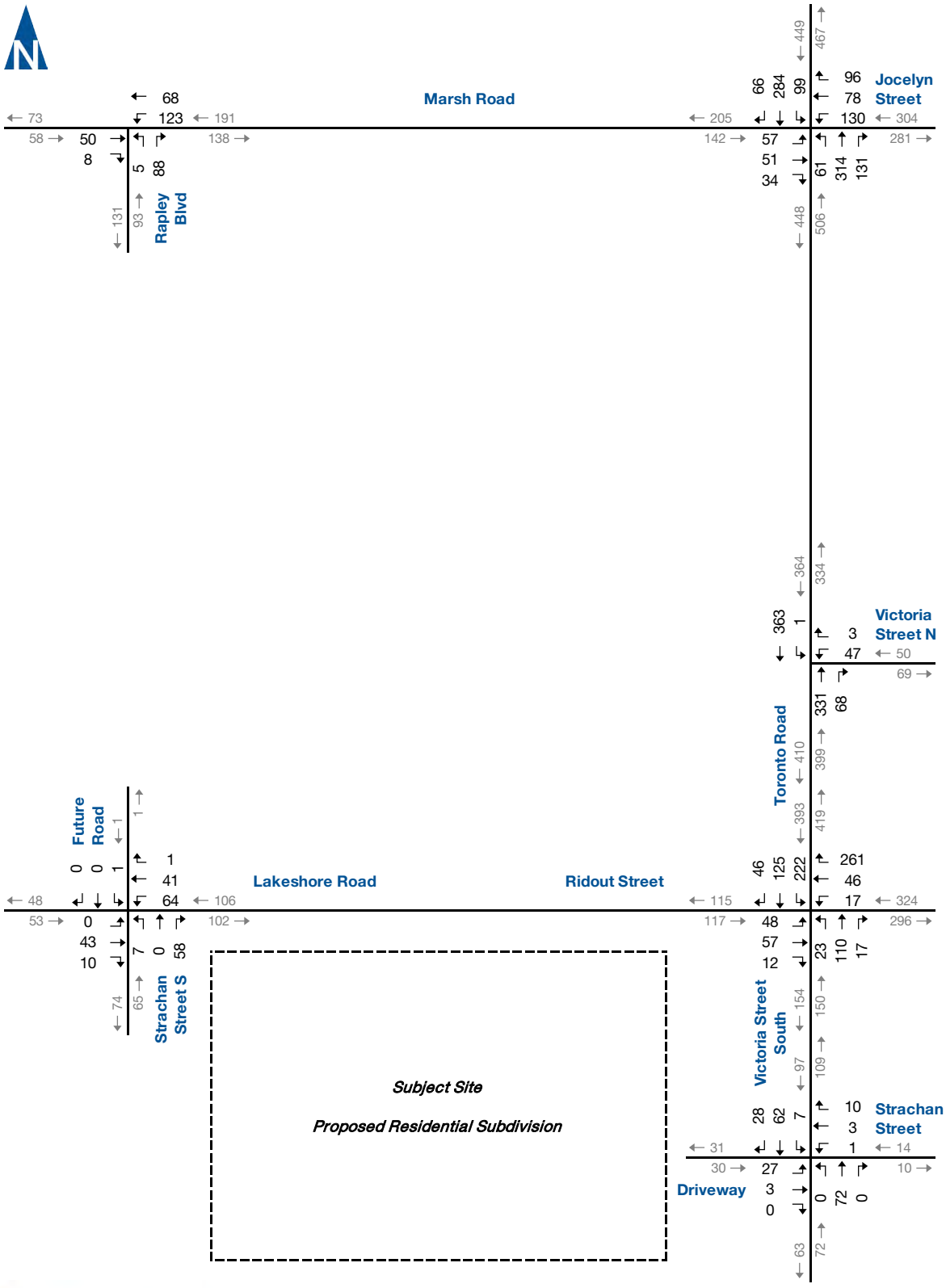
Port Hope Project Haul Routes



2022 Background Traffic Forecast AM Peak Hour

Port Hope Residential Development TRIS
17-000014

Figure 4.2A



2022 Background Traffic Forecast
PM Peak Hour

Port Hope Residential Development TRIS
17-000014

Figure 4.2B

4.3 Site Trip Generation

4.3.1 Phases 4 and 5

The AM and PM peak hour trip generation for the proposed development of Phases 4 and 5 was based on trip rates derived from traffic counts at similar residential developments in the Municipality of Port Hope as well as information contained in the ITE Trip Generation Manual.

Turning movement data collected at the intersection of Marsh Road/Rapley Boulevard was used to estimate the trip generation of the 348 single-family detached housing units (fully occupied) located in the subdivision served by Rapley Boulevard. Similarly, turning movement data collected at the intersection of Lakeshore Road/Strachan Street was used to estimate the trip generation for the 238 residential dwellings (fully occupied) served by Strachan Street. **Table 4.2** summarizes the trip generation rate estimates and inbound/outbound splits, as well as those contained in the ITE Trip Generation Manual for Land Use Code 210 (Single-Family Detached Housing). The ITE trip generation rates have been established based on surveys conducted between the late 1960s and the 2000s throughout Canada and the United States.

TABLE 4.2: EXISTING TRIP GENERATION RATES AND IN/OUT SPLITS

Subdivision Location or ITE Land Use	AM Peak Hour			PM Peak Hour		
	Rate	In	Out	Rate	In	Out
Rapley Boulevard[1]	0.45	38%	62%	0.57	59%	41%
Strachan Street[2]	0.34	42%	58%	0.49	53%	47%
ITE LUC 210[3]	0.75	25%	75%	1.00	63%	37%

[1] - 348 Single Detached Residential Dwellings

[2] - 163 Single Detached Reisdential Dwellings, 75 Townhouses

[3] - Single Detached Family Housing

The trip generation rates summarized in **Table 4.2** indicate that the ITE trip generation rates are much higher than those at the two sample subdivisions within the Municipality. This is presumably due to various factors that tend to reduce travel in the typical commuter peak hour periods such as the homes being occupied by “empty-nesters” or retirees, residents who have jobs involving shift work or part-time work and commute during off peak hours, residents who work at home or are otherwise self-employed and do not work regular hours, and smaller numbers of people per household for the subdivision along Strachan Street as related to a variety of housing types and sizes and the related lower propensity for peak hour travel.

It was concluded that the traffic generated by the subdivision along Rapley Boulevard would generally reflect the trip generation characteristics of the proposed units that will be constructed in Phases 4 and 5, and this subdivision has AM and PM peak hour trip rates that are approximately 60% of the ITE average trip rates. As well, it is understood that the development

will continue to be marketed to an older demographic, and so household sizes (number of people) would tend to be smaller. To be conservative in the estimate of new trips, however, the ITE trip generation data plots for single-family detached housing were also considered. It was noted that for residential developments of approximately 400 units, there were many observations of trip generation data at approximately two-thirds or 66% of the ITE average trip rate.

Therefore, it was concluded that using AM and PM peak hour trip generation rates at 66% of the ITE single-family detached housing unit average rate, which is higher than that observed for the two proxy subdivisions that reflect the local trip-making characteristics of this area of Port Hope, would be reasonable for estimating the new trips generated by the proposed development in Phases 4 and 5.

Table 4.3 presents the weekday AM and PM peak hour trip generation for the proposed development, which would be approximately 219 and 292 trips, respectively. Due to the auto-oriented nature of the development as well as this area of Port Hope, and the currently limited public transit service, no further adjustments (i.e. decreases) have been made to the vehicular trip generation to account for transit or active modes of transportation (i.e. walking and cycling).

TABLE 4.3: TRIP GENERATION

Land Use	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
Proposed Phase 4 and Phase 5 Residential Development[1]	438	0.50	55	164	219	0.67	184	108	292
Total Trip Generation			**55**	**164**	**219**		**184**	**108**	**292**

4.3.2 Partial Development North of Lakeshore Road

The peak hour trip generation for the low density residential component of these lands was estimated by applying the same trip rates as used for the Phases 4 and 5 lands. For the medium and high density residential, and the second storey residential units above the commercial development, the same trip rates as used for similar land uses in the 2010 Update Traffic Study (PM peak hour forecasts only) were applied to both the AM and PM peak hours.

Also, to be consistent with the 2010 Update Traffic Study, the ITE Trip Generation Manual average trip rates for Land Use Code 253 (Congregate Care Facility) and Land Use Code 254 (Assisted Living) were used to estimate the peak hour trips generated by the Retirement Residence units and Assisted Living units, respectively.

For the neighbourhood commercial development, which could contain a retail store and various commercial land uses (personal service shops, a financial institution, office, etc.), the ITE Land Use Code 820 (Shopping

Centre) trip equations were used to estimate the peak hour trips since this land use code and methodology best captures the potential mix of retail-commercial land uses in a relatively small development.

Table 4.4 summarizes the trip generation estimates for the lands north of Lakeshore Road, which would be approximately 176 trips in the AM peak hour and 287 trips in the PM peak hour. Consistent with the approach used in estimating the Phases 4 and 5 trip generation, no adjustments (i.e. decreases) have been made to account for transit or active modes of transportation (i.e. walking and cycling).

TABLE 4.4: TRIP GENERATION – PARTIAL DEVELOPMENT NORTH OF LAKESHORE ROAD

Block	Land Use Code	Units	AM Peak Hour				PM Peak Hour			
			Rate	In	Out	Total	Rate	In	Out	Total
4	LUC 254 Assisted Living (Occupied Beds)[1]	75	0.18	9	5	14	0.29	11	11	22
	LUC 253 Congregate Care Facilities (Dwelling Units)[1]	105	0.15	8	8	16	0.21	13	9	22
5	Medium Density Residential[2]	45	0.45	5	15	20	0.45	12	8	20
6	Low Density Residential	14	0.50	2	5	7	0.67	6	3	9
7	High Density Residential[2]	53	0.45	6	18	24	0.45	14	10	24
8	High Density Residential[2]	48	0.45	6	17	22	0.45	13	9	22
9	High Density Residential[2]	37	0.45	4	13	17	0.45	10	7	17
10	High Density Residential[2]	27	0.45	3	9	12	0.45	7	5	12
11	LUC 820 Shopping Centre* (1000 sq. ft. GLA)[3]	10,760	N/A	25	15	40	N/A	65	70	135
	Medium Density Residential[2]	8	0.45	1	3	4	0.45	2	2	4
Total Trip Generation				**69**	**108**	**177**		**153**	**134**	**287**

1. LUC 253 & LUC 254 Average Rates used for AM and PM peak hours.
2. PM peak hour rate derived frm Penryn Village Update Traffic Study (Tranplan Associates, January 2010)
3. LUC 820 Regression Equation used for AM and PM peak hours.

4.4 Site Trip Distribution

The directional distribution for the AM and PM peak hour site traffic was based on the existing travel patterns in the study area evident from the traffic counts. This also included consideration of key regional and local destinations for travel for this area of the Municipality including the Highway 401 interchanges, Highway 2, the commercial node at the Toronto Road/Marsh Road-Jocelyn Street intersection, downtown Port Hope, and local employment areas.

Table 4.5 summarizes the estimated trip distribution. The higher trip percentages to/from the north and to/from Jocelyn Street reflect the connections to the Highway 401 interchanges and to Highway 2 (west side) for inter-city travel, and the attraction of the local developments providing retail-commercial and employment opportunities.

It is noted that for the 25% of trips to/from the east (downtown and beyond), it was estimated that 15% would use the arterial road route via Ridout Street and its direct connection to Walton Street leading into the centre of the downtown area and further to Mill Street and its connection to Highway 2 (east side). The remaining 10% would use a more circuitous route via the local street section of Strachan Street and its connection to the Bramley Street South-Dorset Street West collector road route into the extreme south end of downtown and to the lakefront industrial area. It is noted that an

extensive traffic calming treatment has been implemented along Dorset Street West to reduce travel speeds.

TABLE 4.5: TRIP DISTRIBUTION

Origin/Destination	AM Peak Hour	PM Peak Hour
North via Toronto Road	35%	35%
North via Victoria Street North	5%	5%
East via Jocelyn Street	15%	15%
East via Ridout Street	25%	25%
East via Strachan Street	10%	10%
West via Lakeshore Road	5%	5%
West via Marsh Road	5%	5%
Total	**100%**	**100%**

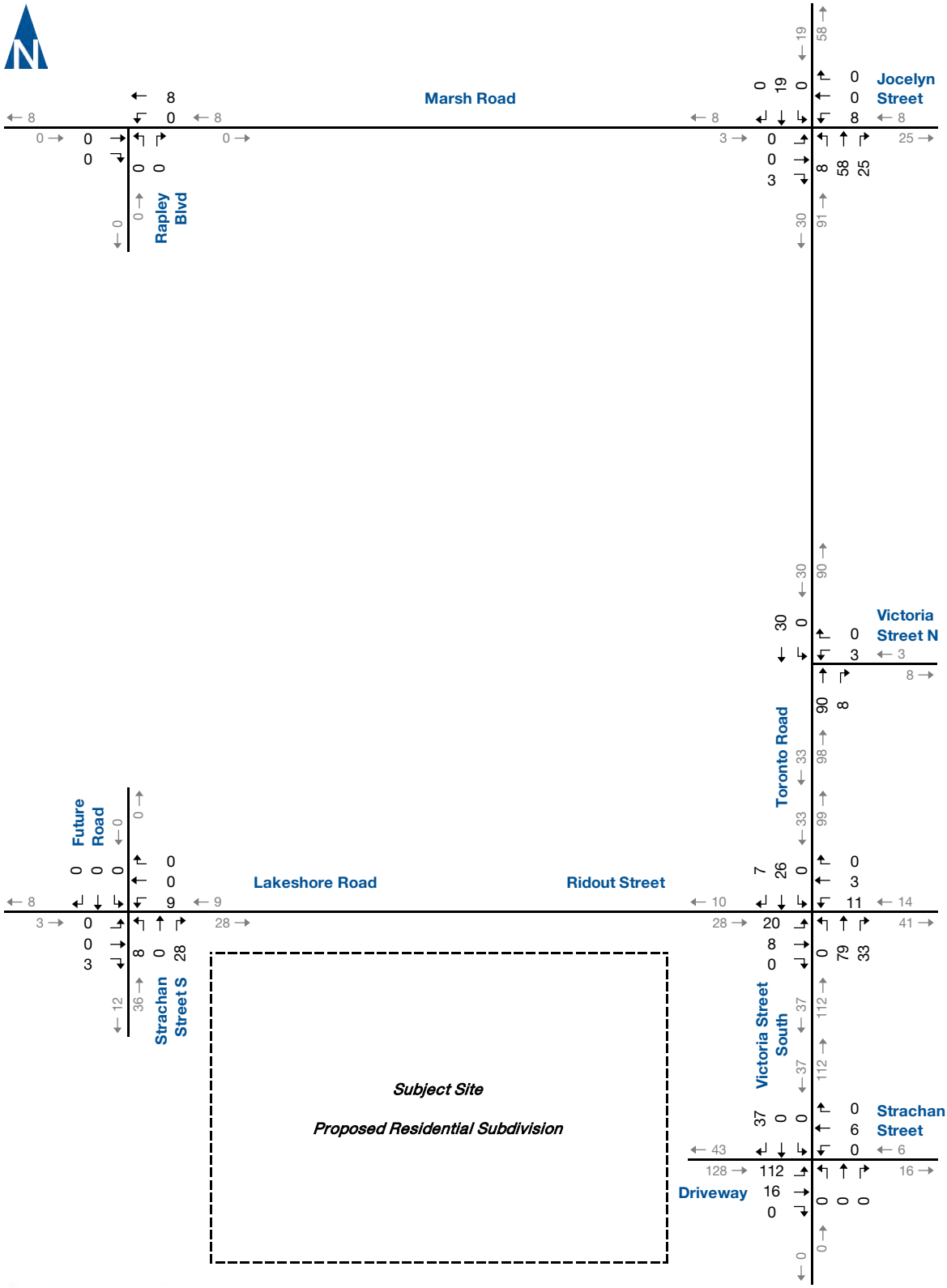
4.5 Site Trip Assignment

The site traffic was assigned to the study roadways based on the trip distribution presented above. A finer routing of AM and PM peak hour trips to and from the Phases 4 and 5 lands was also undertaken to estimate how the majority of the site trips (90+%) that would be destined to or originating from the north and east would access the main arterial roads (Toronto Road and Ridout Street) via Victoria Street South at the east end of the site, and via Strachan Street and Lakeshore Road at the west end of the site.

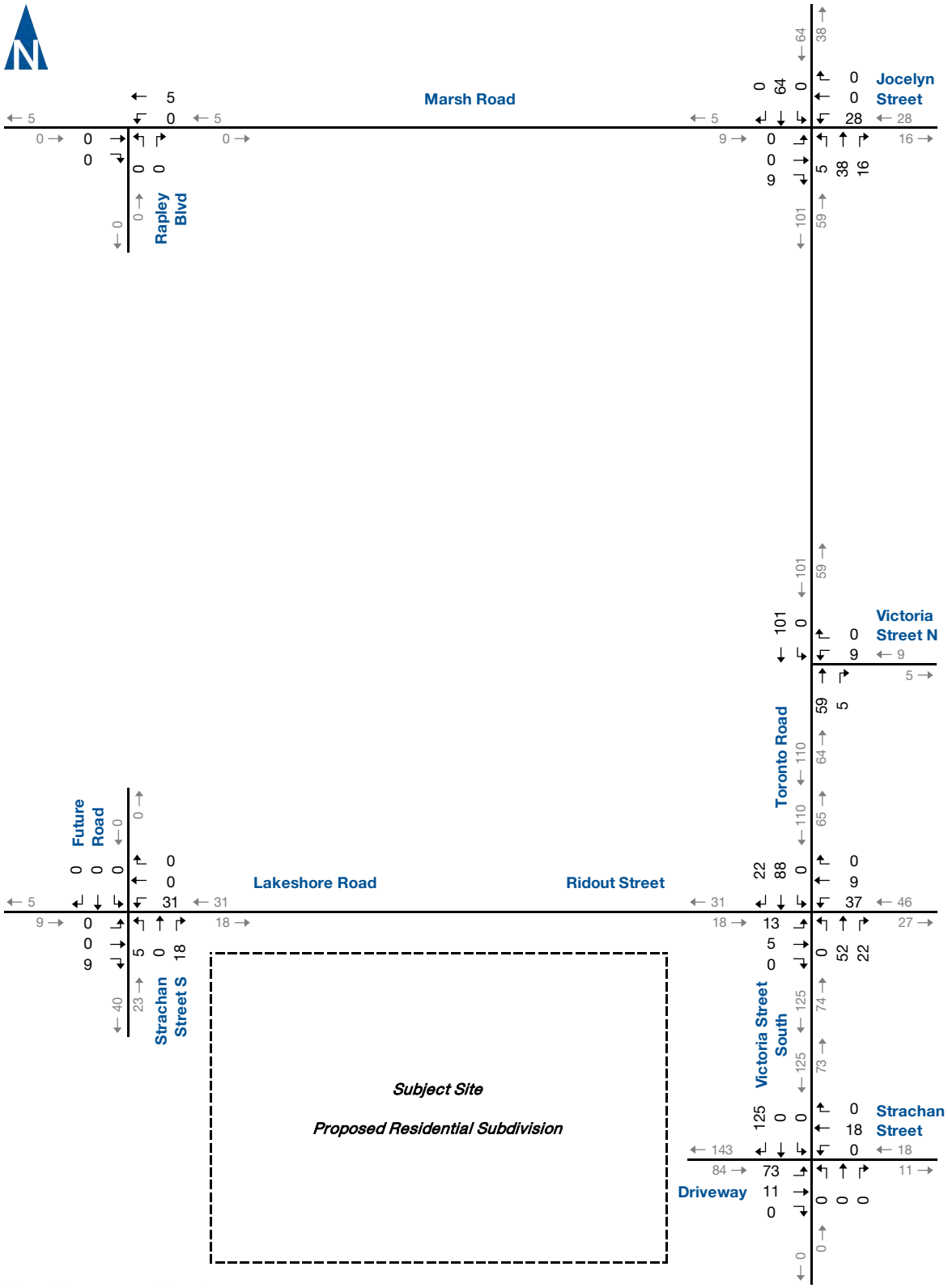
Based on the physical layout of the lots and road pattern shown in the site plan, it was assumed that 20% of outbound peak hour traffic destined to the north and east would find it more convenient to exit the subject site via Strachan Street-Lakeshore Road, and the remaining 80% of outbound peak hour traffic to the north and east would exit the subject site via Victoria Street South. For inbound traffic, it was assumed that 10% of inbound traffic from the north and east would find it more convenient to enter the subject site via Lakeshore Road-Strachan Street, and 90% of inbound traffic from the north and east would enter the subject site via Victoria Street South.

The trips forecast to be generated by the subject lands north of Lakeshore Road were assigned to the external road network via the intersection of Strachan Street and Lakeshore Road. As previously noted, one point of access to these lands has been assumed in this study to assess traffic impact on the external road network. And further, it is recognized that alternative access will be required for emergency and service vehicle purposes, which is to be determined later in the development process.

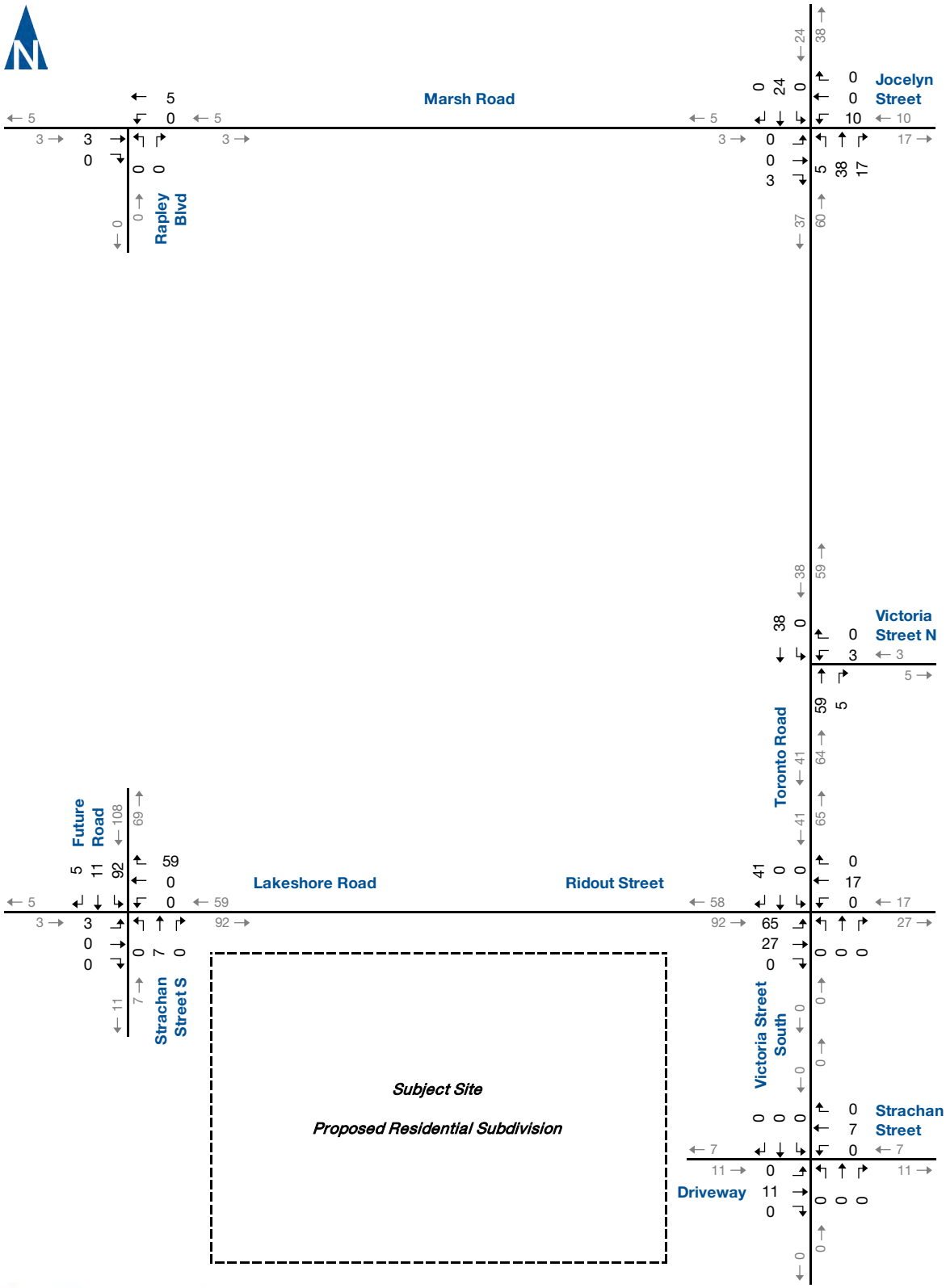
Figure 4.3A and **Figure 4.3B** illustrate the site trip assignment for the AM and PM peak hours, respectively, for the development of Phases 4 and 5. **Figure 4.4A** and **Figure 4.4B** illustrate the site trip assignment for the AM and PM peak hours, respectively for the lands north of Lakeshore Road.



Site Generated Traffic Forecast
Phase 4 and Phase 5 - AM Peak Hour



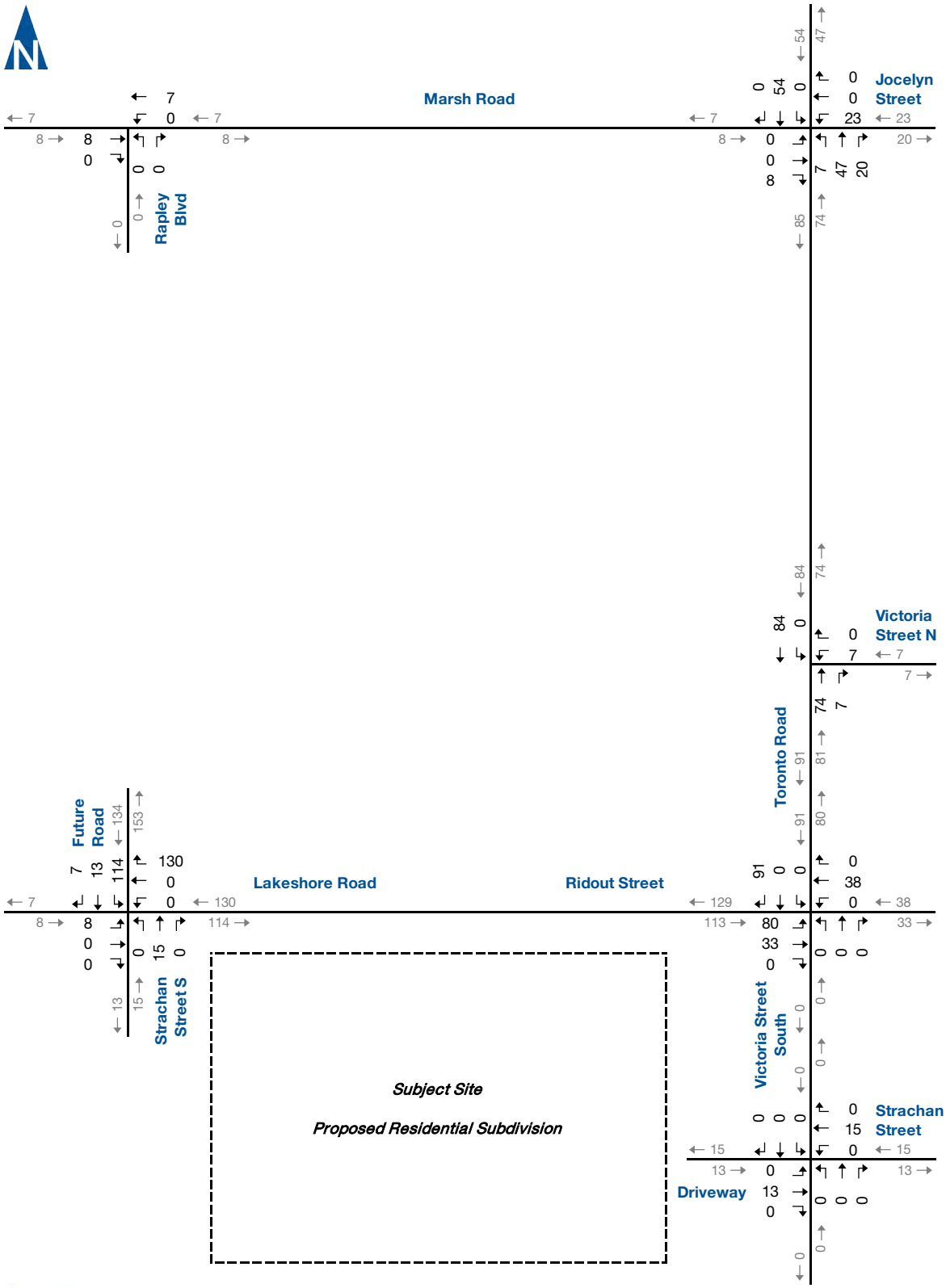
Site Generated Traffic Forecast
Phase 4 and Phase 5 - PM Peak Hour



Site Generated Traffic Forecast
North of Lakeshore Road
AM Peak Hour

Port Hope Residential Development TRIS
17-000014

Figure 4.4A



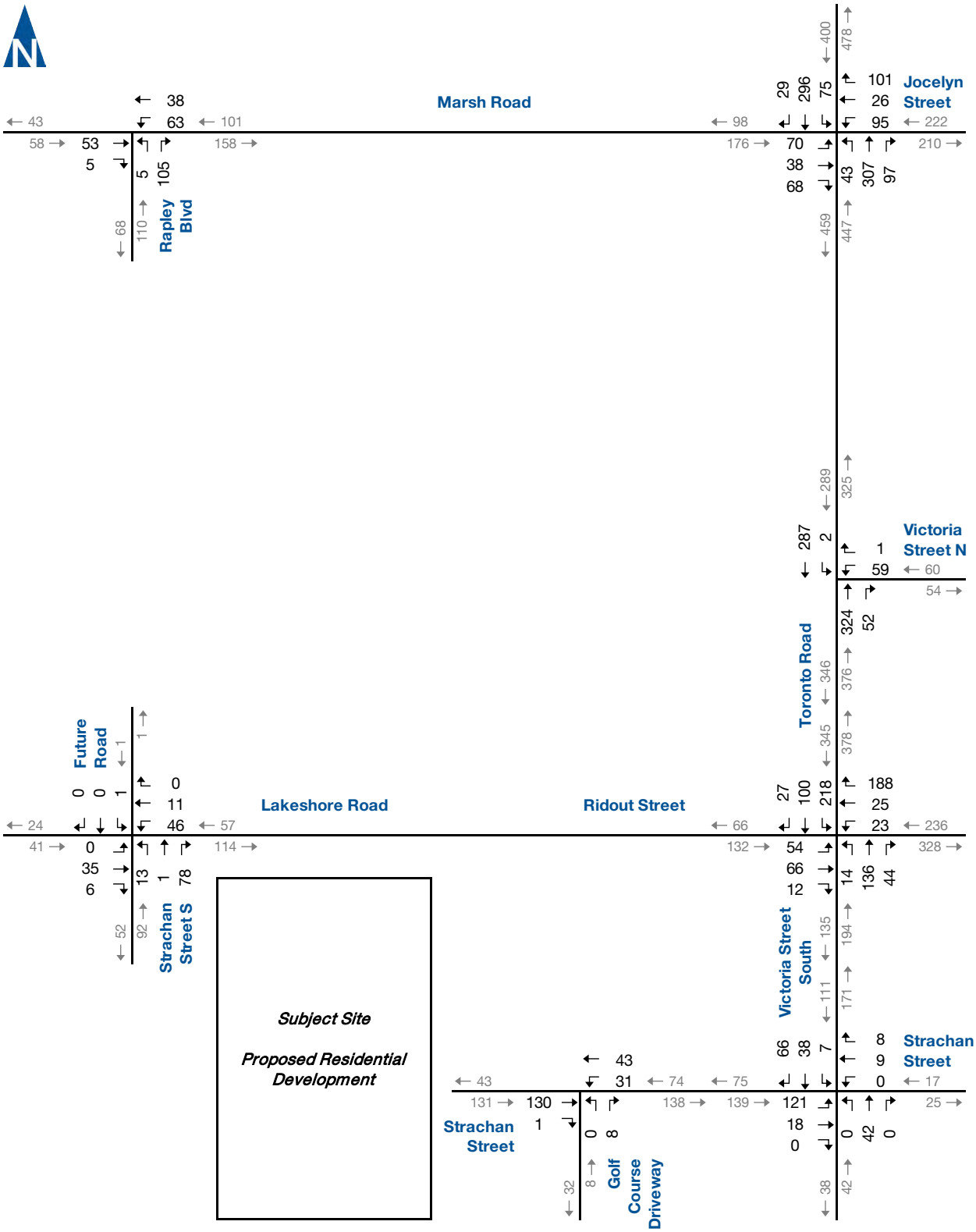
Site Generated Traffic Forecast
North of Lakeshore Road
PM Peak Hour

It is noted that there may be small differences between the site trip generation and the site trip assignments due to rounding.

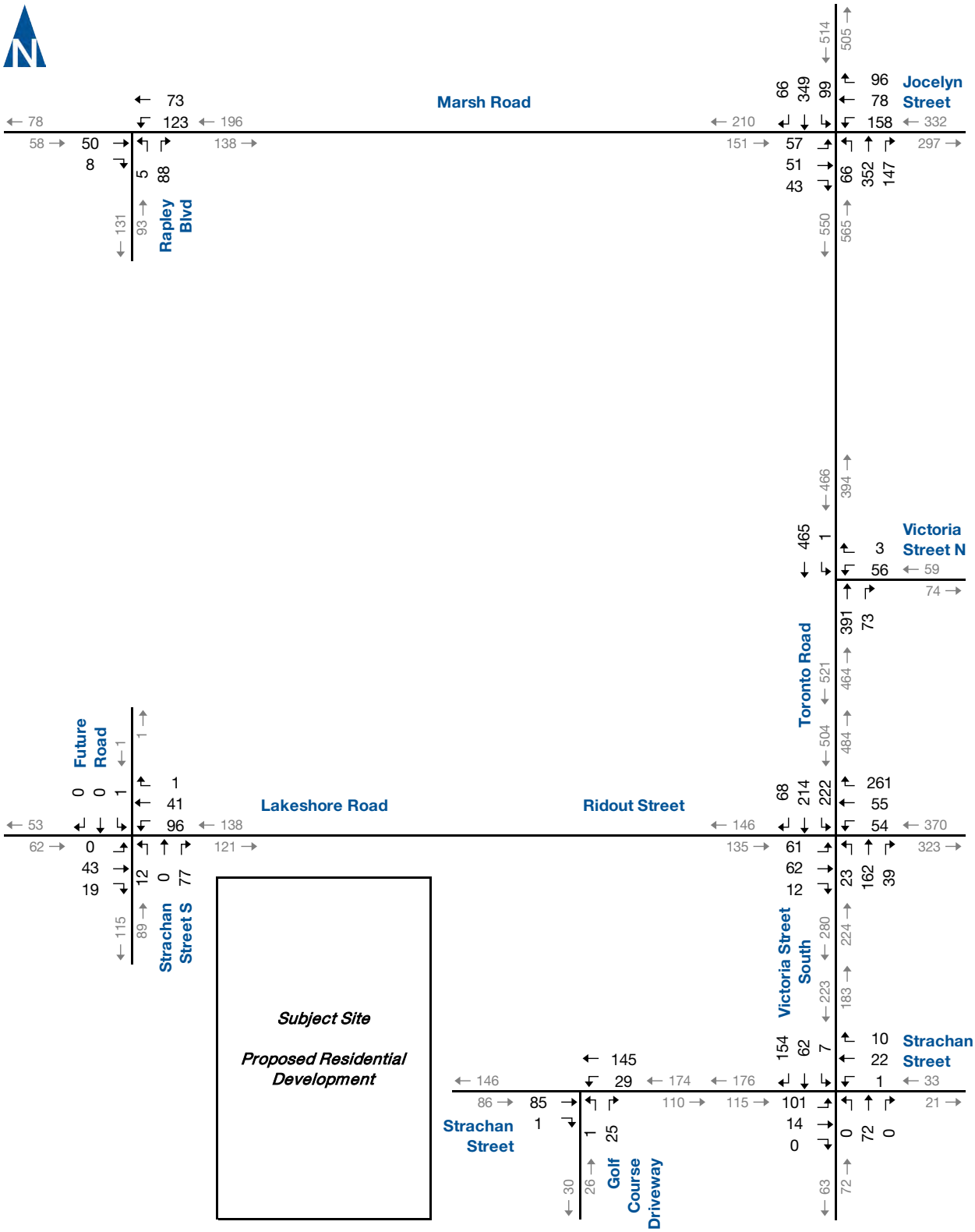
4.6 Future Total Traffic

The future total traffic forecasts with only the development of Phases 4 and 5 (Scenario A) have been derived by combining the future background traffic forecasts (**Figure 4.2A** and **Figure 4.2B**) with the site generated traffic forecasts (**Figure 4.3A** and **Figure 4.3B**). **Figure 4.5A and Figure 4.5B** illustrate the total traffic volume forecasts for the 2022 horizon year.

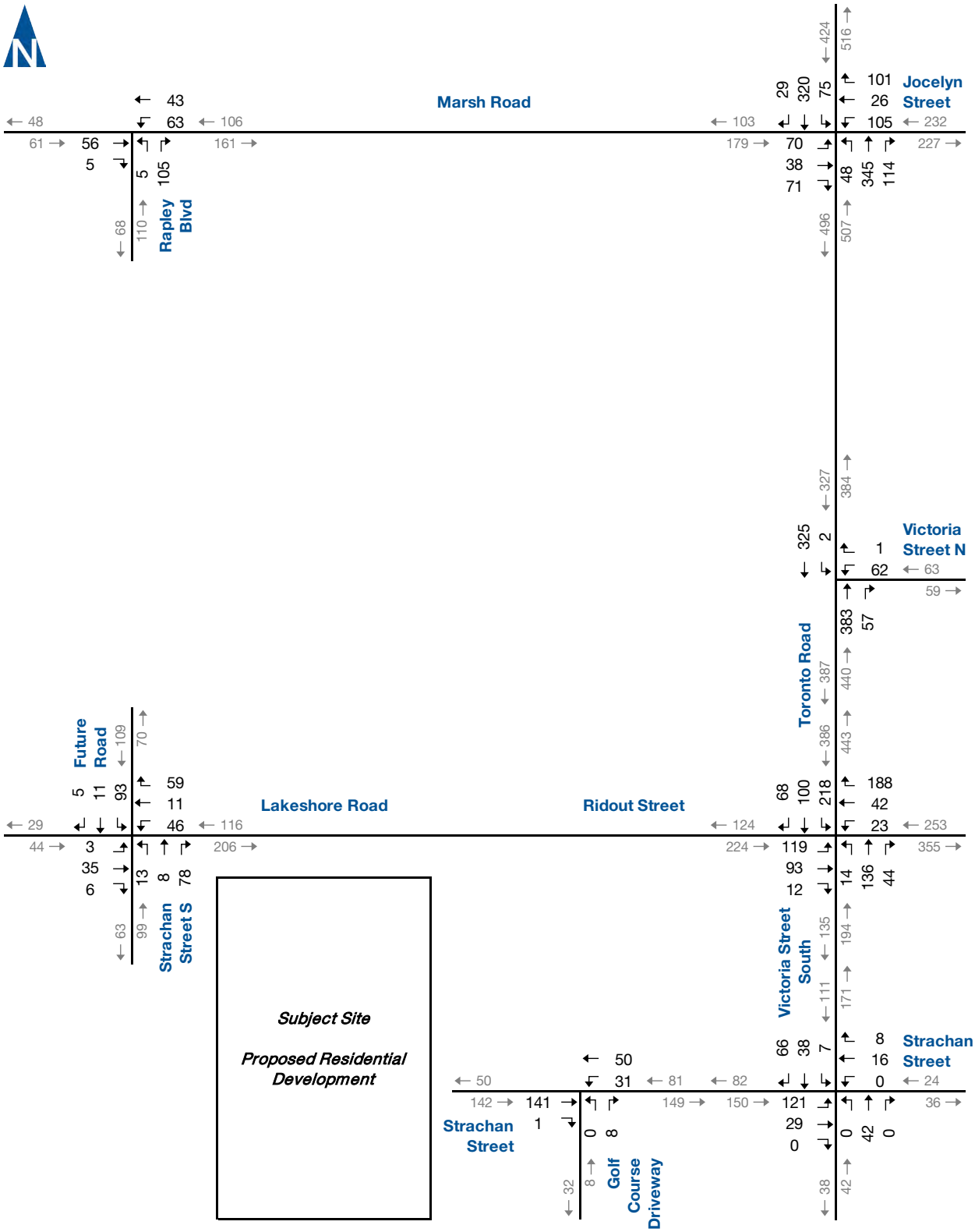
The future total traffic forecasts with the development of Phases 4 and 5, and the lands north of Lakeshore Road (Scenario B), have been derived by combining the future background traffic forecasts (**Figure 4.2A** and **Figure 4.2B**) with the site generated traffic forecasts (**Figure 4.3A, Figure 4.3B, Figure 4.4A**, and **Figure 4.4B**). **Figure 4.6A** and **Figure 4.6B** illustrate the total traffic volume forecasts for the 2022 horizon year.



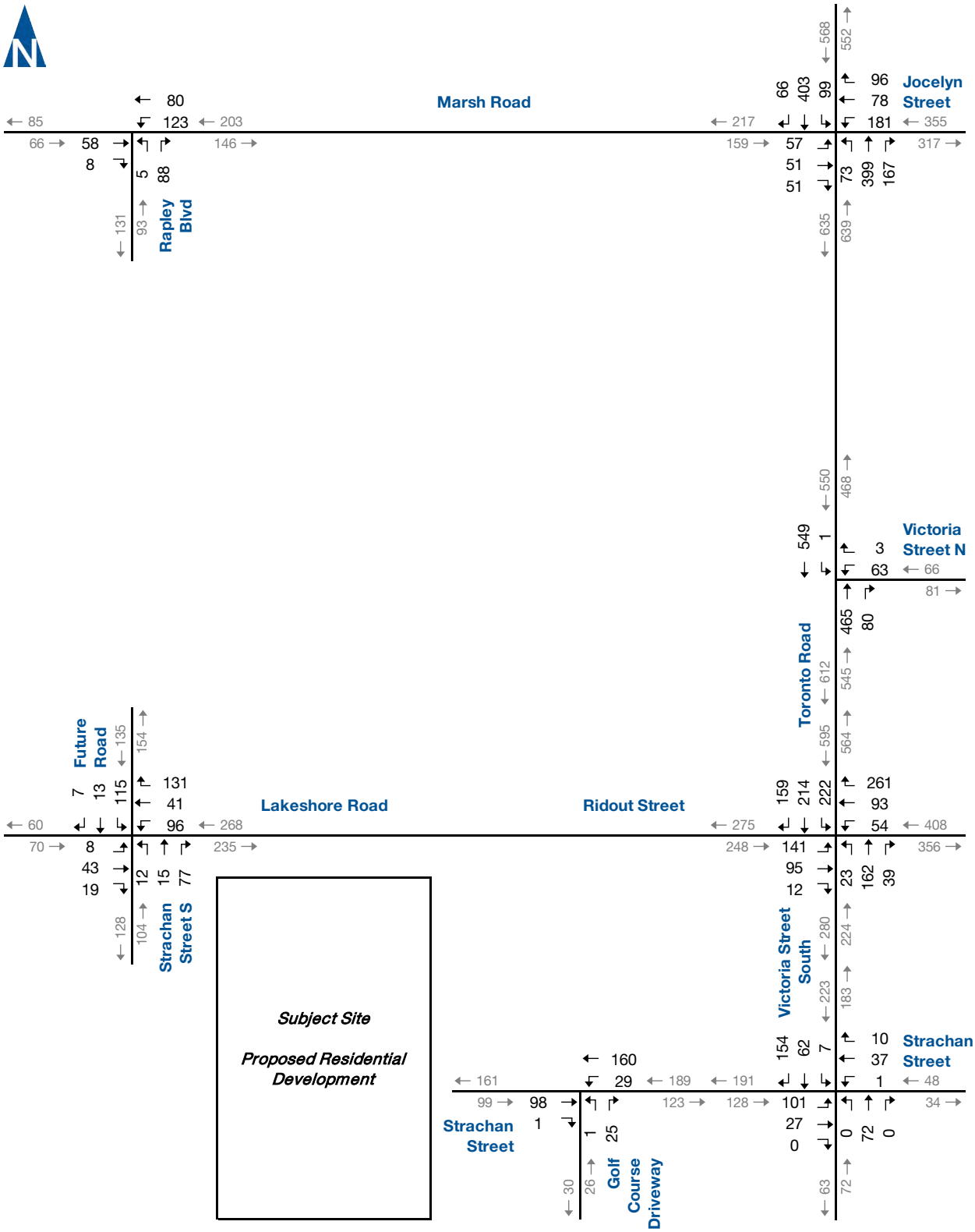
2022 Total Traffic Forecast
Scenario A - AM Peak Hour



2022 Total Traffic Forecast
Scenario A - PM Peak Hour



2022 Total Traffic Forecast
Scenario B - AM Peak Hour



2022 Total Traffic Forecast
Scenario B - PM Peak Hour

Port Hope Residential Development TRIS
17-000014

Figure 4.6B

5 Transportation Impact Assessment

5.1 Operational Analysis – Future Background Traffic

An operational analysis of the study area intersections was undertaken for the weekday AM and weekday PM peak hours with the 2022 background traffic forecasts, and using the same methodology and parameters as in the analysis of existing conditions. Traffic signal timings have not been optimized to determine whether the existing timing plans can accommodate the estimated growth in traffic.

Table 5.1 provides a summary of the results of the operational analysis for the 2022 horizon background traffic conditions. The key results are as follows:

AM Peak Hour

- No movements or intersections are considered to be critical in terms of operations or queuing.

PM Peak Hour

- No movements or intersections are considered to be critical in terms of operations or queuing.

Appendix D contains the detailed Synchro 9.1 reports.

TABLE 5.1: 2022 BACKGROUND TRAFFIC OPERATIONS SUMMARY

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Rapley Blvd & Marsh Road	TWSC	LOS		A	>	A	<	A		A	A		A	A	Approach Not Applicable				
			Delay		0	>	0	<	5		5	10		9	9					
			V/C		0.04	>		<	0.05			0.01		0.12						
			Q		0	>		<	1			0		3						
			Ex		-	>		<	-			-		-						
			Avail.		-	>		<	-			-		-						
	2 - Toronto Road & Marsh Road/Jocelyn Street	TCS	LOS	C	C	>	C	C	C	C	C	A	B	>	B	A	B	>	B	B
			Delay	22	27	>	25	22	26	26	24	9	16	>	15	8	13	>	12	17
			V/C	0.23	0.29	>		0.31	0.12	0.08		0.08	0.48	>		0.18	0.41	>		0.40
			Q	16	-	>		19	-	12		7	-	>		12	-	>		
			Ex	15	-	>		30	-	-		25	-	>		30	-	>		
			Avail.	-1	-	>		11	-	-		18	-	>		18	-	>		
	3 - Toronto Road & Victoria Street North	AWSC	LOS	Approach Not Applicable				B		B	B		A	>	A	A			A	
			Delay					11		11	11		0	>	0	0			0	
			V/C					0.10		0.10			0.20	>		0.00				
			Q					3		3			-	>		0				
			Ex					-		-			-	>		-				
			Avail.					-		-			-	>		-				
	4 - Toronto Road/Victoria Street South & Ridout Street	TCS	LOS	<	B	>	B	<	A	B	B	<	B	>	B	B	B	>	B	B
			Delay	<	11	>	11	<	10	11	11	<	11	>	11	16	11	>	14	12
			V/C	<	0.17	>		<	0.06	0.14		<	0.12	>		0.51	0.14	>		0.34
			Q	<	15	>		<	7	8		<	12	>		34	13	>		
			Ex	<	-	>		<	-	-		<	-	>		50	-	>		
			Avail.	<	-	>		<	-	-		<	-	>		16	-	>		
	5 - Victoria Street South & Strachan Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	10	>	10	<	9	>	9	<	0	>	0	<	1	>	1	
			V/C	<	0.01	>		<	0.02	>		<	0.00	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	6 - Lakeshore Road & Strachan Street South	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	8	>	8	<	8	>	8	<	7	>	7	<	7	>	7	
			V/C	<	0.06	>		<	0.07	>		<	0.07	>		<	0.00	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
PM Peak Hour	1 - Rapley Blvd & Marsh Road	TWSC	LOS		A	>	A	<	A		A	B		A	A	Approach Not Applicable				
			Delay		0	>	0	<	5		5	13		9	9					
			V/C		0.05	>		<	0.11			0.01		0.12						
			Q		0	>		<	3			0		3						
			Ex		-	>		<	-			-		-						
			Avail.		-	>		<	-			-		-						
	2 - Toronto Road & Marsh Road/Jocelyn Street	TCS	LOS	C	C	>	C	C	C	C	C	A	B	>	B	A	B	>	B	B
			Delay	23	28	>	26	21	26	25	24	8	17	>	16	9	14	>	13	18
			V/C	0.19	0.30	>		0.38	0.28	0.07		0.12	0.58	>		0.23	0.44	>		0.49
			Q	13	-	>		26	-	12		10	-	>		14	-	>		
			Ex	15	-	>		30	-	-		25	-	>		30	-	>		
			Avail.	2	-	>		4	-	-		15	-	>		16	-	>		
	3 - Toronto Road & Victoria Street North	AWSC	LOS	Approach Not Applicable				B		B	B		A	>	A	A			A	
			Delay					12		12	12		0	>	0	0			0	
			V/C					0.09		0.09			0.25	>		0.00				
			Q					2		2			-	>		0				
			Ex					-		-			-	>		-				
			Avail.					-		-			-	>		-				
	4 - Toronto Road/Victoria Street South & Ridout Street	TCS	LOS	<	B	>	B	<	B	B	B	<	B	>	B	B	B	>	B	B
			Delay	<	11	>	11	<	10	11	11	<	11	>	11	14	11	>	13	12
			V/C	<	0.19	>		<	0.10	0.18		<	0.22	>		0.44	0.22	>		0.31
			Q	<	16	>		<	10	12		<	20	>		34	20	>		
			Ex	<	-	>		<	-	-		<	-	>		50	-	>		
			Avail.	<	-	>		<	-	-		<	-	>		16	-	>		
	5 - Victoria Street South & Strachan Street	TWSC	LOS	<	B	>	B	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	10	>	10	<	9	>	9	<	0	>	0	<	1	>	1	
			V/C	<	0.06	>		<	0.02	>		<	0.00	>		<	0.01	>		
			Q	<	1	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	6 - Lakeshore Road & Strachan Street South	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	8	>	8	<	8	>	8	<	7	>	7	<	8	>	8	
			V/C	<	0.07	>		<	0.15	>		<	0.08	>		<	0.00	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

<- Shared Left/Through Lane
>- Shared Right/Through Lane
UM - Unopposed Movement

5.2 Operational Analysis – Future Total Traffic

An operational analysis of the study area intersections was undertaken for the 2022 AM and PM peak hour total traffic forecasts without and with the partial development of the lands north of Lakeshore Road, and using the same methodology and parameters as in the analysis of existing conditions. To determine whether the existing timing plans can accommodate the higher forecast traffic volumes, signal timings have not been optimized.

Based on the preliminary site plan, the new Strachan Street connection to Victoria Street South has been assumed to be two lanes (one eastbound and one westbound), and would operate with the Strachan Street approaches (old and new) under stop control as it does today. As well, the intersection of Strachan Street/Lakeshore Road, with the north leg added when considering development north of Lakeshore Road, has been assumed to operate under all-way stop control as it does today.

5.2.1 2022 Horizon – Scenario A

Table 5.2A and **Table 5.2B** provide a summary of the results of the operational analysis for the 2022 AM and PM peak hours, respectively. The key results are as follows:

AM Peak Hour

- No movements or intersections are considered to be critical in terms of operations or queuing.

PM Peak Hour

- No movements or intersections are considered to be critical in terms of operations or queuing.

The analysis indicates that the proposed development under Scenario A (Phases 4 and 5 only) will have a negligible impact on the surrounding road network. The study area intersections currently operate at good overall levels of service (LOS C or better), and are forecast to continue to operate at good overall levels of service (LOS C or better) at the 2022 horizon with the additional development.

Appendix E contains the detailed Synchro 9.1 reports.

TABLE 5.2A: 2022 TOTAL TRAFFIC OPERATIONS SUMMARY – SCENARIO A – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Rapley Blvd & Marsh Road	TWSC	LOS		A	>	**A**	<	A		**A**	B		A	**A**	**Approach Not Applicable**				
			Delay		0	>	**0**	<	5		**5**	10		9	**9**					
			V/C		0.04	>		<	0.05			0.01		0.12						
			Q		0	>		<	1			0		3						
			Ex		-	>		<	-			-		-						
			Avail.		-	>		<	-			-		-						
	2 - Toronto Road & Marsh Road/Jocelyn Street	TCS	LOS	C	C	>	**C**	C	C	C	**C**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	22	28	>	**25**	22	26	26	**24**	9	18	>	**17**	8	14	>	**13**	**18**
			V/C	0.24	0.31	>		0.33	0.12	0.08		0.10	0.61	>		0.21	0.44	>		**0.48**
			Q	16	-	>		21	-	12		8	-	>		12	-	>		
			Ex	15	-	>		30	-	-		25	-	>		30	-	>		
			Avail.	-1	-	>		9	-	-		17	-	>		18	-	>		
	3 - Toronto Road & Victoria Street North	AWSC	LOS	**Approach Not Applicable**				B		B	**B**		A	>	**A**	A	A		**A**	
			Delay					12		12	**12**		0	>	**0**	0	0		**0**	
			V/C					0.12		0.12			0.27	>		0.00	0.14			
			Q					3		3			-	>		0	0			
			Ex					-		-			-	>		-	-			
			Avail.					-		-			-	>		-	-			
	4 - Toronto Road/Victoria Street South & Ridout Street	TCS	LOS	<	B	>	**B**	<	B	B	**B**	<	B	>	**B**	B	B	>	**B**	**B**
			Delay	<	11	>	**11**	<	10	11	**11**	<	12	>	**12**	17	11	>	**15**	**13**
			V/C	<	0.23	>		<	0.09	0.14		<	0.29	>		0.55	0.19	>		**0.39**
			Q	<	18	>		<	9	8		<	24	>		36	16	>		
			Ex	<	-	>		<	-	-		<	-	>		50	-	>		
			Avail.	<	-	>		<	-	-		<	-	>		14	-	>		
	5 - Victoria Street South & Strachan Street	TWSC	LOS	<	B	>	**B**	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	
			Delay	<	11	>	**11**	<	10	>	**10**	<	0	>	**0**	<	1	>	**1**	
			V/C	<	0.23	>		<	0.03	>		<	0.00	>		<	0.01	>		
			Q	<	7	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	6 - Lakeshore Road & Strachan Street South	AWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	
			Delay	<	8	>	**8**	<	8	>	**8**	<	7	>	**7**	<	8	>	**8**	
			V/C	<	0.06	>		<	0.09	>		<	0.12	>		<	0.00	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	7 - Strachan Street & Golf Course Driveway	AWSC	LOS		A	>	**A**	<	A		**A**	<	A	>	**A**	**Approach Not Applicable**				
			Delay		0	>	**0**	<	3		**3**	<	9	>	**9**					
			V/C		0.08	>		<	0.02			<	0.01	>						
			Q		0	>		<	1			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
<- Shared Left/Through Lane
>- Shared Right/Through Lane
UM - Unopposed Movement

TABLE 5.2B: 2022 TOTAL TRAFFIC OPERATIONS SUMMARY – SCENARIO A – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	1 - Rapley Blvd & Marsh Road	TWSC	LOS		A	>	A	<	A		A	B		A	A	Approach Not Applicable				
			Delay		0	>	0	<	5		5	13		9	9					
			V/C		0.05	>		<	0.11			0.01		0.12						
			Q		0	>		<	3			0		3						
			Ex		-	>		<	-			-		-						
			Avail.		-	>		<	-			-		-						
	2 - Toronto Road & Marsh Road/Jocelyn Street	TCS	LOS	C	C	>	C	B	C	C	C	B	C	>	C	B	C	>	B	C
			Delay	24	30	>	28	18	23	23	20	11	26	>	24	12	21	>	19	22
			V/C	0.20	0.34	>		0.35	0.20	0.07		0.18	0.74	>		0.31	0.59	>		0.56
			Q	13	-	>		31	-	12		11	-	>		15	-	>		
			Ex	15	-	>		30	-	-		25	-	>		30	-	>		
			Avail.	2	-	>		-1	-	-		14	-	>		15	-	>		
	3 - Toronto Road & Victoria Street North	AWSC	LOS	Approach Not Applicable				B		B	B		A	>	A	A			A	
			Delay					12		12	12		0	>	0	0			0	
			V/C					0.11		0.11			0.29	>		0.00				
			Q					3		3			-	>		0				
			Ex					-		-			-	>		-				
			Avail.					-		-			-	>		-				
	4 - Toronto Road/Victoria Street South & Ridout Street	TCS	LOS	<	B	>	B	<	B	B	B	<	B	>	B	B	B	>	B	B
			Delay	<	12	>	12	<	11	11	11	<	12	>	12	16	13	>	14	13
			V/C	<	0.23	>		<	0.19	0.18		<	0.32	>		0.50	0.39	>		0.36
			Q	<	19	>		<	17	12		<	29	>		36	36	>		
			Ex	<	-	>		<	-	-		<	-	>		50	-	>		
			Avail.	<	-	>		<	-	-		<	-	>		14	-	>		
	5 - Victoria Street South & Strachan Street	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	
			Delay	<	13	>	13	<	11	>	11	<	0	>	0	<	0	>	0	
			V/C	<	0.26	>		<	0.07	>		<	0.00	>		<	0.01	>		
			Q	<	8	>		<	2	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	6 - Lakeshore Road & Strachan Street South	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	8	>	8	<	9	>	9	<	8	>	8	<	8	>	8	
			V/C	<	0.09	>		<	0.20	>		<	0.12	>		<	0.00	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	7 - Strachan Street & Golf Course Driveway	AWSC	LOS		A	>	A	<	A		A	<	A	>	A	Approach Not Applicable				
			Delay		0	>	0	<	1		1	<	9	>	9					
			V/C		0.05	>		<	0.02			<	0.03	>						
			Q		0	>		<	0			<	1	>						
			Ex		3	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						

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Ex. - Existing Available Storage (m)
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AWSC - All-Way Stop Control

<- Shared Left/Through Lane
>- Shared Right/Through Lane
UM - Unopposed Movement

5.2.1 2022 Horizon – Scenario B

Table 5.3A and **Table 5.3B** provides a summary of the results of the operational analysis for the 2022 AM and PM peak hours, respectively. The key results are as follows:

AM Peak Hour

- No movements or intersections are considered to be critical in terms of operations or queuing.

PM Peak Hour

- No movements or intersections are considered to be critical in terms of operations or queuing.

The results of the analysis indicate that the proposed development (Phases 4 and 5 and partial development north of Lakeshore Road) will have a negligible impact on the surrounding road network. The study area intersections currently operate at good overall levels of service (LOS C or better), and are forecast to continue to operate at good overall levels of service (LOS C or better) at the 2022 horizon with or without the development.

Appendix F contains the detailed Synchro 9.1 reports.

TABLE 5.3A: 2022 TOTAL TRAFFIC OPERATIONS SUMMARY – SCENARIO B – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Rapley Blvd & Marsh Road	TWSC	LOS		A	>	A	<	A		A	B		A	A	Approach Not Applicable				
			Delay		0	>	0	<	5		5	10		9	9					
			V/C		0.04	>		<	0.05			0.01		0.12						
			Q		0	>		<	1			0		3						
			Ex		-	>		<	-			-		-						
			Avail.		-	>		<	-			-		-						
	2 - Toronto Road & Marsh Road/Jocelyn Street	TCS	LOS	C	C	>	C	C	C	C	C	A	C	>	B	A	B	>	B	B
			Delay	22	28	>	26	22	26	26	24	9	21	>	19	9	14	>	13	19
			V/C	0.24	0.32	>		0.37	0.12	0.08		0.11	0.69	>		0.24	0.47	>		0.55
			Q	16	-	>		23	-	12		9	-	>		12	-	>		
			Ex	15	-	>		30	-	-		25	-	>		30	-	>		
			Avail.	-1	-	>		7	-	-		16	-	>		18	-	>		
	3 - Toronto Road & Victoria Street North	AWSC	LOS	Approach Not Applicable				B		B	B		A	>	A	A			A	
			Delay					13		13	13		0	>	0	0			0	
			V/C					0.14		0.14			0.31	>		0.00				
			Q					4		4			-	>		0				
			Ex					-		-			-	>		-				
			Avail.					-		-			-	>		-				
	4 - Toronto Road/Victoria Street South & Ridout Street	TCS	LOS	<	B	>	B	<	B	B	B	<	B	>	B	B	B	>	B	B
			Delay	<	14	>	14	<	11	11	11	<	12	>	12	17	11	>	15	13
			V/C	<	0.44	>		<	0.12	0.14		<	0.29	>		0.55	0.23	>		0.50
			Q	<	33	>		<	11	8		<	24	>		36	18	>		
			Ex	<	-	>		<	-	-		<	-	>		50	-	>		
			Avail.	<	-	>		<	-	-		<	-	>		14	-	>		
	5 - Victoria Street South & Strachan Street	TWSC	LOS	<	B	>	B	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	12	>	12	<	10	>	10	<	0	>	0	<	1	>	1	
			V/C	<	0.26	>		<	0.04	>		<	0.00	>		<	0.01	>		
			Q	<	8	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	6 - Lakeshore Road & Strachan Street South	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	8	>	8	<	8	>	8	<	8	>	8	<	9	>	9	
			V/C	<	0.07	>		<	0.18	>		<	0.14	>		<	0.18	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	7 - Strachan Street & Golf Course Driveway	AWSC	LOS		A	>	A	<	A		A	<	A	>	A	Approach Not Applicable				
			Delay		0	>	0	<	3		3	<	9	>	9					
			V/C		0.09	>		<	0.02			<	0.01	>						
			Q		0	>		<	1			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						

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TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

<- Shared Left/Through Lane
>- Shared Right/Through Lane
UM - Unopposed Movement

TABLE 5.3B: 2022 TOTAL TRAFFIC OPERATIONS SUMMARY – SCENARIO B – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	1 - Rapley Blvd & Marsh Road	TWSC	LOS		A	>	A	<	A		A	B		A	A	Approach Not Applicable				
			Delay		0	>	0	<	5		5	13		9	9					
			V/C		0.05	>		<	0.11			0.02		0.12						
			Q		0	>		<	3			0		3						
			Ex		-	>		<	-			-		-						
			Avail.		-	>		<	-			-		-						
	2 - Toronto Road & Marsh Road/Jocelyn Street	TCS	LOS	C	C	>	C	B	C	C	C	B	C	>	C	B	C	>	C	C
			Delay	25	31	>	29	18	23	22	20	12	33	>	30	14	23	>	22	25
			V/C	0.21	0.37	>		0.40	0.19	0.07		0.22	0.85	>		0.37	0.68	>		0.64
			Q	13	-	>		35	-	12		12	-	>		16	-	>		
			Ex	15	-	>		30	-	-		25	-	>		30	-	>		
			Avail.	2	-	>		-5	-	-		13	-	>		14	-	>		
	3 - Toronto Road & Victoria Street North	AWSC	LOS	Approach Not Applicable				B		B	B		A	>	A	A			A	
			Delay					13		13	13		0	>	0	0			0	
			V/C					0.14		0.14			0.34	>		0.00				
			Q					4		4			-	>		0				
			Ex					-		-			-	>		-				
			Avail.					-		-			-	>		-				
	4 - Toronto Road/Victoria Street South & Ridout Street	TCS	LOS	<	B	>	B	<	B	B	B	<	B	>	B	B	B	>	B	B
			Delay	<	15	>	15	<	12	11	11	<	12	>	12	16	15	>	15	14
			V/C	<	0.49	>		<	0.26	0.18		<	0.33	>		0.50	0.50	>		0.50
			Q	<	38	>		<	22	12		<	29	>		36	46	>		
			Ex	<	-	>		<	-	-		<	-	>		50	-	>		
			Avail.	<	-	>		<	-	-		<	-	>		14	-	>		
	5 - Victoria Street South & Strachan Street	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	
			Delay	<	14	>	14	<	12	>	12	<	0	>	0	<	0	>	0	
			V/C	<	0.30	>		<	0.11	>		<	0.00	>		<	0.01	>		
			Q	<	10	>		<	3	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	6 - Lakeshore Road & Strachan Street South	AWSC	LOS	<	A	>	A	<	B	>	B	<	A	>	A	<	A	>	A	
			Delay	<	9	>	9	<	11	>	11	<	9	>	9	<	10	>	10	
			V/C	<	0.11	>		<	0.40	>		<	0.16	>		<	0.23	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	7 - Strachan Street & Golf Course Driveway	AWSC	LOS		A	>	A	<	A		A	<	A	>	A	Approach Not Applicable				
			Delay		0	>	0	<	1		1	<	9	>	9					
			V/C		0.06	>		<	0.02			<	0.03	>						
			Q		0	>		<	1			<	1	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						

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Delay - Average Delay per Vehicle in Seconds

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Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)

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TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

<- Shared Left/Through Lane
>- Shared Right/Through Lane
UM - Unopposed Movement

5.3 Operational Analysis – Key Findings

The results of the operational analysis indicate that the external study area intersections are forecast to operate at a good overall level of service (LOS C or better) at the 2022 horizon year for either Scenario A or Scenario B. Based on this analysis, no road capacity or traffic control device improvements would be required to support the development.

Within the Phases 4 and 5 subdivision, it is also reasoned that all internal intersections would function at a very good level of service due to the relatively low peak hour volumes on the Strachan Street extension and the dispersal of site traffic to six local road intersections. The highest hourly volumes on Strachan Street would be during the PM peak hour, and the forecasts represent an average of approximately three vehicles per minute westbound and two vehicles per minute eastbound at the busiest location just west of Victoria Street South.

It should also be noted that these volumes would be well within the capacity of the single lane roundabout proposed at the Strachan Street/Street B-Street D intersection. In addition to the traffic control provided by the roundabout intersection, it also serves as a traffic calming feature to assist in discouraging higher operating speeds along the future east-west section of Strachan Street.

5.4 Functional Classifications – Internal Road Network

With the completion of Strachan Street between Lakeshore Road and Victoria Street South, it will provide a collector function within the Phases 4 and 5 subdivision. By definition, collector roads provide equally for through traffic movement and access to properties. The remaining roads in the development will function as local roads, which primarily provide access to properties. Strachan Street will also operate as a collector road north of Lakeshore Road when it is fully extended to its planned northerly terminus at the intersection with the future Lavinia Street extension.

The PM peak hour forecasts were factored by 10 to represent the typical relationship of the PM peak hour being 10% of the daily traffic on a roadway. This results in the following estimates of vehicles per day (vpd):

- Strachan Street immediately north of Lakeshore Road, 2,900 vpd;
- Strachan Street immediately south of Lakeshore Road, 2,300 vpd; and
- Strachan Street immediately west of Victoria Street South, 3,200 vpd.

The Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Road identifies the typical daily traffic volume for collector roads as up to 8,000 vpd for residential areas, and up to 1,000 vpd for local

roads. The resultant estimates of future daily traffic volumes on Strachan Street are well within the guideline for the collector road classification.

In consideration of the relatively low collector road daily traffic volume forecasts, the geographic distribution of the residential units within the Phase 4 and Phase 5 lands, and the number of local road connections within the subdivision, the daily traffic volumes on the remaining roads with the local road functional classification would also be relatively low and well within the 1,000 vpd guideline.

5.5 Internal Site Circulation

Previous studies completed for the existing development west of the subject site included a review of the proposed internal road network. To remain consistent with these previous studies, a review of the internal street layout in Phases 4 and 5 was conducted to confirm that the new intersections will meet standards for efficient and safe traffic operations.

At present, Strachan Street serves as a local road connection. However, as shown earlier in **Figure 2.1** Strachan Street is proposed to serve as the principal access connecting the existing development, with the new development. The Municipality's Official Plan presently identifies Strachan Street as a future collector road west of Victoria Street South. As the only collector road in the planning area, the roadway will carry some through traffic to Lakeshore Road, as well as local traffic accessing the new development, as was previously identified in the study update completed by Tranplan Associates in January 2010[14].

Also, as illustrated previously in **Figure 2.1**, six (6) new intersections will provide access for the development as it is constructed. The principal considerations from a traffic operations and safety perspective are the intersection spacing and sightline requirements along Strachan Street. The proposed intersection locations along the new section of Strachan Street exceed the Transportation Association of Canada (TAC) guideline of 60 metres as the minimum intersection spacing along residential collector roads. Sightline requirements have been based on the TAC guidelines for a design speed of 60 kilometres per hour (10 kilometres per hour above the assumed statutory maximum speed limit 50 km/h) for Stopping Sight Distance (90 metres) and Departure Sight Distance (125 metres). Respectively, these are the required distances for a driver on the major or free flow street to perceive and react to a vehicle entering the main street from a minor street and to bring their vehicle to a complete stop, and for a driver turning from a minor street to select a gap in major street traffic that will not significantly impede traffic flow (i.e. require slowing of major street traffic).

[14] Penryn Village Residential Subdivision Update Traffic Study. Prepared for AON Inc. by Tranplan Associates. January 2010.

5.5.1 Intersection 1 – Street D and Strachan Street

Street D forms a T-intersection with Strachan Street, and is located approximately 244 metres east of Potts Lane/Bigwood Crescent (centreline to centreline spacing). There will be approximately 260 metres of sight distance to the west for vehicles approaching from the west or turning from Street D. There will be approximately 515 metres of sight distance to the east for vehicles approaching from the east or turning from Street D. This exceeds TAC guidelines for stopping and departure sight distance for a design speed of 60 kilometres per hour. The intersection should be stop controlled on the minor approach (i.e. Street D).

The centrelines for Strachan Street and Street D meet at an angle of 90˚. This meets the TAC guidelines for the skew angle of two roadway centrelines being between 70˚ and 90˚.

5.5.2 Intersection 2 – Street C-Street F and Strachan Street

Street C-Street F forms a four-leg intersection with Strachan Street, and is located approximately 163 metres east of Street D (centreline to centreline spacing). There will be approximately 420 metres of sight distance to the west for vehicles approaching from the west or turning from Street D. There will be approximately 352 metres of sight distance to the east for vehicles approaching from the east or turning from Street D. This exceeds TAC guidelines for stopping and departure sight distances for a design speed of 60 kilometres per hour. The intersection should be stop controlled on the minor approaches (Street C-Street F).

The centrelines for Strachan Street and Street C-Street F meet at an angle of 90˚. This meets the TAC guidelines for the skew angle of two roadway centrelines being between 70˚ and 90˚.

5.5.3 Intersection 3 – Street C-Street E and Strachan Street

Street C-Street E forms a four-leg intersection with Strachan Street, and is located approximately 163 metres east of Street C-Street F (centreline to centreline spacing). There will be approximately 583 metres of sight distance to the west for vehicles approaching from the west or turning from Street D. There will be approximately 190 metres of sight distance to the east for vehicles approaching from the east or turning from Street D. This exceeds TAC guidelines for stopping and departure sight distances for a design speed of 60 kilometres per hour. The intersection should be stop controlled on the minor approaches (Street C-Street E).

The centrelines for Strachan Street and Street C-Street E meet at an angle of 90˚. This meets the TAC guidelines for the skew angle of two roadway centrelines being between 70˚ and 90˚.

5.5.4 Intersection 4 – Street A (West Leg) and Strachan Street

Street A forms a T-intersection with Strachan Street, and is located approximately 75 metres east of Street C-Street E (centreline to centreline spacing) and approximately 100 metres west of Street D-Street B. There will be approximately 660 metres of sight distance to the west for vehicles approaching from the west or turning from Street A. There will be approximately 116 metres of sight distance to the east for vehicles approaching from the east, or turning from Street A. This exceeds TAC guidelines for stopping sight distance for a design speed of 60 kilometres per hour. The intersection should be stop controlled on the minor approach (Street A).

For left or right turning vehicles from Street A, the sight distance to the east is less than the departure sight distance for a 60 km/h design speed. However, it should be noted that the preliminary site plan includes roundabout design and traffic control at the Strachan Street/Street D-Street B intersection, which will to some extent meter the westbound traffic flow approaching Street A (west leg) and contribute to lower vehicle speeds on the section of Strachan Street between Street A and Street D-Street B.

The centrelines for Strachan Street and Street A meet at an angle of 90°. This meets the TAC guidelines for the skew angle of two roadway centrelines being between 70° and 90°.

5.5.5 Intersection 5 – Street B-Street D and Strachan Street

Street B-Street D forms a four-leg intersection with Strachan Street, and is located approximately 100 metres east of the west leg of Street A and 110 metres west of the east leg of Street A (centreline to centreline spacing). As noted above, the intersection would be designed as a roundabout. Under roundabout control, stopping and departure sight distance requirements are effectively controlled by the requirement for vehicles entering the intersection having to yield the right of way to traffic already circulating within the roundabout.

The centrelines for Strachan Street and Street B/Street D meet at an angle of 90º, except for the westbound approach on Strachan Street which intersects Street B/Street D at an angle of 70º. This meets the TAC guidelines for the skew angle of two roadway centrelines being between 70º and 90º.

5.5.6 Intersection 6 – Street A (East Leg) and Strachan Street

Street A forms a T-intersection with Strachan Street, and is located approximately 110 metres east of Street B/Street D and 110 metres west of Victoria Street South (centreline to centreline spacing). There will be approximately 90 metres of sight distance to the west for vehicles approaching from the west or turning from Street A. There will be approximately 120 metres of sight distance to the east for vehicles approaching from the east, or turning from Street A. This meets or exceeds TAC guidelines for stopping sight distance for a design speed of 60

kilometres per hour. The intersection should be stop controlled on the minor approach (Street A).

Departure sight distances for a design speed of 60 km/h are not met for vehicles turning left or right from Street A. This intersection, however, would be on a section of Street A with lower eastbound travel speeds due to the proposed roundabout at Street B-Street D to the west (described previously) and lower westbound travel speeds related to vehicles turning left or right onto Strachan Street from Victoria Street South or traversing Victoria Street South from the stop controlled westbound approach of exiting Strachan Street.

The centrelines for Strachan Street and Street A meet at an angle of 90°. This meets the TAC guidelines for the skew angle of two roadway centrelines being between 70° and 90°.

5.6 Public Transit

According to the Ministry of Transportation of Ontario (MTO) "Transit Supportive Guidelines", it is desirable to provide transit service such that at least 90% of people/jobs are within a 400 metre (five minute) walking distance of a transit stop. To achieve this level of transit coverage for the subject lands south and north of Lakeshore Road would require re-routing Route A to run along the extension of Strachan Street and Lakeshore Road.

It is understood from discussions with Municipal staff that consideration is being given to changing the current transit system from fixed route to on-demand. This would provide a more flexible system in terms of the type of transit vehicles that could be used, routing, scheduling and the origins and destinations served.

The provision of transit service in closer proximity to the proposed residential, institutional, and commercial development, and the availability of active transportation facilities, could reduce the reliance on the private automobile and the amount of traffic generated by the new residents. The proposed site plan for Phases 4 and 5 could accommodate either an extension of Route A along a new section of Strachan Street or an on-demand transit service.

5.7 Active Transportation

5.7.1 Pedestrian Connectivity

As a collector road, the proposed new sections of Strachan Street would have sidewalks on both sides of the street. For the remaining local roads within the proposed subdivision, there would be a sidewalk on one side as per the Municipality's policy. The sidewalks will connect to the broader sidewalk network within the completed Phases 1, 2, and 3 of this subdivision, and to the sidewalk on the adjacent public roads.

The Municipality's 2011 "Active Transportation and Trail Master Plan"[15] (ATTMP) was reviewed to identify any recommendations that coincide with the development of the subject site, or the surrounding transportation network. The ATTMP recommended any future reconstruction of Lakeshore Road incorporate a painted bike lane and sidewalk to connect the existing sidewalk east of Shortt Street[16].

As stated in section 11.2.3. of the Official Plan, "Lakeshore Road has been identified as a cultural landscape and a Civic Way worthy of specific consideration". In section C13.3.1 and Figure 1 of the Official Plan, future changes to the Lakeshore Road cross section for approximately 650 metres west of its intersection with Toronto Road-Victoria Street South are subject to special provisions. A lesser standard than one typically applied to arterial roads may be applied in response to "historical/cultural" requirements. As depicted in Figure 1, "Typical Road Cross Section", Lakeshore Road has a 20-metre right-of-way in which to accommodate sidewalks on both sides of the road, existing mature streets (part of the cultural landscape), two travel lanes, and open ditches on both sides. Notes are included specifying interlocking brick sidewalk, rather than concrete, adjacent to trees and that ditches will not be constructed where existing trees may be negatively impacted.

Under existing conditions, the sidewalk on Lakeshore Road remains discontinuous. Until the Municipality completes the sidewalk network on Lakeshore Road, the proposed extension of Strachan Street within the Phases 4 and 5 subdivision would provide an alternative east-west pedestrian route.

5.7.2 Cycling Connectivity

The Municipality's "2014 Road-Related Urban Cycling Facility Implementation Strategy"[17] (RRUCFIS) was reviewed to identify any recommendations that coincide with the development of the subject site, or the surrounding transportation network. **Appendix G** contains the maps from the RRUCFIS, illustrating the proposed short-term and long-term cycling facility types.

The RRUCFIS identified Lakeshore Road as a short-term cycling spine, and proposed the use of a signed route, in place of more permanent bike lanes, as previously referenced in the earlier ATTMP. The long-term plan recommended maintaining the signed facility west of Strachan Street, and diverting the bike route onto Strachan Street extension.

The RRUCFIS identified Strachan Street as an urban road with a 9.0 metre pavement width and 1.5 metre cycling lanes on each side of the road for the

[15] Active Transportation and Trail Master Plan. The Corporation of the Municipality of Port Hope. January 2011.
[16] Ibid. Pg. 9
[17] Road-Related Urban Cycling Facility Implementation Strategy. Prepared by CIMA+. November 2014.

short term. For the long term, it is suggested a pavement width that would allow for 1.8 metre cycling lanes and two 3,0, metre travel lanes, which would be a minimum pavement width of 9.6 metres although 10.6 metres was noted in the report's presentation materials.

Under the current development proposal, the cross section for Strachan Street within a 23.0 metre right-of-way includes a 10.0 metre pavement width and a parking layby of 2.5 metres. The 10.0 metre pavement width could accommodate either 1.5 or 1.8 metre bike lanes.

5.8 Traffic Management Plan (Construction)

In advance of the construction of new development on the subject lands, a Traffic Management Plan will be prepared and reviewed with Municipal staff and the public. The key objectives of the plan would be to minimize potential conflicts between general traffic and construction-related traffic, and to mitigate other nuisance impacts of construction (e.g. dust, mud tracking, temporary lane closures, etc.)

The basic components of the Traffic Management Plan would include:

- A public information strategy to provide advanced notice of construction activities that may affect public roadways, and their schedule (dates and times);
- The establishment of the route(s) and site access(es) for construction vehicles that would focus this traffic on the higher order roads (arterials and collectors);
- The identification of the location of construction worker and equipment parking;
- A plan to illustrate the required traffic control measures such as signage, barriers, barrels, and locations for flag-persons (if necessary);
- The protocol for escort or warning vehicles if required for oversize construction equipment or delivery vehicles; and
- The measures to be used for dust control, mud-tracking, and snow removal.

6 Conclusions and Recommendations

6.1 Conclusions

The conclusions of the Transportation Impact Study are as follows:

- Under base year 2017 conditions, the study area intersections operate at good overall levels of service (LOS C or better), and well within capacity;
- Under 2022 future background conditions, with future increases in traffic related to general background growth, the operations of the study area intersections are forecast to operate at similar levels of service to 2017 base year conditions (LOS C or better), and well within capacity;
- Under 2022 future total traffic conditions, with the addition of site generated traffic with Phases 4 and 5 alone or with the additional partial development of lands north of Lakeshore Road, the operations of the study area intersections are forecast to operate at similar levels of service to 2022 background conditions (LOS C or better) and well within capacity. The intersection of Lakeshore Road/Strachan Street, and Victoria Street South/Strachan Street are both forecast to operate at good overall levels of service and well within capacity;
- No road capacity or traffic control device improvements would be required on the external road network to accommodate the site generated traffic;
- The proposed local road intersections with the east-west extension of Strachan Street (collector road) provide sufficient spacing and sightlines to meet accepted guidelines, and all roads would have appropriate traffic volumes for their functional classifications;
- The proposed roundabout at the internal intersection of Strachan Street/Street B-Street D would have more than sufficient capacity to accommodate the site traffic and would serve as a traffic calming feature to discourage higher travel speeds through the existing and new residential areas south of Lakeshore Road;
- To provide a desirable level of public transit coverage for the proposed new development would require modifying Port Hope Transit's Route A to run along the new east-west section of Strachan Street and Lakeshore Road. Similarly, if the Municipality replaced the current fixed route transit system with an on-demand service in the future, the proposed internal road network would facilitate ease of access for transit vehicles;
- Pedestrian travel would be accommodated by the proposed sidewalk network within the development and its connections to the public sidewalk system. It is anticipated that at some future date the Municipality will complete the sidewalk system on Lakeshore Road

as envisioned in section 13.3.1 and Figure 1 ("Typical Road Cross Section") of the Official Plan;

- Bicycle travel would be accommodated by the proposed collector (Strachan Street) and local roads (all other streets) within the development. The proposed Strachan Street cross section within Phases 4 and 5 could accommodate the delineation of painted on-road bicycle lanes as envisioned in the Municipality's 2014 "Road-Related Urban Cycling Facility Implementation Strategy', and this would facilitate the diversion of cycling traffic from the parallel, but physically constrained, Lakeshore Road corridor;
- The preparation of a Traffic Management Plan, which would be subject to review by the Municipality and the public, would assist in minimizing potential traffic conflicts and mitigating other adverse impacts related to Phases 4 and 5 construction activities; and
- The subject study addresses the five-year traffic impact of the development that is anticipated to occur, or has potential to occur, within the larger development area previously approved by the Ontario Municipal Board, and therefore, serves as the update traffic study required under the conditions of the Board's overall approval.

6.2 Recommendations

The recommendations of the Transportation Impact Study are as follows:

- The proposed development of Phases 4 and 5, within the larger residential community that was initially proposed by AON Inc., be approved from a transportation perspective;
- Similarly, the potential partial development of lands north of Lakeshore Road be approved from a transportation perspective subject to the condition that emergency and service vehicle access requirements are to be addressed through subsequent steps in the development approval process;
- The subject study be accepted as the required five-year update to meet the conditions of approval for the overall development as established by the Ontario Municipal Board (OMB) in the early 2000's;
- A Traffic Management Plan be developed and reviewed with the Municipality and the public prior to the beginning of Phases 4 and 5 subdivision construction activities;
- The Municipality of Port Hope make the appropriate changes to transit routing, or to the transit system in general, to ensure that the subject lands would have a desirable level of access to public transit; and
- On-road bicycle lanes be included within the proposed cross section for Strachan Street to promote active transportation.

Appendix A

Turning Movement Count Data Sheets

15 MINUTE REPORT

South Road: Rapley Blvd
East-West Road: Marsh Rd
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016

TIME BEGINNING	NORTH APPROACH								EAST APPROACH								SOUTH APPROACH								WEST APPROACH								Total Vehicular Traffic	Total PED/BIKE Traffic
	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike		
	Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right				
7:00	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	9	0	0	0	0	0	0	25	0
7:15	0	0	0	0	0	0	0	0	2	3	0	1	0	0	0	0	1	0	8	0	0	1	0	0	0	8	0	0	0	0	0	0	24	0
7:30	0	0	0	0	0	0	0	0	5	6	0	0	0	0	0	0	1	0	15	0	0	0	3	0	0	15	0	0	0	0	0	0	42	3
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8:00	0	0	0	0	0	0	0	0	4	8	0	0	2	0	0	0	0	0	20	0	0	0	0	0	0	12	0	0	0	0	0	0	46	0
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8:45	0	0	0	0	0	0	0	0	8	9	0	1	0	0	0	0	0	0	24	0	0	3	0	0	0	14	1	0	2	0	0	0	62	0
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15:00	0	0	0	0	0	0	0	0	21	10	0	0	2	0	1	0	0	0	16	0	0	0	0	0	0	15	0	0	0	0	4	0	64	5
15:15	0	0	0	0	0	0	0	0	24	15	0	2	0	0	0	0	3	0	13	0	0	2	0	0	0	14	0	0	0	0	0	0	73	0
15:30	0	0	0	0	0	0	0	0	42	14	0	0	1	0	0	0	0	0	24	0	0	1	1	0	0	14	4	0	0	0	1	0	100	2
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16:00	0	0	0	0	0	0	0	0	19	14	0	0	0	0	0	0	1	0	25	0	0	1	0	0	0	6	3	0	1	0	0	0	70	0
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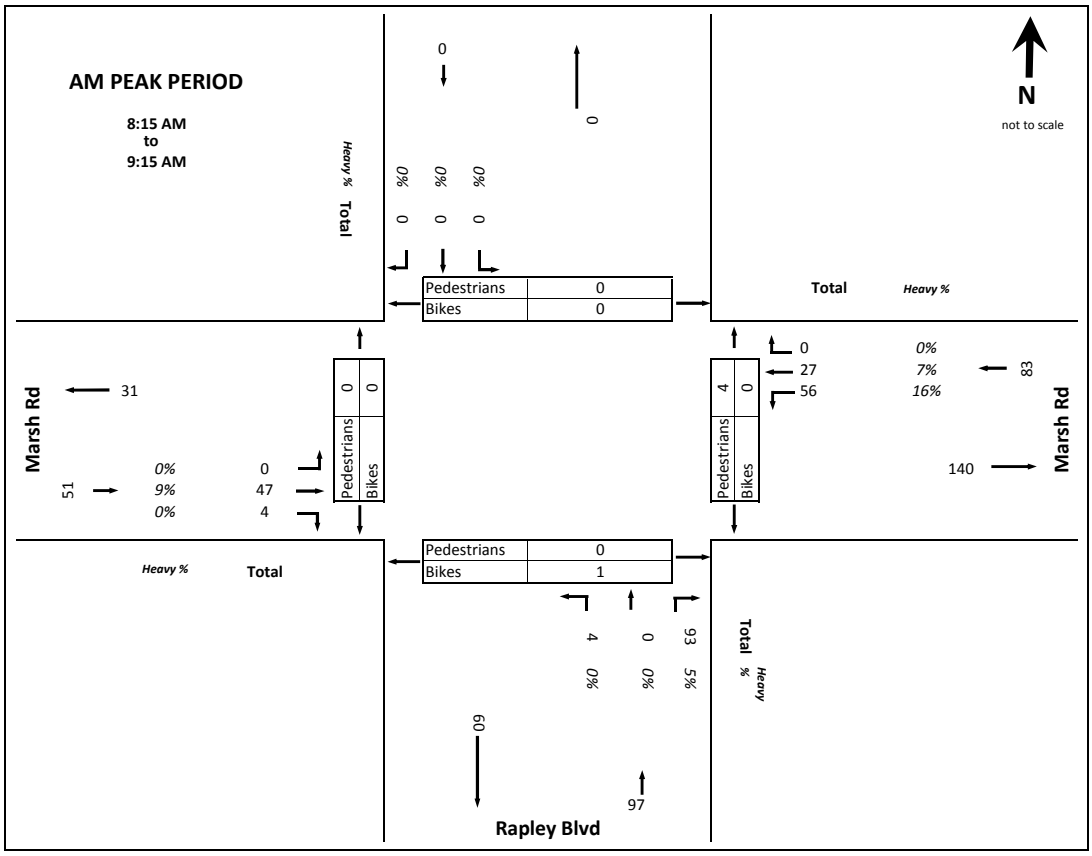
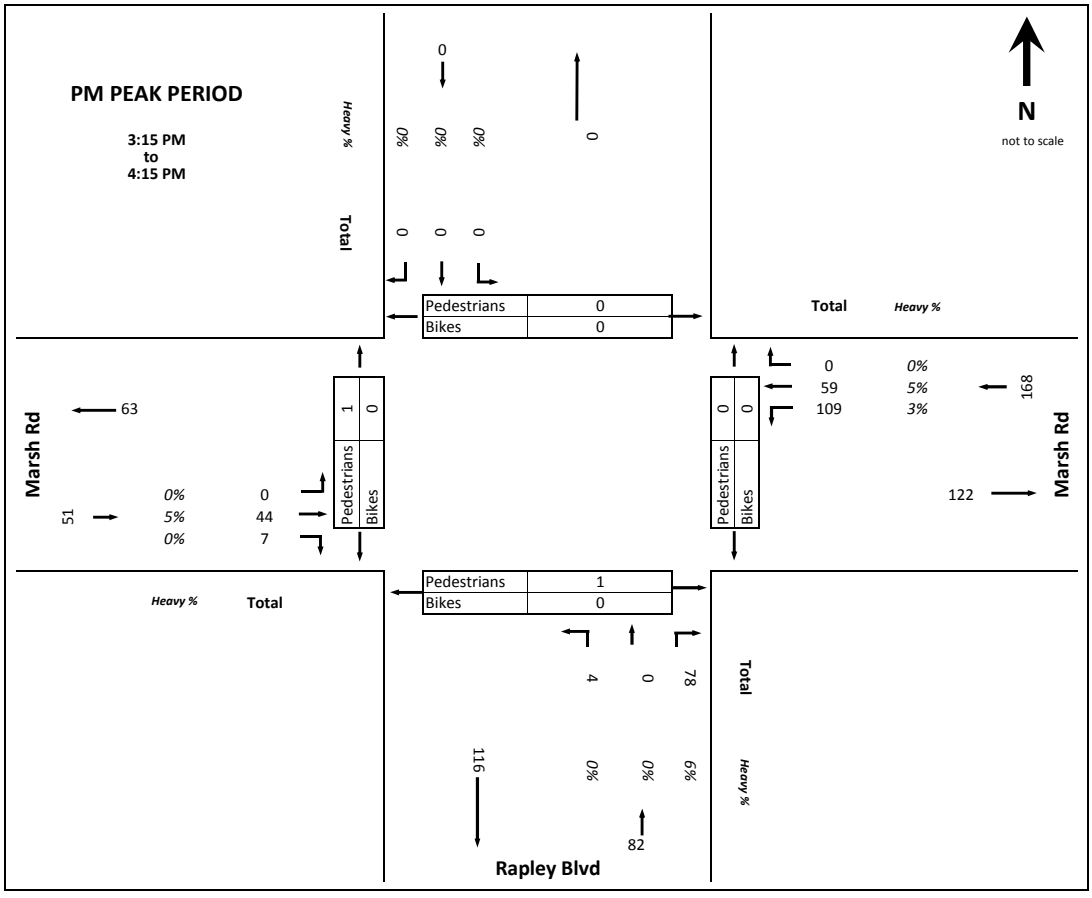
16:45	0	0	0	0	0	0	0	0	35	19	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	14	1	0	0	0	0	0	78	0

TURNING MOVEMENT DIAGRAMS

South Road: Rapley Blvd
East-West Road: Marsh Rd
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016





15 MINUTE REPORT

North-South Road: Toronto Rd
East-West Road: Jocelyn St / Marsh Rd
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016

TIME BEGINNING	NORTH APPROACH								EAST APPROACH								SOUTH APPROACH								WEST APPROACH								Total Vehicular Traffic	Total PED/BIKE Traffic
	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike		
	Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right				
7:00	2	34	2	1	2	0	0	0	5	3	16	0	1	0	2	0	2	30	3	0	2	0	0	0	18	7	0	1	0	0	0	0	129	2
7:15	8	38	4	1	1	0	0	0	7	0	24	0	1	0	1	0	1	33	4	0	1	2	0	0	8	4	5	0	1	0	0	0	143	1
7:30	3	40	9	1	2	0	0	0	6	5	21	1	0	1	0	0	1	52	4	0	1	1	3	0	17	5	3	1	0	0	0	0	174	3
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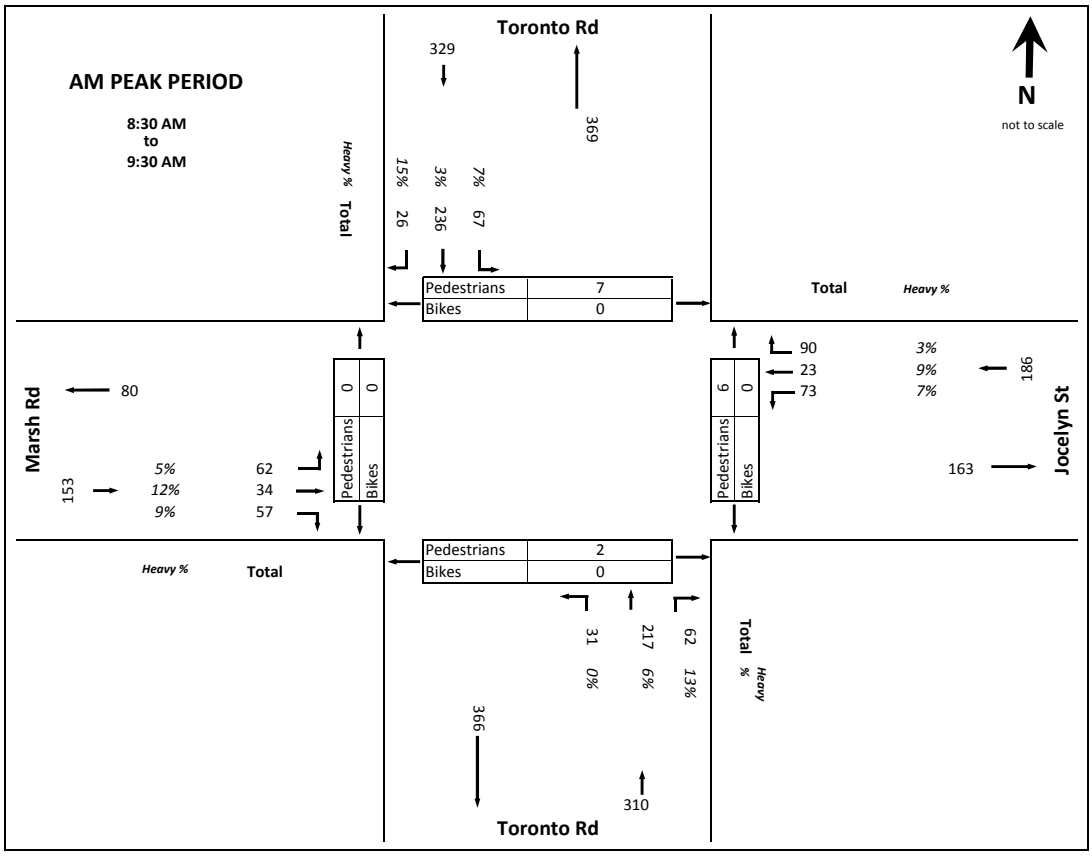
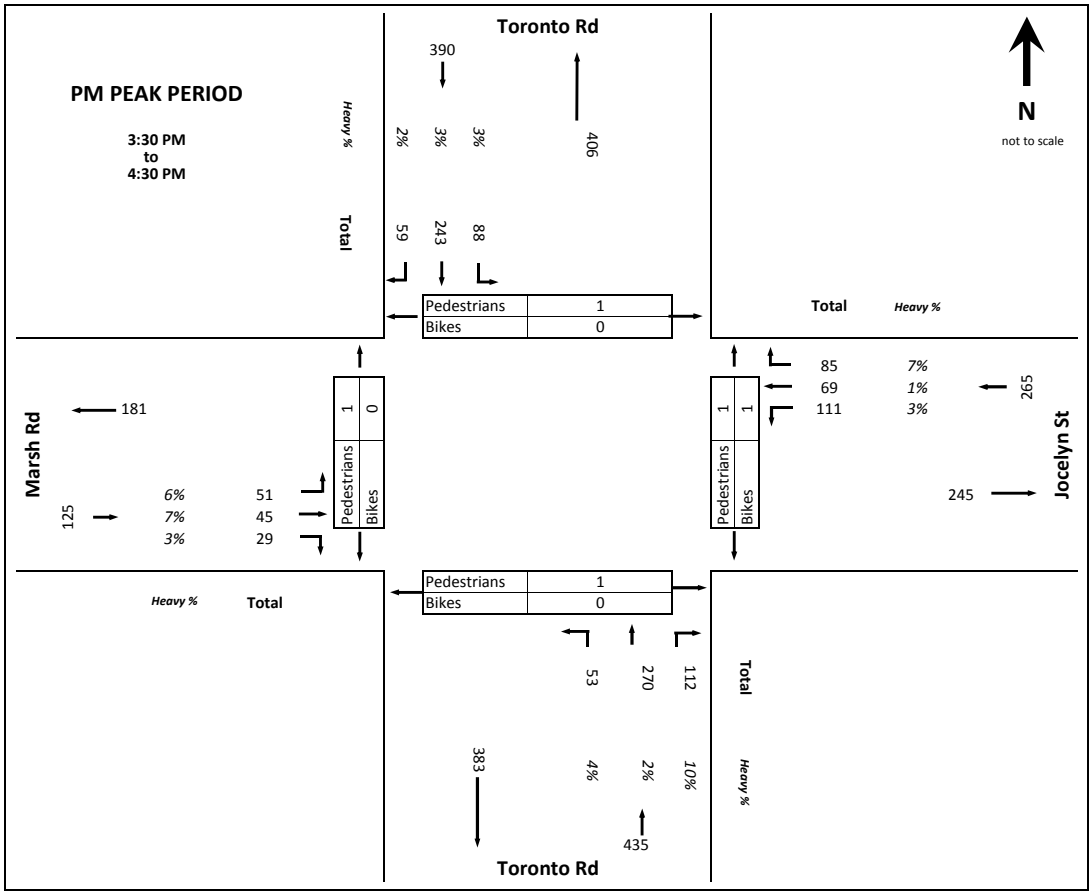
17:45	15	52	15	1	0	0	0	0	22	11	20	0	1	0	0	0	9	34	13	0	0	0	0	0	16	9	11	0	0	0	0	1	229	1

TURNING MOVEMENT DIAGRAMS

North-South Road: Toronto Rd
East-West Road: Jocelyn St / Marsh Rd
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016





15 MINUTE REPORT

North-South Road: Toronto Rd
East Road: Victoria St N
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016

TIME BEGINNING	NORTH APPROACH								EAST APPROACH								SOUTH APPROACH								WEST APPROACH								Total Vehicular Traffic	Total PED/BIKE Traffic
	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike		
	Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right				
7:00	0	26	0	0	1	0	0	0	6	0	0	0	0	0	0	0	0	24	2	0	0	0	0	0	0	0	0	0	0	0	0	0	59	0
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7:45	1	51	0	0	3	0	0	0	9	0	1	1	0	0	4	0	0	37	4	0	1	0	0	0	0	0	0	0	0	0	0	0	108	4
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15:00	0	60	0	0	2	0	1	0	15	0	1	0	0	0	2	0	0	61	16	0	5	3	0	0	0	0	0	0	0	0	0	0	163	3
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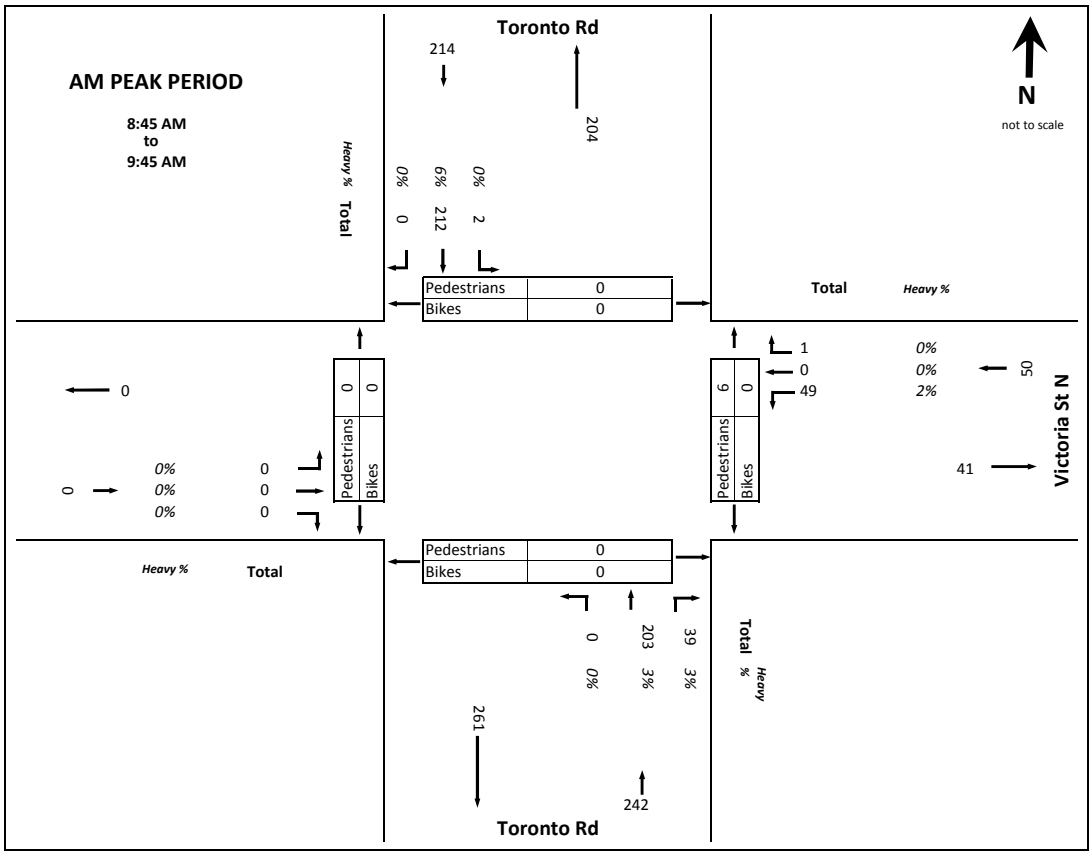
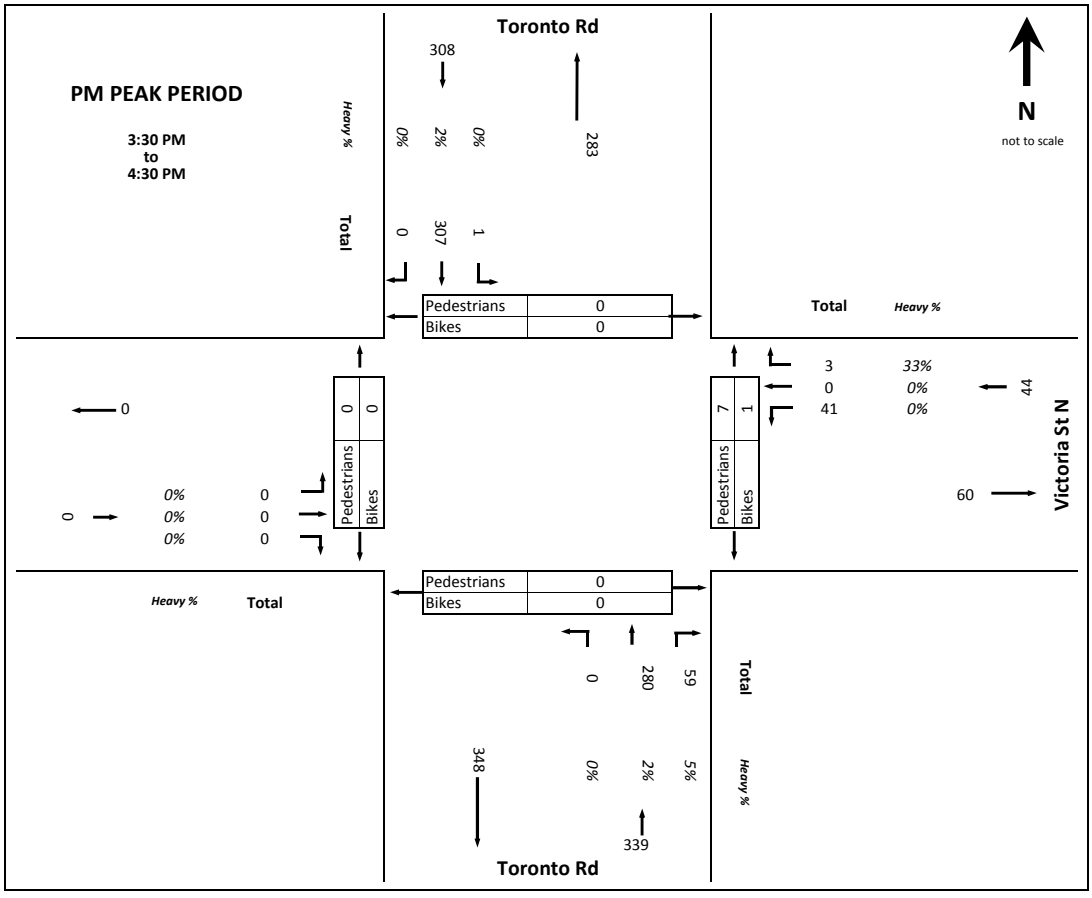
16:45	0	57	0	0	1	0	0	0	10	0	0	0	0	0	3	1	0	68	24	0	0	0	1	0	0	0	0	0	0	0	0	0	160	5

TURNING MOVEMENT DIAGRAMS

North-South Road: Toronto Rd
East Road: Victoria St N
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016





15 MINUTE REPORT

North-South Road: Toronto Rd / Victoria St S
East-West Road: Ridout St
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016

TIME BEGINNING	NORTH APPROACH								EAST APPROACH								SOUTH APPROACH								WEST APPROACH								Total Vehicular Traffic	Total PED/BIKE Traffic
	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike		
	Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right				
7:00	18	9	5	1	0	0	0	0	0	1	12	0	0	0	2	0	0	8	0	0	0	0	0	0	6	3	4	0	0	0	0	0	67	2
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7:30	24	7	7	2	0	1	0	0	0	4	23	0	1	0	1	0	0	12	0	0	0	0	0	0	7	10	7	0	0	0	2	0	105	3
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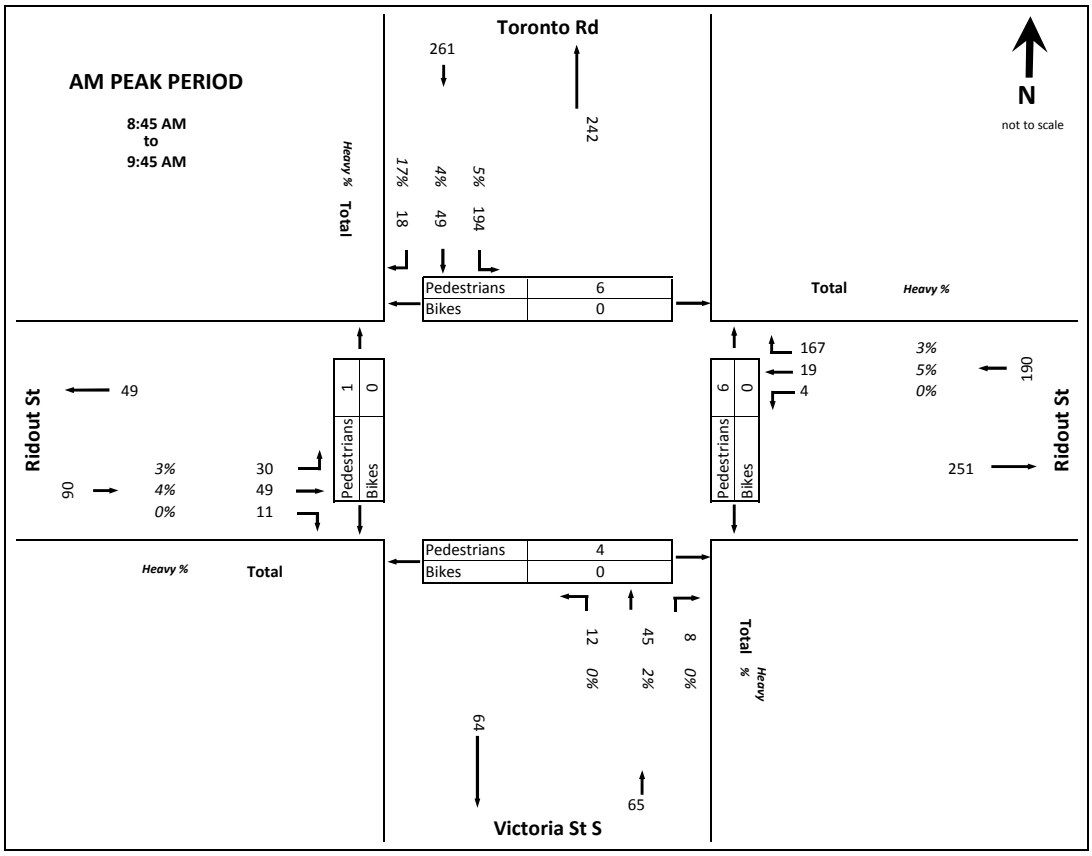
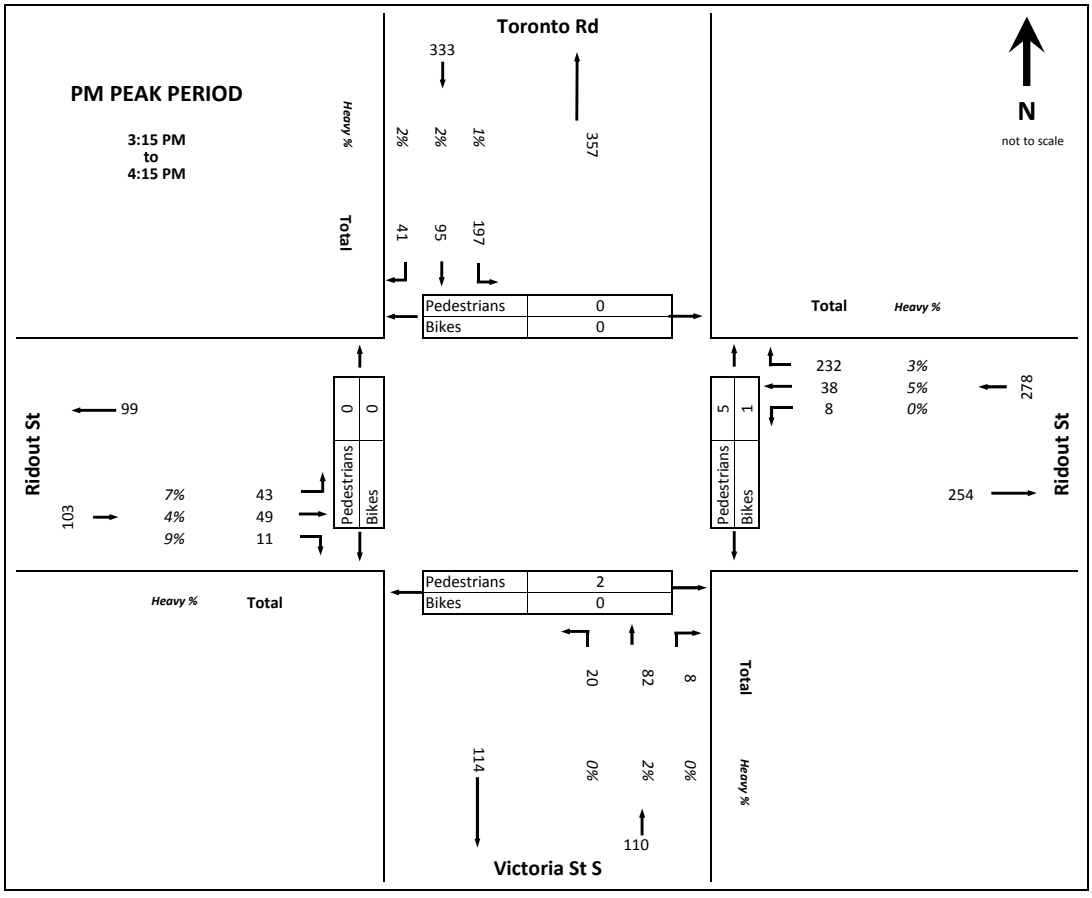
8:15	27	8	6	1	1	0	0	0	1	5	30	0	0	1	2	0	0	11	1	0	2	0	0	0	7	6	2	0	0	0	0	0	109	2
8:30	30	12	0	1	0	1	0	0	0	3	35	0	0	1	0	0	0	13	0	0	1	0	0	0	8	10	1	1	0	0	1	0	117	1
8:45	39	10	2	2	1	0	1	0	2	5	43	0	0	3	3	0	2	10	0	0	0	0	2	0	8	7	1	0	2	0	0	0	137	6
9:00	52	19	7	4	1	0	0	0	1	6	45	0	1	1	2	0	4	16	3	0	0	0	1	0	7	10	2	1	0	0	0	0	180	3
9:15	46	15	2	2	0	1	5	0	1	5	44	0	0	0	0	0	3	5	1	0	1	0	0	0	6	22	4	0	0	0	0	0	158	5
9:30	48	3	4	1	0	2	0	0	0	2	30	0	0	1	1	0	3	13	4	0	0	0	1	0	8	8	4	0	0	0	1	0	131	3
9:45	32	4	9	2	0	1	1	0	0	3	33	0	0	3	3	0	2	10	1	0	0	0	0	0	9	15	2	0	0	0	0	0	126	4
15:00	46	18	11	1	0	1	1	0	1	7	57	0	0	5	0	0	2	11	1	0	1	0	4	1	9	9	4	2	0	0	0	0	186	6
15:15	46	21	8	0	0	0	0	0	0	12	59	0	1	3	1	1	6	21	2	0	1	0	0	0	7	10	2	1	0	0	0	0	200	2
15:30	45	26	14	0	0	0	0	0	1	5	54	0	0	0	1	0	4	21	1	0	0	0	2	0	15	15	1	0	0	1	0	0	203	3
15:45	55	19	12	2	2	0	0	0	5	11	60	0	1	1	2	0	6	16	2	0	1	0	0	0	12	14	3	1	2	0	0	0	225	2
16:00	49	27	6	0	0	1	0	0	2	8	53	0	0	2	1	0	4	22	3	0	0	0	0	0	6	8	4	1	0	0	0	0	196	1
16:15	59	19	10	2	0	0	0	0	2	9	52	0	0	3	1	0	7	12	0	0	0	0	1	0	7	10	3	0	0	0	0	0	195	2
16:30	50	16	4	4	0	1	0	0	3	17	50	0	0	0	2	0	7	19	1	0	1	0	0	0	5	10	4	1	0	0	0	0	193	2
16:45	49	10	8	0	1	0	1	0	3	5	62	0	0	0	1	1	5	22	0	0	0	0	1	0	8	20	3	0	0	0	0	0	196	4
17:00	39	22	6	0	0	0	0	0	2	9	54	0	1	2	0	0	2	27	2	1	0	0	0	0	11	14	3	1	1	0	0	0	197	0
17:15	55	19	17	1	1	0	0	0	1	6	50	0	0	1	1	1	7	20	5	0	1	0	0	0	9	9	3	0	1	0	0	0	206	2
17:30	43	13	11	1	0	0	1	0	1	13	33	0	0	1	2	0	2	16	1	0	0	0	0	0	9	10	1	0	0	0	0	1	155	4
17:45	58	9	7	0	0	0	0	0	3	5	40	0	0	0	0	0	7	15	4	0	0	0	1	0	8	5	3	0	0	0	0	0	164	1

TURNING MOVEMENT DIAGRAMS

North-South Road: Toronto Rd / Victoria St S
East-West Road: Ridout St
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016





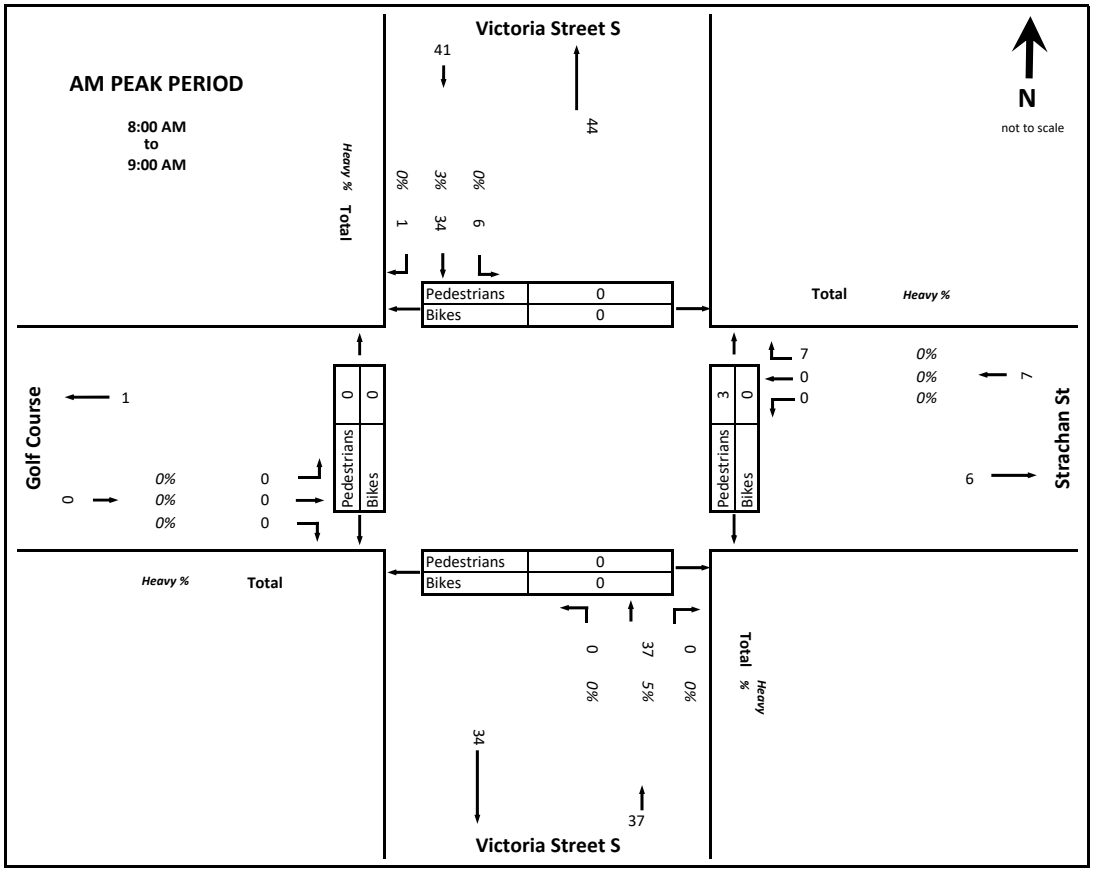
15 MINUTE REPORT

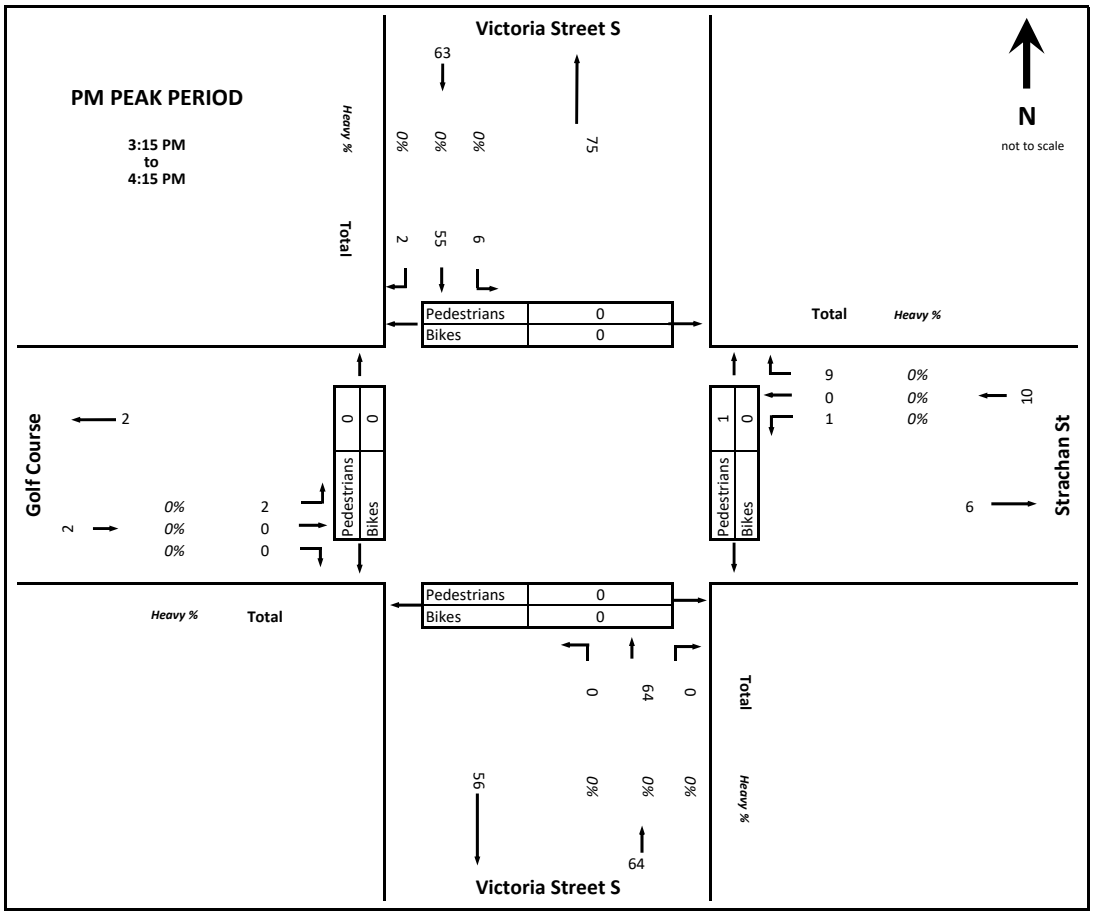
North-South Road: Victoria Street S
East-West Road: Strachan St / Golf Course
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: February 2, 2017

TIME BEGINNING	NORTH APPROACH								EAST APPROACH								SOUTH APPROACH								WEST APPROACH								Total Vehicular Traffic	Total PED/BIKE Traffic
	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike		
	Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right				
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	1	4	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	24	0
8:15	1	7	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	7	0	0	1	0	0	0	0	0	0	0	0	0	0	0	17	0
8:30	1	8	0	0	1	0	0	0	0	0	2	0	0	0	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	1
8:45	3	14	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	2
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	2	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	1	0	0	0	0	0	0	0	24	0
15:30	1	20	0	0	0	0	0	0	1	0	3	0	0	0	1	0	0	21	0	0	0	0	0	0	1	0	0	0	0	0	0	0	47	1
15:45	2	13	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	0
16:00	1	15	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TURNING MOVEMENT DIAGRAMS

North-South Road: Victoria Street S
East-West Road: Strachan St / Golf Course
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: February 2, 2017





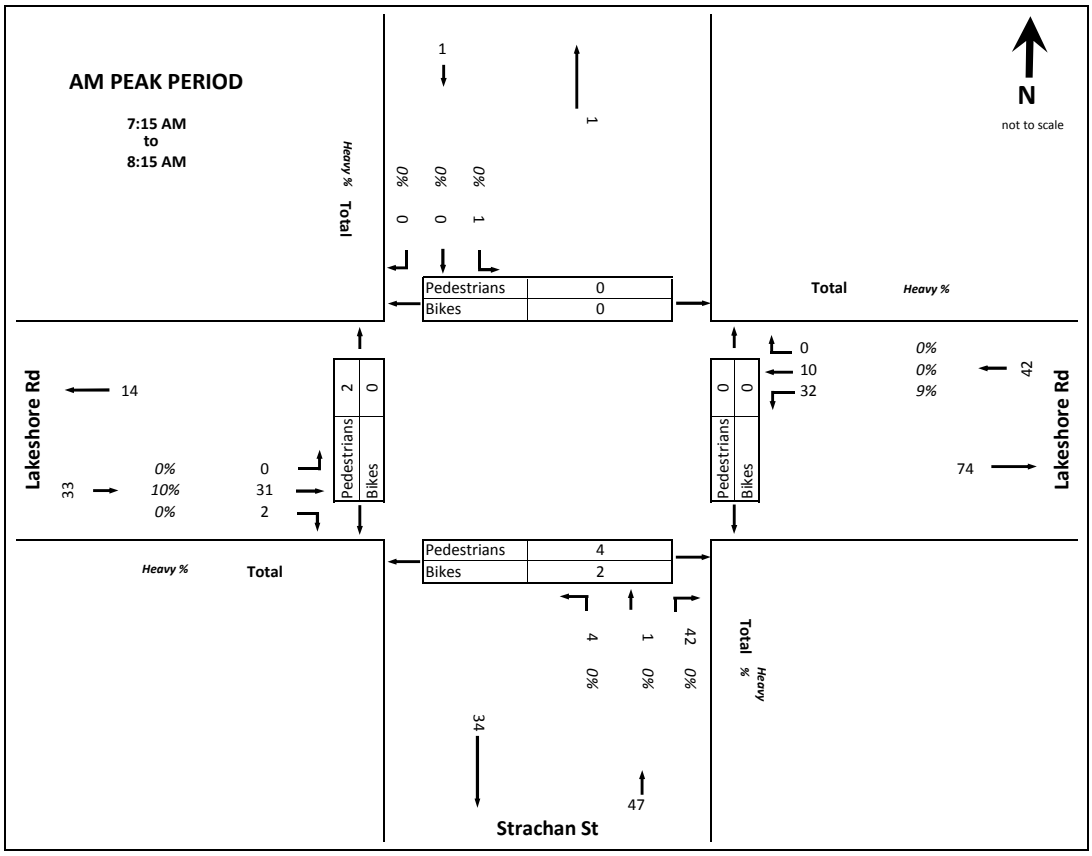
15 MINUTE REPORT

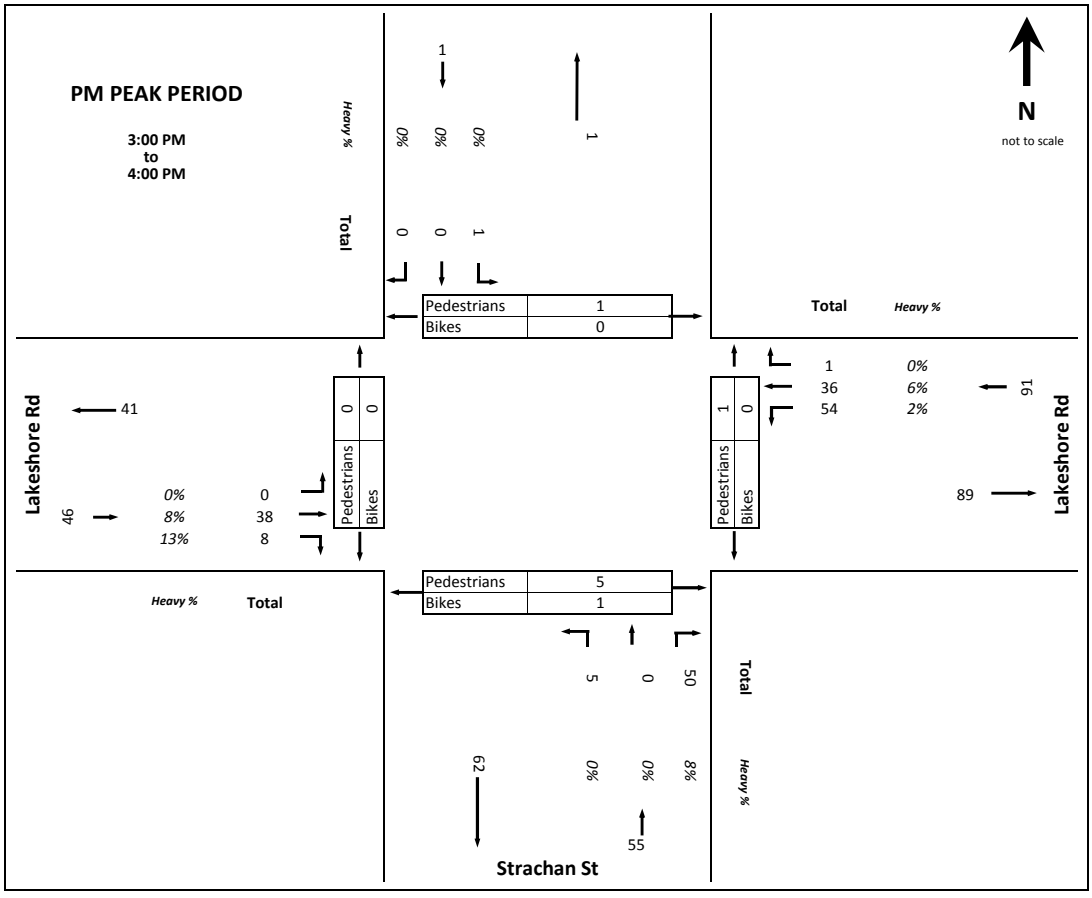
South Road: Strachan St
East-West Road: Lakeshore Rd
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016

TIME BEGINNING	NORTH APPROACH								EAST APPROACH								SOUTH APPROACH								WEST APPROACH								Total Vehicular Traffic	Total PED/BIKE Traffic
	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike		
	Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right				
7:00	0	1	0	0	0	0	1	0	2	3	1	0	0	0	1	0	1	0	4	0	0	0	1	0	0	3	0	0	0	0	0	0	15	3
7:15	1	0	0	0	0	0	0	0	6	5	0	0	0	0	0	0	0	1	8	0	0	0	1	1	0	5	0	0	0	0	0	0	26	2
7:30	0	0	0	0	0	0	0	0	7	1	0	1	0	0	0	0	0	0	14	0	0	0	0	0	0	6	0	0	0	0	1	0	29	1
7:45	0	0	0	0	0	0	0	0	9	2	0	2	0	0	0	0	4	0	13	0	0	0	2	0	0	8	1	0	0	0	0	0	39	2
8:00	0	0	0	0	0	0	0	0	7	2	0	0	0	0	0	0	0	0	7	0	0	0	1	1	0	9	1	0	3	0	1	0	29	3
8:15	0	0	0	0	0	0	0	0	7	3	0	0	0	0	0	0	1	0	10	0	0	0	0	0	0	3	2	0	0	0	0	0	26	0
8:30	0	0	0	0	0	0	0	0	4	4	0	1	0	0	0	0	0	0	8	0	0	1	1	0	0	8	1	0	0	0	0	0	27	1
8:45	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	1	1	5	0	0	1	4	0	0	6	0	0	1	0	0	0	21	4
14:30	1	0	0	0	0	0	0	0	11	7	0	0	0	0	0	0	0	0	10	0	0	1	0	1	0	14	0	0	0	0	4	0	44	5
14:45	0	0	0	0	0	0	0	0	7	8	0	1	3	0	0	0	0	0	11	0	0	0	2	0	0	8	0	0	0	0	0	0	38	2
15:00	0	0	0	0	0	0	0	0	12	8	0	1	0	0	0	0	1	0	12	0	0	1	3	1	0	8	1	0	1	0	0	0	45	4
15:15	0	0	0	0	0	0	1	0	11	10	0	0	0	0	0	0	2	0	11	0	0	1	1	0	0	6	1	0	0	1	0	0	43	2
15:30	0	0	0	0	0	0	0	0	15	6	0	0	1	0	0	0	2	0	14	0	0	1	0	0	0	14	4	0	0	0	0	0	57	0
15:45	1	0	0	0	0	0	0	0	15	10	1	0	1	0	1	0	0	0	9	0	0	1	1	0	0	7	1	0	2	0	0	0	48	2
16:00	0	0	0	0	0	0	0	0	8	5	0	1	0	0	0	0	3	0	10	0	0	1	0	0	0	5	1	0	0	0	0	0	34	0
16:15	0	0	0	0	0	0	3	0	14	7	0	0	0	0	0	0	2	0	5	0	0	0	1	1	0	12	5	0	0	0	0	0	45	5
16:30	0	0	0	0	0	0	0	0	9	13	0	1	0	0	0	0	3	0	12	0	0	0	0	1	0	7	2	0	1	0	0	0	48	1
16:45	0	0	1	0	0	0	1	0	9	5	0	0	0	0	0	0	1	1	12	1	0	0	0	0	0	11	1	0	1	0	0	0	43	1

TURNING MOVEMENT DIAGRAMS

South Road: Strachan St
East-West Road: Lakeshore Rd
Municipality: Port Hope
Weather: Mainly Clear
Day: Thursday
Survey Date: June 9, 2016





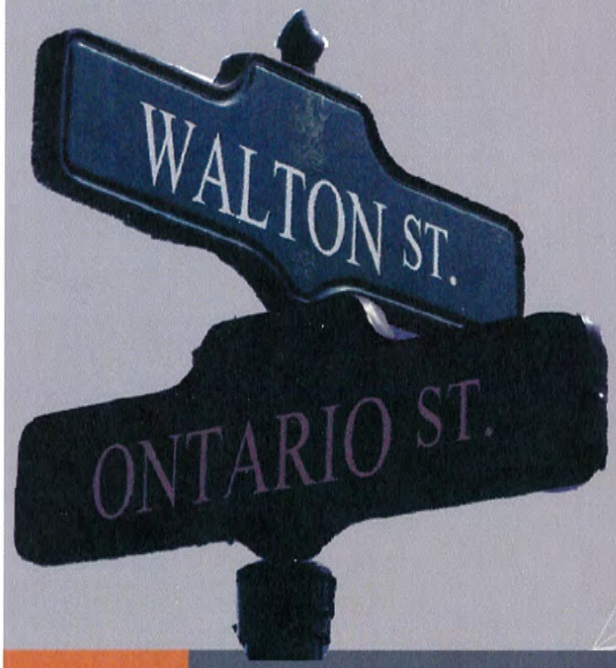
Appendix B

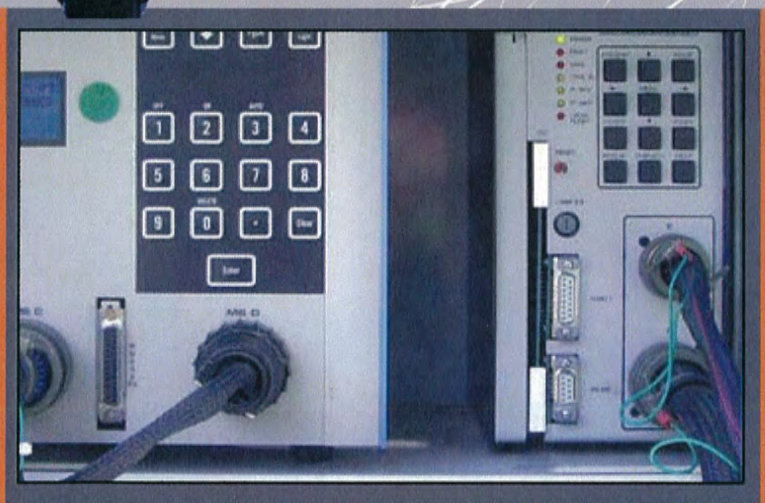
Signal Timing Plans

SEPT 01 2009

MUNICIPALITY OF PORT HOPE

TRAFFIC CONTROLLER DATABASE





COMPLETED BY
DINO FALCO

TORONTO / JOCELYN & MARSH

INVENTORY

	Manufacturer	Model	Condition
Controller	Peek Traffic	LMD9200	Excellent
Conflict Monitor	Peek Traffic	DD-CMU	Excellent
Installation Date	Sept 05	NA	Excellent
Cabinet Type	Aluminum	"M"	Excellent
Cabinet Mounting	Base Mounted	NA	Excellent
Fire Pre-Emption	3M	452	Excellent

MAINTENANCE

	Checked	Date	Comments
Cabinet Air Filter	YES	2008	
NEMA CMU ATSI Test	YES	2008	
NEMA CMU Cab Test	?	?	
Ped PB Check	?	?	
Audible Ped Check	?	?	
Broken Visor Check	?	?	
LED Visual Inspect	?	?	

TIMING

	1	2	3	4	5	6	7	8
MGR	4	28	4	5	4	28	4	15
PSG	3	0	3	3	3	0	3	3
YEL	3	3	3	3	3	3	3	3
RED	0	2	0	2	0	2	0	2
MX1	30	33	30	26	30	33	30	26
WLK	0	21	0	18	0	21	0	18
PCL	0	11	0	8	0	11	0	8

REPORT

This intersection features fairly new installed equipment. This equipment should provide trouble free operation for many years to come. Consideration for replacement shall not be required till about 2020. This is the Municipalities only fully 8 phase traffic controller and was the first with Audible and Count down Pedestrian Signals. It Is recommended that the NEMA conflict monitor be tested annually for ATSI Certification. In addition, technical service personnel should also complete in cabinet NEMA conflict monitor testing to assure proper conflict detecting and operation within the cabinet with the existing cabinet assembly wiring and components.

INVENTORY

	Manufacturer	Model	Condition
Controller	Naztec	920	Very Good
Conflict Monitor	EDI	SSM-6LE	Very Good
Installation Date	2001	NA	NA
Cabinet Type	Aluminum	"G"	Very Good
Cabinet Mounting	Pole Mounted	NA	Very Good
Fire Pre-Emption	NA	NA	NA

MAINTENANCE

	Checked	Date	Comments
Cabinet Air Filter	YES	2008	
NEMA CMU ATSI Test	YES	2008	
NEMA CMU Cab Test	?	?	
Ped PB Check	NA	NA	
Audible Ped Check	NA	NA	
Broken Visor Check	?	?	
LED Visual Inspect	?	?	

TIMING

	1	2	3	4	5	6	7	8
MGR	5	22	5	22				
PSG	1	1	1	1				
YEL	2.5	4	3.5	4				
RED	1.5	2	1.5	2				
MX1	25	22	25	22				
WLK	0	8	0	8				
PCL	0	12	0	12				

REPORT

This intersection features, fairly new installed equipment. This equipment should provide trouble free operation for many years to come. Consideration for replacement shall not be required till about 2016. Consideration may want to be given for the installation of Audible and Countdown Pedestrian Signals. However, it is recommended that the NEMA conflict monitor, be tested annually for ATSI Certification. In addition, technical service personnel should also complete in cabinet NEMA conflict monitor testing to assure proper conflict detecting and operation within the cabinet with the existing cabinet assembly wiring and components.

ONTARIO & WALTON

INVENTORY

	Manufacturer	Model	Condition
Controller	Peek Traffic	LMD9200	Excellent
Conflict Monitor	Peek Traffic	LCD-6	Excellent
Installation Date	June 4th., 09	NA	Excellent
Cabinet Type	Aluminum	"G"	Excellent
Cabinet Mounting	Pole Mounted	NA	Excellent
Fire Pre-Emption	3M	452	Excellent

MAINTENANCE

	Checked	Date	Comments
Cabinet Air Filter	YES	2008	
NEMA CMU ATSI Test	YES	2008	
NEMA CMU Cab Test	?	?	
Ped PB Check	?	?	
Audible Ped Check	?	?	
Broken Visor Check	?	?	
LED Visual Inspect	?	?	

TIMING

	1	2	3	4	5	6	7	8
MGR	6	10	6	10				
PSG	3	3	3	3				
YEL	2	3	2	3				
RED	1	2	1	2				
MX1	10	39	10	28				
WLK	0	13	0	13				
PCL	0	14	0	15				

REPORT

This intersection features newly installed equipment. This equipment should provide several years of trouble free operation.

However, it is recommended that the NEMA conflict monitor be tested annually for ATSI Certification. In addition, technical service personnel should also complete in cabinet NEMA conflict monitor testing to assure proper conflict detecting and operation within the cabinet with the existing cabinet assembly wiring and components.

INVENTORY

	Manufacturer	Model	Condition
Controller	Peek Traffic	LMD9200	Excellent
Conflict Monitor	Peek Traffic	LCD-6	Excellent
Installation Date	June 4th., 09	NA	Excellent
Cabinet Type	Aluminum	"G"	Excellent
Cabinet Mounting	Pole Mounted	NA	Excellent
Fire Pre-Emption	3M	452	Excellent

MAINTENANCE

	Checked	Date	Comments
Cabinet Air Filter	YES	2008	
NEMA CMU ATSI Test	YES	2008	
NEMA CMU Cab Test	?	?	
Ped PB Check	NA	NA	
Audible Ped Check	NA	NA	
Broken Visor Check	?	?	
LED Visual Inspect	?	?	

TIMING

	1	2	3	4	5	6	7	8
MGR	10	25	5	25				
PSG	1	1	1	1				
YEL	3	3.5	3.5	3.5				
RED	1.5	1.5	1.5	1.5				
MX1	10	25	25	25				
WLK	0	15	0	15				
PCL	0	10	0	10				

REPORT

This controller was removed from Ontario & Walton and is in very good condition. This controller will be modified by the electrical contractor for the addition of fire pre-emption equipment. The cabinet should be cleanout and organized to eliminate clutter. The cabinet wiring diagrams should also be revised to include the pre-emption equipment wiring once the work is completed. This controller should continue to function trouble free and does not have to be replaced till 2016. As per the other intersections, it Is recommended that the NEMA conflict monitor be tested annually for ATSI Certification.

INVENTORY

	Manufacturer	Model	Condition
Controller	TCT	LS2480	OK
Conflict Monitor	Internal	LSM6P	OK
Installation Date	2000	NA	NA
Cabinet Type	Aluminum	"M"	Good
Cabinet Mounting	Base Mounted	NA	Good
Fire Pre-Emption	NA	NA	NA

MAINTENANCE

	Checked	Date	Comments
Cabinet Air Filter	YES	2008	
NEMA CMU ATSI Test	YES	2008	
NEMA CMU Cab Test	?	?	
Ped PB Check	NA	NA	
Audible Ped Check	NA	NA	
Broken Visor Check	?	?	
LED Visual Inspect	?	?	

TIMING

INT	1	2	3	4	5	6	7	8
	.5	4	3	11	2	4	4	4
INT	9	10	11	12	13	14	15	16
	3	0	0	0	0	.1	.9	3
INT	17	18	19	20	21	22	23	24
	3	3	4	4	2			

REPORT

This controller is 1980's vintage. This type of controller features a built in NEMA type conflict monitor which is getting more and more difficult to obtain. The battery indicator is also showing on the LCD keyboard which states that the CPU battery needs replacement. Should the controller have a power out, it might not return to off flash condition without this battery replacement. Thought about replacing this controller cabinet assembly should be given in the near future. In addition, as per the other intersections it is recommended that the NEMA conflict monItor be tested annually for both in cabinet testing and for out of cabinet ATSI Certification testing.

PETER & HOPE

INVENTORY

	Manufacturer	Model	Condition
Controller	Naztec	920	Very Good
Conflict Monitor	EDI	SSM-6LE	Very Good
Installation Date	2004	NA	NA
Cabinet Type	Aluminum	"G"	Very Good
Cabinet Mounting	Pole Mounted	NA	Very Good
Fire Pre-Emption	NA	NA	NA

MAINTENANCE

	Checked	Date	Comments
Cabinet Air Filter	YES	2008	
NEMA CMU ATSI Test	YES	2008	
NEMA CMU Cab Test	?	?	
Ped PB Check	NA	NA	
Audible Ped Check	NA	NA	
Broken Visor Check	?	?	
LED Visual Inspect	?	?	

TIMING

	1	2	3	4	5	6	7	8
MGR	0	25	0	15				
PSG	0	1	0	1				
YEL	3.5	4	3.5	3.5				
RED	1.5	2	2	1.5				
MX1	0	25	0	18				
WLK	0	15	0	13				
PCL	0	10	0	10				

REPORT

This controller will be removed and will be replaced by a new base mounted 8 phase controller in 2009. This controller assembly can then become a spare traffic controller cabinet assembly. This controller should continue to function for many years to come. It was assembled and installed in only 2004.

As per the other intersections, it is recommended that the NEMA conflict monitor be tested annually for both in cabinet testing and for out of cabinet ATSI Certification testing.

INVENTORY

	Manufacturer	Model	Condition
Controller	TCT	LS1860	Rough
Conflict Monitor	Internal	LSM6P	OK
Installation Date	1995	NA	NA
Cabinet Type	Aluminum	"G"	Good
Cabinet Mounting	Pole Mounted	NA	Good
Fire Pre-Emption	NA	NA	NA

MAINTENANCE

	Checked	Date	Comments
Cabinet Air Filter	YES	2008	
NEMA CMU ATSI Test	YES	2008	
NEMA CMU Cab Test	?	?	
Ped PB Check	NA	NA	
Audible Ped Check	NA	NA	
Broken Visor Check	?	?	
LED Visual Inspect	?	?	

TIMING

INT	1	2	3	4	5	6	7	8
INT	9	10	11	12	13	14	15	16
INT	17	18	19	20	21	22	23	24

REPORT

This controller, is 1980's vintage. This type of controller features a built in NEMA type conflict monitor which is getting more and more difficult to obtain. The keyboard is also damaged so timing data was not able to be retrieved. It is recommended to get the display changed as soon as possible so that the timing data can be recorded. Thought should also be given to replacing this controller cabinet assembly in the near future since it's at the end of its recommended life span. In addition, as per the other intersections it is recommended that the NEMA conflict monItor be tested annually for both in cabinet testing and for out of cabinet ATSI Certification testing.

Appendix C

Existing Traffic Operations Reports

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	47	4	56	27	4	93
Future Volume (vph)	47	4	56	27	4	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990					0.850
Flt Protected				0.967	0.950	
Satd. Flow (prot)	1736	0	0	1625	1805	1538
Flt Permitted				0.967	0.950	
Satd. Flow (perm)	1736	0	0	1625	1805	1538
Link Speed (k/h)	50			50	50	
Link Distance (m)	183.1			244.8	101.4	
Travel Time (s)	13.2			17.6	7.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	0%	16%	7%	0%	5%
Adj. Flow (vph)	52	4	62	30	4	103
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	0	92	4	103
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	47	4	56	27	4	93
Future Volume (Veh/h)	47	4	56	27	4	93
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)	52	4	62	30	4	103
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				245		
pX, platoon unblocked						
vC, conflicting volume			56		208	54
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			56		208	54
tC, single (s)			4.3		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			96		99	90
cM capacity (veh/h)			1464		752	1005

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	56	92	4	103
Volume Left	0	62	4	0
Volume Right	4	0	0	103
cSH	1700	1464	752	1005
Volume to Capacity	0.03	0.04	0.01	0.10
Queue Length 95th (m)	0.0	1.1	0.1	2.7
Control Delay (s)	0.0	5.2	9.8	9.0
Lane LOS		A	A	A
Approach Delay (s)	0.0	5.2	9.0	
Approach LOS			A	

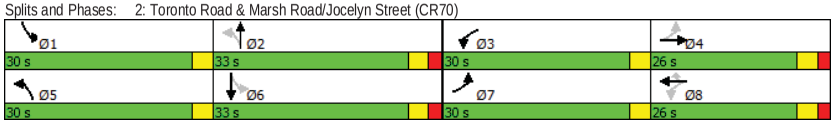
Intersection Summary				
Average Delay		5.7		
Intersection Capacity Utilization		21.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	34	58	77	23	90	31	220	64	67	246	26
Future Volume (vph)	62	34	58	77	23	90	31	220	64	67	246	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	30.0		0.0	25.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.906				0.850		0.966			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1563	0	1687	1743	1568	1805	1706	0	1687	1797	0
Flt Permitted	0.740			0.674			0.567			0.456		
Satd. Flow (perm)	1339	1563	0	1197	1743	1568	1077	1706	0	810	1797	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62				106		11			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		244.8			299.9			1468.9			447.0	
Travel Time (s)		17.6			21.6			105.8			32.2	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	12%	9%	7%	9%	3%	0%	6%	13%	7%	3%	15%
Adj. Flow (vph)	73	40	68	91	27	106	36	259	75	79	289	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	73	108	0	91	27	106	36	334	0	79	320	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	15.0	15.0	4.0	26.0		4.0	27.0	
Minimum Split (s)	7.0	26.0		7.0	26.0	26.0	7.0	32.0		7.0	32.0	
Total Split (s)	30.0	26.0		30.0	26.0	26.0	30.0	33.0		30.0	33.0	
Total Split (%)	25.2%	21.8%		25.2%	21.8%	21.8%	25.2%	27.7%		25.2%	27.7%	
Maximum Green (s)	27.0	21.0		27.0	21.0	21.0	27.0	28.0		27.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		18.0			18.0	18.0		21.0			21.0	
Flash Dont Walk (s)		3.0			3.0	3.0		6.0			6.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	20.1	12.7		20.7	16.7	16.7	38.0	33.2		40.3	37.2	
Actuated g/C Ratio	0.30	0.19		0.31	0.25	0.25	0.57	0.50		0.61	0.56	
v/c Ratio	0.16	0.31		0.21	0.06	0.22	0.05	0.39		0.13	0.32	
Control Delay	16.3	16.4		16.8	25.5	7.6	8.6	18.8		9.1	15.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.3	16.4		16.8	25.5	7.6	8.6	18.8		9.1	15.2	
LOS	B	B		B	C	A	A	B		A	B	
Approach Delay		16.3			13.5			17.8			14.0	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 119			
Actuated Cycle Length: 66.5			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 50.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Toronto Road & Marsh Road/Jocelyn Street (CR70)



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	73	108	91	27	106	36	334	79	320
v/c Ratio	0.16	0.31	0.21	0.06	0.22	0.05	0.39	0.13	0.32
Control Delay	16.3	16.4	16.8	25.5	7.6	8.6	18.8	9.1	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	16.4	16.8	25.5	7.6	8.6	18.8	9.1	15.2
Queue Length 50th (m)	6.8	5.6	8.6	3.2	0.0	2.3	35.6	5.1	25.5
Queue Length 95th (m)	14.6	17.7	17.3	9.5	10.9	6.2	59.0	11.1	54.4
Internal Link Dist (m)		220.8		275.9			1444.9		423.0
Turn Bay Length (m)	15.0		30.0			25.0		30.0	
Base Capacity (vph)	796	590	780	613	620	991	857	894	1008
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.18	0.12	0.04	0.17	0.04	0.39	0.09	0.32

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	34	58	77	23	90	31	220	64	67	246	26
Future Volume (vph)	62	34	58	77	23	90	31	220	64	67	246	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1563		1687	1743	1568	1805	1707		1687	1798	
Flt Permitted	0.74	1.00		0.67	1.00	1.00	0.57	1.00		0.46	1.00	
Satd. Flow (perm)	1338	1563		1198	1743	1568	1076	1707		809	1798	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	73	40	68	91	27	106	36	259	75	79	289	31
RTOR Reduction (vph)	0	53	0	0	0	90	0	6	0	0	2	0
Lane Group Flow (vph)	73	55	0	91	27	16	36	328	0	79	318	0
Heavy Vehicles (%)	5%	12%	9%	7%	9%	3%	0%	6%	13%	7%	3%	15%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	16.4	10.5		16.8	10.7	10.7	34.7	32.3		40.5	35.2	
Effective Green, g (s)	16.4	10.5		16.8	10.7	10.7	34.7	32.3		40.5	35.2	
Actuated g/C Ratio	0.23	0.15		0.24	0.15	0.15	0.49	0.46		0.58	0.50	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	344	233		329	265	238	556	785		533	901	
v/s Ratio Prot	0.02	0.04		c0.02	0.02		0.00	c0.19		c0.01	0.18	
v/s Ratio Perm	0.03			c0.04		0.01	0.03			0.07		
v/c Ratio	0.21	0.24		0.28	0.10	0.07	0.06	0.42		0.15	0.35	
Uniform Delay, d1	21.5	26.3		21.5	25.6	25.5	9.2	12.7		6.9	10.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.5		0.5	0.2	0.1	0.0	1.6		0.1	1.1	
Delay (s)	21.8	26.8		21.9	25.8	25.6	9.2	14.3		7.1	11.7	
Level of Service	C	C		C	C	C	A	B		A	B	
Approach Delay (s)		24.8			24.1			13.8			10.8	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	70.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	50	1	207	39	2	228
Future Volume (vph)	50	1	207	39	2	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	45.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt	0.998		0.979			
Flt Protected	0.953					
Satd. Flow (prot)	1772	0	1806	0	0	3407
Flt Permitted	0.953					
Satd. Flow (perm)	1772	0	1806	0	0	3407
Link Speed (k/h)	60		60			50
Link Distance (m)	315.9		89.2			1468.9
Travel Time (s)	19.0		5.4			105.8
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	2%	0%	3%	3%	0%	6%
Adj. Flow (vph)	60	1	249	47	2	275
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	296	0	0	277
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	50	1	207	39	2	228
Future Volume (Veh/h)	50	1	207	39	2	228
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	60	1	249	47	2	275
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (m)			89			
pX, platoon unblocked						
vC, conflicting volume	414	272			296	
vC1, stage 1 conf vol	272					
vC2, stage 2 conf vol	142					
vCu, unblocked vol	414	272			296	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	100			100	
cM capacity (veh/h)	698	731			1277	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	61	296	94	183
Volume Left	60	0	2	0
Volume Right	1	47	0	0
cSH	698	1700	1277	1700
Volume to Capacity	0.09	0.17	0.00	0.11
Queue Length 95th (m)	2.3	0.0	0.0	0.0
Control Delay (s)	10.6	0.0	0.2	0.0
Lane LOS	B		A	
Approach Delay (s)	10.6	0.0	0.1	
Approach LOS	B			

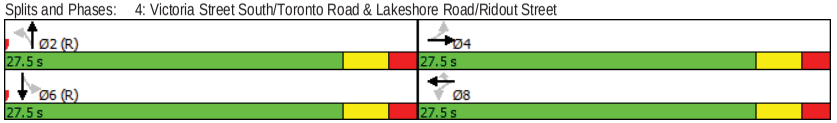
Intersection Summary				
Average Delay		1.1		
Intersection Capacity Utilization		23.3%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	49	11	11	19	167	12	50	10	194	66	18
Future Volume (vph)	30	49	11	11	19	167	12	50	10	194	66	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984				0.850		0.981			0.968	
Flt Protected		0.983			0.982			0.992		0.950		
Satd. Flow (prot)	0	1781	0	0	1808	1568	0	1824	0	1719	1723	0
Flt Permitted		0.916			0.920			0.960		0.701		
Satd. Flow (perm)	0	1660	0	0	1694	1568	0	1765	0	1268	1723	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				199		12			21	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1052.7			168.4			235.6			89.2	
Travel Time (s)		75.8			12.1			17.0			6.4	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	3%	4%	0%	0%	5%	3%	0%	2%	0%	5%	4%	17%
Adj. Flow (vph)	36	58	13	13	23	199	14	60	12	231	79	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	107	0	0	36	199	0	86	0	231	100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
v/c Ratio		0.16			0.05	0.26		0.12		0.45	0.14	
Control Delay		10.0			10.2	3.0		9.5		15.2	9.1	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		10.0			10.2	3.0		9.5		15.2	9.1	
LOS		A			B	A		A		B	A	
Approach Delay		10.0			4.1			9.5			13.3	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 37.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Victoria Street South/Toronto Road & Lakeshore Road/Ridout Street



Lane Group	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	107	36	199	86	231	100
v/c Ratio	0.16	0.05	0.26	0.12	0.45	0.14
Control Delay	10.0	10.2	3.0	9.5	15.2	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	10.2	3.0	9.5	15.2	9.1
Queue Length 50th (m)	5.9	2.2	0.0	4.6	16.7	4.9
Queue Length 95th (m)	12.9	6.1	8.1	10.7	30.1	11.5
Internal Link Dist (m)	1028.7	144.4		211.6		65.2
Turn Bay Length (m)						
Base Capacity (vph)	686	693	759	729	518	717
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.05	0.26	0.12	0.45	0.14

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	49	11	11	19	167	12	50	10	194	66	18
Future Volume (vph)	30	49	11	11	19	167	12	50	10	194	66	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Frt		0.98			1.00	0.85		0.98		1.00	0.97	
Flt Protected		0.98			0.98	1.00		0.99		0.95	1.00	
Satd. Flow (prot)		1781			1809	1568		1824		1719	1724	
Flt Permitted		0.92			0.92	1.00		0.96		0.70	1.00	
Satd. Flow (perm)		1659			1694	1568		1766		1269	1724	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	36	58	13	13	23	199	14	60	12	231	79	21
RTOR Reduction (vph)	0	8	0	0	0	118	0	7	0	0	12	0
Lane Group Flow (vph)	0	99	0	0	36	81	0	79	0	231	88	0
Heavy Vehicles (%)	3%	4%	0%	0%	5%	3%	0%	2%	0%	5%	4%	17%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Effective Green, g (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Grp Cap (vph)		678			693	641		722		519	705	
v/s Ratio Prot											0.05	
v/s Ratio Perm		c0.06			0.02	0.05		0.04		c0.18		
v/c Ratio		0.15			0.05	0.13		0.11		0.45	0.12	
Uniform Delay, d1		10.2			9.8	10.1		10.1		11.7	10.1	
Progression Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.5			0.1	0.4		0.3		2.8	0.4	
Delay (s)		10.7			10.0	10.5		10.4		14.5	10.5	
Level of Service		B			A	B		B		B	B	
Approach Delay (s)		10.7			10.4			10.4			13.3	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.30				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	37.3%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (vph)	7	1	0	0	3	7	0	37	0	6	34	26
Future Volume (vph)	7	1	0	0	3	7	0	37	0	6	34	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.907						0.948	
Flt Protected		0.957									0.995	
Satd. Flow (prot)	0	1818	0	0	1723	0	0	1810	0	0	1765	0
Flt Permitted		0.957									0.995	
Satd. Flow (perm)	0	1818	0	0	1723	0	0	1810	0	0	1765	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.2			66.3			50.0			235.6	
Travel Time (s)		3.7			4.8			3.6			17.0	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	3%	0%
Adj. Flow (vph)	9	1	0	0	4	9	0	47	0	8	44	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	13	0	0	47	0	0	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	7	1	0	0	3	7	0	37	0	6	34	26
Future Volume (Veh/h)	7	1	0	0	3	7	0	37	0	6	34	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	9	1	0	0	4	9	0	47	0	8	44	33
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											236	
pX, platoon unblocked												
vC, conflicting volume	134	124	60	124	140	47	77			47		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	134	124	60	124	140	47	77			47		
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 %	99	100	100	100	99	99	100			99		
cM capacity (veh/h)	828	767	1010	851	751	1028	1535			1573		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	10	13	47	85
Volume Left	9	0	0	8
Volume Right	0	9	0	33
cSH	821	923	1535	1573
Volume to Capacity	0.01	0.01	0.00	0.01
Queue Length 95th (m)	0.3	0.3	0.0	0.1
Control Delay (s)	9.4	9.0	0.0	0.7
Lane LOS	A	A		A
Approach Delay (s)	9.4	9.0	0.0	0.7
Approach LOS	A	A		

Intersection Summary					
Average Delay		1.8			
Intersection Capacity Utilization		21.4%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	31	3	32	10	0	4	1	42	1	0	0
Future Volume (vph)	0	31	3	32	10	0	4	1	42	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987						0.879				
Flt Protected					0.963			0.996			0.950	
Satd. Flow (prot)	0	1719	0	0	1713	0	0	1663	0	0	1805	0
Flt Permitted					0.963			0.996			0.950	
Satd. Flow (perm)	0	1719	0	0	1713	0	0	1663	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.5			1052.7			82.7			71.4	
Travel Time (s)		7.2			75.8			6.0			5.1	
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
Heavy Vehicles (%)	0%	10%	0%	9%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	39	4	41	13	0	5	1	53	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	43	0	0	54	0	0	59	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	31	3	32	10	0	4	1	42	1	0	0
Future Volume (vph)	0	31	3	32	10	0	4	1	42	1	0	0
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	4	41	13	0	5	1	53	1	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	43	54	59	1
Volume Left (vph)	0	41	5	1
Volume Right (vph)	4	0	53	0
Hadj (s)	0.10	0.27	-0.52	0.20
Departure Headway (s)	4.2	4.3	3.6	4.4
Degree Utilization, x	0.05	0.06	0.06	0.00
Capacity (veh/h)	844	816	965	799
Control Delay (s)	7.4	7.6	6.8	7.4
Approach Delay (s)	7.4	7.6	6.8	7.4
Approach LOS	A	A	A	A

Intersection Summary					
Delay	7.3				
Level of Service	A				
Intersection Capacity Utilization	19.0%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	44	7	109	60	4	78
Future Volume (vph)	44	7	109	60	4	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.982					0.850
Flt Protected				0.969	0.950	
Satd. Flow (prot)	1788	0	0	1775	1805	1524
Flt Permitted				0.969	0.950	
Satd. Flow (perm)	1788	0	0	1775	1805	1524
Link Speed (k/h)	50			50	50	
Link Distance (m)	183.1			244.8	101.4	
Travel Time (s)	13.2			17.6	7.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	0%	3%	5%	0%	6%
Adj. Flow (vph)	59	9	145	80	5	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	0	225	5	104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	44	7	109	60	4	78
Future Volume (Veh/h)	44	7	109	60	4	78
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	59	9	145	80	5	104
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				245		
pX, platoon unblocked						
vC, conflicting volume			68		434	64
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		434	64
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			91		99	89
cM capacity (veh/h)			1527		528	990

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	68	225	5	104
Volume Left	0	145	5	0
Volume Right	9	0	0	104
cSH	1700	1527	528	990
Volume to Capacity	0.04	0.09	0.01	0.11
Queue Length 95th (m)	0.0	2.5	0.2	2.8
Control Delay (s)	0.0	5.2	11.9	9.1
Lane LOS		A	B	A
Approach Delay (s)	0.0	5.2	9.2	
Approach LOS			A	

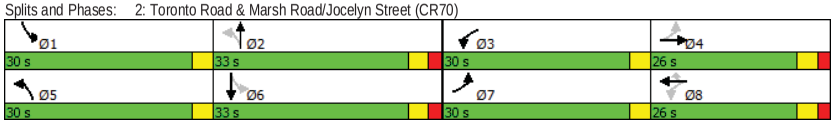
Intersection Summary				
Average Delay		5.4		
Intersection Capacity Utilization		25.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	45	30	115	69	85	54	279	116	88	252	59
Future Volume (vph)	51	45	30	115	69	85	54	279	116	88	252	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	30.0		0.0	25.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.940				0.850		0.956			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1694	0	1752	1881	1509	1736	1741	0	1752	1796	0
Flt Permitted	0.710			0.536			0.549			0.400		
Satd. Flow (perm)	1273	1694	0	989	1881	1509	1003	1741	0	738	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				89		16			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		244.8			299.9			1468.9			447.0	
Travel Time (s)		17.6			21.6			105.8			32.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	7%	3%	3%	1%	7%	4%	2%	10%	3%	3%	2%
Adj. Flow (vph)	53	47	31	120	72	89	56	291	121	92	263	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	78	0	120	72	89	56	412	0	92	324	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	15.0	15.0	4.0	26.0		4.0	27.0	
Minimum Split (s)	7.0	26.0		7.0	26.0	26.0	7.0	32.0		7.0	32.0	
Total Split (s)	30.0	26.0		30.0	26.0	26.0	30.0	33.0		30.0	33.0	
Total Split (%)	25.2%	21.8%		25.2%	21.8%	21.8%	25.2%	27.7%		25.2%	27.7%	
Maximum Green (s)	27.0	21.0		27.0	21.0	21.0	27.0	28.0		27.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		18.0			18.0	18.0		21.0			21.0	
Flash Dont Walk (s)		3.0			3.0	3.0		6.0			6.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	16.9	10.1		20.3	17.1	17.1	38.1	32.9		39.7	35.3	
Actuated g/C Ratio	0.26	0.16		0.31	0.26	0.26	0.59	0.51		0.61	0.55	
v/c Ratio	0.14	0.27		0.29	0.14	0.19	0.08	0.46		0.16	0.33	
Control Delay	16.6	23.2		18.2	25.6	7.9	8.2	18.9		8.6	15.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.6	23.2		18.2	25.6	7.9	8.2	18.9		8.6	15.9	
LOS	B	C		B	C	A	A	B		A	B	
Approach Delay		20.6			16.8			17.6			14.3	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 119			
Actuated Cycle Length: 64.6			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 51.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Toronto Road & Marsh Road/Jocelyn Street (CR70)



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	78	120	72	89	56	412	92	324
v/c Ratio	0.14	0.27	0.29	0.14	0.19	0.08	0.46	0.16	0.33
Control Delay	16.6	23.2	18.2	25.6	7.9	8.2	18.9	8.6	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	23.2	18.2	25.6	7.9	8.2	18.9	8.6	15.9
Queue Length 50th (m)	4.9	6.7	11.6	8.7	0.0	3.5	45.3	5.9	33.0
Queue Length 95th (m)	12.3	19.1	23.4	20.4	11.5	8.7	79.6	12.9	58.7
Internal Link Dist (m)		220.8		275.9			1444.9		423.0
Turn Bay Length (m)	15.0		30.0			25.0		30.0	
Base Capacity (vph)	797	624	817	676	599	973	895	935	985
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.13	0.15	0.11	0.15	0.06	0.46	0.10	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	45	30	115	69	85	54	279	116	88	252	59
Future Volume (vph)	51	45	30	115	69	85	54	279	116	88	252	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	1695		1752	1881	1509	1736	1741		1752	1796	
Flt Permitted	0.71	1.00		0.54	1.00	1.00	0.55	1.00		0.40	1.00	
Satd. Flow (perm)	1273	1695		989	1881	1509	1002	1741		738	1796	
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)	53	47	31	120	72	89	56	291	121	92	262	61
RTOR Reduction (vph)	0	21	0	0	0	74	0	9	0	0	5	0
Lane Group Flow (vph)	53	57	0	120	72	15	56	403	0	92	319	0
Heavy Vehicles (%)	6%	7%	3%	3%	1%	7%	4%	2%	10%	3%	3%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	12.6	8.5		18.0	11.2	11.2	35.3	31.6		38.9	33.4	
Effective Green, g (s)	12.6	8.5		18.0	11.2	11.2	35.3	31.6		38.9	33.4	
Actuated g/C Ratio	0.18	0.12		0.26	0.16	0.16	0.52	0.46		0.57	0.49	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	260	210		336	308	247	556	804		501	876	
v/s Ratio Prot	0.01	0.03		c0.04	0.04		0.01	c0.23		c0.01	0.18	
v/s Ratio Perm	0.03			c0.06		0.01	0.05			0.09		
v/c Ratio	0.20	0.27		0.36	0.23	0.06	0.10	0.50		0.18	0.36	
Uniform Delay, d1	23.5	27.1		20.0	24.9	24.2	8.3	12.9		7.2	10.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.7		0.7	0.4	0.1	0.1	2.2		0.2	1.2	
Delay (s)	23.9	27.8		20.6	25.3	24.3	8.4	15.1		7.4	12.1	
Level of Service	C	C		C	C	C	A	B		A	B	
Approach Delay (s)		26.2			23.0			14.3			11.0	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	51.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	42	3	294	60	1	322
Future Volume (vph)	42	3	294	60	1	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	45.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt	0.992		0.977			
Flt Protected	0.955					
Satd. Flow (prot)	1764	0	1811	0	0	3539
Flt Permitted	0.955					
Satd. Flow (perm)	1764	0	1811	0	0	3539
Link Speed (k/h)	60		60			50
Link Distance (m)	315.9		89.2			1468.9
Travel Time (s)	19.0		5.4			105.8
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	33%	2%	5%	0%	2%
Adj. Flow (vph)	45	3	313	64	1	343
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	0	377	0	0	344
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	42	3	294	60	1	322
Future Volume (Veh/h)	42	3	294	60	1	322
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	45	3	313	64	1	343
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (m)			89			
pX, platoon unblocked						
vC, conflicting volume	518	345			377	
vC1, stage 1 conf vol	345					
vC2, stage 2 conf vol	174					
vCu, unblocked vol	518	345			377	
tC, single (s)	6.8	7.6			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.6			2.2	
p0 queue free %	93	99			100	
cM capacity (veh/h)	644	569			1193	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	48	377	115	229
Volume Left	45	0	1	0
Volume Right	3	64	0	0
cSH	638	1700	1193	1700
Volume to Capacity	0.08	0.22	0.00	0.13
Queue Length 95th (m)	1.9	0.0	0.0	0.0
Control Delay (s)	11.1	0.0	0.1	0.0
Lane LOS	B		A	
Approach Delay (s)	11.1	0.0	0.0	
Approach LOS	B			

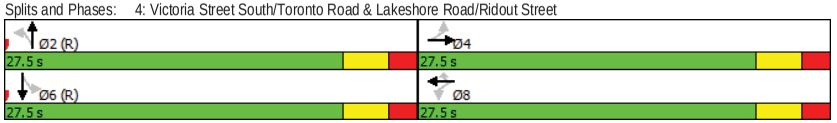
Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		29.1%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	49	11	15	38	232	20	98	15	197	111	41
Future Volume (vph)	43	49	11	15	38	232	20	98	15	197	111	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986				0.850		0.985			0.959	
Flt Protected		0.979			0.986			0.992		0.950		
Satd. Flow (prot)	0	1734	0	0	1808	1568	0	1830	0	1787	1786	0
Flt Permitted		0.882			0.930			0.949		0.742		
Satd. Flow (perm)	0	1562	0	0	1706	1568	0	1750	0	1396	1786	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				252		14			41	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1052.7			168.4			235.6			89.2	
Travel Time (s)		75.8			12.1			17.0			6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	9%	0%	5%	3%	0%	2%	0%	1%	2%	2%
Adj. Flow (vph)	47	53	12	16	41	252	22	107	16	214	121	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	57	252	0	145	0	214	166	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
v/c Ratio		0.17			0.08	0.32		0.20		0.37	0.22	
Control Delay		10.3			10.4	3.0		10.4		13.8	8.9	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		10.3			10.4	3.0		10.4		13.8	8.9	
LOS		B			B	A		B		B	A	
Approach Delay		10.3			4.4			10.4			11.7	
Approach LOS		B			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 8.9		Intersection LOS: A	
Intersection Capacity Utilization 42.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Victoria Street South/Toronto Road & Lakeshore Road/Ridout Street



Lane Group	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	112	57	252	145	214	166
v/c Ratio	0.17	0.08	0.32	0.20	0.37	0.22
Control Delay	10.3	10.4	3.0	10.4	13.8	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	10.4	3.0	10.4	13.8	8.9
Queue Length 50th (m)	6.3	3.5	0.0	8.3	14.9	7.9
Queue Length 95th (m)	14.8	9.1	10.9	18.1	29.5	18.1
Internal Link Dist (m)	1028.7	144.4		211.6		65.2
Turn Bay Length (m)						
Base Capacity (vph)	646	697	790	724	571	754
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.08	0.32	0.20	0.37	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	49	11	15	38	232	20	98	15	197	111	41
Future Volume (vph)	43	49	11	15	38	232	20	98	15	197	111	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Frt		0.99			1.00	0.85		0.99		1.00	0.96	
Flt Protected		0.98			0.99	1.00		0.99		0.95	1.00	
Satd. Flow (prot)		1734			1809	1568		1831		1787	1787	
Flt Permitted		0.88			0.93	1.00		0.95		0.74	1.00	
Satd. Flow (perm)		1562			1706	1568		1751		1395	1787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	53	12	16	41	252	22	107	16	214	121	45
RTOR Reduction (vph)	0	7	0	0	0	149	0	8	0	0	24	0
Lane Group Flow (vph)	0	105	0	0	57	103	0	137	0	214	142	0
Heavy Vehicles (%)	7%	4%	9%	0%	5%	3%	0%	2%	0%	1%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Effective Green, g (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Grp Cap (vph)		639			697	641		716		570	731	
v/s Ratio Prot											0.08	
v/s Ratio Perm		c0.07			0.03	0.07		0.08		c0.15		
v/c Ratio		0.16			0.08	0.16		0.19		0.38	0.19	
Uniform Delay, d1		10.3			9.9	10.3		10.4		11.3	10.4	
Progression Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.6			0.2	0.5		0.6		1.9	0.6	
Delay (s)		10.8			10.2	10.8		11.0		13.2	11.0	
Level of Service		B			B	B		B		B	B	
Approach Delay (s)		10.8			10.7			11.0			12.3	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.27				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	42.9%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	3	0	1	3	9	0	64	0	6	55	25
Future Volume (vph)	24	3	0	1	3	9	0	64	0	6	55	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.905						0.960	
Flt Protected		0.957			0.997						0.997	
Satd. Flow (prot)	0	1818	0	0	1714	0	0	1900	0	0	1819	0
Flt Permitted		0.957			0.997						0.997	
Satd. Flow (perm)	0	1818	0	0	1714	0	0	1900	0	0	1819	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.2			66.3			50.0			235.6	
Travel Time (s)		3.7			4.8			3.6			17.0	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	32	4	0	1	4	12	0	86	0	8	74	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	17	0	0	86	0	0	116	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	3	0	1	3	9	0	64	0	6	55	25
Future Volume (Veh/h)	24	3	0	1	3	9	0	64	0	6	55	25
Sign Control		Stop			Stop			Free			Free	
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)	32	4	0	1	4	12	0	86	0	8	74	34
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											236	
pX, platoon unblocked												
vC, conflicting volume	207	193	91	195	210	86	108			86		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	207	193	91	195	210	86	108			86		
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 %	96	99	100	100	99	99	100			99		
cM capacity (veh/h)	739	702	972	762	687	978	1495			1523		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	36	17	86	116
Volume Left	32	1	0	8
Volume Right	0	12	0	34
cSH	735	876	1495	1523
Volume to Capacity	0.05	0.02	0.00	0.01
Queue Length 95th (m)	1.2	0.5	0.0	0.1
Control Delay (s)	10.1	9.2	0.0	0.5
Lane LOS	B	A		A
Approach Delay (s)	10.1	9.2	0.0	0.5
Approach LOS	B	A		

Intersection Summary					
Average Delay		2.3			
Intersection Capacity Utilization		24.4%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	38	9	54	36	1	6	0	50	1	0	0
Future Volume (vph)	0	38	9	54	36	1	6	0	50	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.999			0.879				
Flt Protected					0.971			0.995			0.950	
Satd. Flow (prot)	0	1696	0	0	1780	0	0	1551	0	0	1805	0
Flt Permitted					0.971			0.995			0.950	
Satd. Flow (perm)	0	1696	0	0	1780	0	0	1551	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.5			1052.7			82.7			71.4	
Travel Time (s)		7.2			75.8			6.0			5.1	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	8%	13%	2%	6%	0%	0%	0%	8%	0%	0%	0%
Adj. Flow (vph)	0	45	11	64	42	1	7	0	59	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	0	0	107	0	0	66	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	38	9	54	36	1	6	0	50	1	0	0
Future Volume (vph)	0	38	9	54	36	1	6	0	50	1	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	45	11	64	42	1	7	0	59	1	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	56	107	66	1
Volume Left (vph)	0	64	7	1
Volume Right (vph)	11	1	59	0
Hadj (s)	0.03	0.17	-0.39	0.20
Departure Headway (s)	4.2	4.3	3.9	4.5
Degree Utilization, x	0.07	0.13	0.07	0.00
Capacity (veh/h)	838	826	885	759
Control Delay (s)	7.5	7.9	7.2	7.5
Approach Delay (s)	7.5	7.9	7.2	7.5
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.6		
Level of Service	A		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix D

2022 Background Traffic Operations Reports

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	53	5	63	30	5	105
Future Volume (vph)	53	5	63	30	5	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988					0.850
Flt Protected				0.967	0.950	
Satd. Flow (prot)	1735	0	0	1624	1805	1538
Flt Permitted				0.967	0.950	
Satd. Flow (perm)	1735	0	0	1624	1805	1538
Link Speed (k/h)	50			50	50	
Link Distance (m)	183.1			244.8	101.4	
Travel Time (s)	13.2			17.6	7.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	0%	16%	7%	0%	5%
Adj. Flow (vph)	59	6	70	33	6	117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	103	6	117
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	53	5	63	30	5	105
Future Volume (Veh/h)	53	5	63	30	5	105
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)	59	6	70	33	6	117
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				245		
pX, platoon unblocked						
vC, conflicting volume			65		235	62
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			65		235	62
tC, single (s)			4.3		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			95		99	88
cM capacity (veh/h)			1452		721	995

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	65	103	6	117
Volume Left	0	70	6	0
Volume Right	6	0	0	117
cSH	1700	1452	721	995
Volume to Capacity	0.04	0.05	0.01	0.12
Queue Length 95th (m)	0.0	1.2	0.2	3.2
Control Delay (s)	0.0	5.3	10.0	9.1
Lane LOS		A	B	A
Approach Delay (s)	0.0	5.3	9.1	
Approach LOS			A	

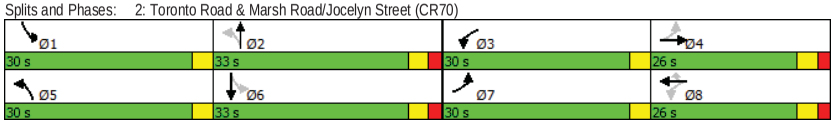
Intersection Summary				
Average Delay		5.7		
Intersection Capacity Utilization		21.7%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	38	65	87	26	101	35	248	72	75	277	29
Future Volume (vph)	70	38	65	87	26	101	35	248	72	75	277	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	30.0		0.0	25.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.906				0.850		0.966			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1563	0	1687	1743	1568	1805	1706	0	1687	1799	0
Flt Permitted	0.737			0.667			0.508			0.425		
Satd. Flow (perm)	1334	1563	0	1184	1743	1568	965	1706	0	755	1799	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62				119		12			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		244.8			299.9			1468.9			447.0	
Travel Time (s)		17.6			21.6			105.8			32.2	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	12%	9%	7%	9%	3%	0%	6%	13%	7%	3%	15%
Adj. Flow (vph)	82	45	76	102	31	119	41	292	85	88	326	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	121	0	102	31	119	41	377	0	88	360	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	15.0	15.0	4.0	26.0		4.0	27.0	
Minimum Split (s)	7.0	26.0		7.0	26.0	26.0	7.0	32.0		7.0	32.0	
Total Split (s)	30.0	26.0		30.0	26.0	26.0	30.0	33.0		30.0	33.0	
Total Split (%)	25.2%	21.8%		25.2%	21.8%	21.8%	25.2%	27.7%		25.2%	27.7%	
Maximum Green (s)	27.0	21.0		27.0	21.0	21.0	27.0	28.0		27.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		18.0			18.0	18.0		21.0			21.0	
Flash Dont Walk (s)		3.0			3.0	3.0		6.0			6.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	20.4	12.6		21.0	16.7	16.7	38.1	33.3		40.3	35.8	
Actuated g/C Ratio	0.30	0.19		0.31	0.25	0.25	0.57	0.50		0.60	0.53	
v/c Ratio	0.18	0.35		0.23	0.07	0.25	0.06	0.44		0.16	0.37	
Control Delay	16.6	18.4		17.2	26.0	7.5	8.8	19.9		9.4	17.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.6	18.4		17.2	26.0	7.5	8.8	19.9		9.4	17.4	
LOS	B	B		B	C	A	A	B		A	B	
Approach Delay		17.7			13.7			18.8			15.8	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 119			
Actuated Cycle Length: 67			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 50.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Toronto Road & Marsh Road/Jocelyn Street (CR70)



Queues
2022 Background - AM Peak Hour
2: Toronto Road & Marsh Road/Jocelyn Street (CR70)
17-000014: Port Hope Residential Development TRIS

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	121	102	31	119	41	377	88	360
v/c Ratio	0.18	0.35	0.23	0.07	0.25	0.06	0.44	0.16	0.37
Control Delay	16.6	18.4	17.2	26.0	7.5	8.8	19.9	9.4	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	18.4	17.2	26.0	7.5	8.8	19.9	9.4	17.4
Queue Length 50th (m)	7.7	7.3	9.7	3.8	0.0	2.6	42.0	5.8	39.0
Queue Length 95th (m)	16.1	20.7	19.1	10.6	11.5	6.8	69.1	12.2	62.6
Internal Link Dist (m)		220.8		275.9			1444.9		423.0
Turn Bay Length (m)	15.0		30.0			25.0		30.0	
Base Capacity (vph)	797	587	780	609	626	970	853	882	962
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.21	0.13	0.05	0.19	0.04	0.44	0.10	0.37

Intersection Summary

HCM Signalized Intersection Capacity Analysis
2022 Background - AM Peak Hour
2: Toronto Road & Marsh Road/Jocelyn Street (CR70)
17-000014: Port Hope Residential Development TRIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	38	65	87	26	101	35	248	72	75	277	29
Future Volume (vph)	70	38	65	87	26	101	35	248	72	75	277	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1563		1687	1743	1568	1805	1706		1687	1799	
Flt Permitted	0.74	1.00		0.67	1.00	1.00	0.51	1.00		0.43	1.00	
Satd. Flow (perm)	1334	1563		1184	1743	1568	965	1706		755	1799	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	82	45	76	102	31	119	41	292	85	88	326	34
RTOR Reduction (vph)	0	53	0	0	0	101	0	7	0	0	2	0
Lane Group Flow (vph)	82	68	0	102	31	18	41	370	0	88	358	0
Heavy Vehicles (%)	5%	12%	9%	7%	9%	3%	0%	6%	13%	7%	3%	15%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	16.7	10.5		17.1	10.7	10.7	35.5	31.9		39.3	33.8	
Effective Green, g (s)	16.7	10.5		17.1	10.7	10.7	35.5	31.9		39.3	33.8	
Actuated g/C Ratio	0.24	0.15		0.24	0.15	0.15	0.50	0.45		0.56	0.48	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	350	233		333	265	238	530	774		494	864	
v/s Ratio Prot	0.02	0.04		c0.03	0.02		0.00	c0.22		c0.01	0.20	
v/s Ratio Perm	0.03			c0.05		0.01	0.04			0.09		
v/c Ratio	0.23	0.29		0.31	0.12	0.08	0.08	0.48		0.18	0.41	
Uniform Delay, d1	21.5	26.6		21.4	25.7	25.6	8.9	13.4		7.6	11.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.7		0.5	0.2	0.1	0.1	2.1		0.2	1.5	
Delay (s)	21.8	27.3		21.9	25.9	25.7	8.9	15.5		7.8	13.3	
Level of Service	C	C		C	C	C	A	B		A	B	
Approach Delay (s)		25.1			24.2			14.9			12.2	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	56	1	233	44	2	257
Future Volume (vph)	56	1	233	44	2	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	45.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt	0.998		0.979			
Flt Protected	0.953					
Satd. Flow (prot)	1772	0	1806	0	0	3407
Flt Permitted	0.953					
Satd. Flow (perm)	1772	0	1806	0	0	3407
Link Speed (k/h)	60		60			50
Link Distance (m)	315.9		89.2			1468.9
Travel Time (s)	19.0		5.4			105.8
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	2%	0%	3%	3%	0%	6%
Adj. Flow (vph)	67	1	281	53	2	310
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	334	0	0	312
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	56	1	233	44	2	257
Future Volume (Veh/h)	56	1	233	44	2	257
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	67	1	281	53	2	310
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (m)			89			
pX, platoon unblocked						
vC, conflicting volume	466	308			334	
vC1, stage 1 conf vol	308					
vC2, stage 2 conf vol	159					
vCu, unblocked vol	466	308			334	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	100			100	
cM capacity (veh/h)	667	694			1237	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	68	334	105	207
Volume Left	67	0	2	0
Volume Right	1	53	0	0
cSH	668	1700	1237	1700
Volume to Capacity	0.10	0.20	0.00	0.12
Queue Length 95th (m)	2.7	0.0	0.0	0.0
Control Delay (s)	11.0	0.0	0.2	0.0
Lane LOS	B		A	
Approach Delay (s)	11.0	0.0	0.1	
Approach LOS	B			

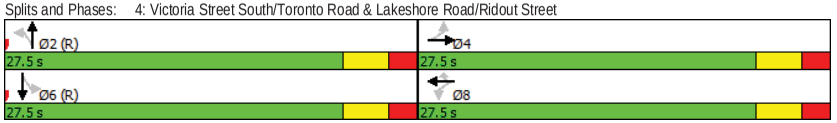
Intersection Summary				
Average Delay		1.1		
Intersection Capacity Utilization		24.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	58	12	12	22	188	14	56	11	218	74	20
Future Volume (vph)	34	58	12	12	22	188	14	56	11	218	74	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985				0.850		0.982			0.968	
Flt Protected		0.984			0.983			0.991		0.950		
Satd. Flow (prot)	0	1784	0	0	1809	1568	0	1824	0	1719	1722	0
Flt Permitted		0.914			0.917			0.953		0.694		
Satd. Flow (perm)	0	1657	0	0	1687	1568	0	1754	0	1256	1722	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				224		13			24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1052.7			168.4			235.6			89.2	
Travel Time (s)		75.8			12.1			17.0			6.4	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	3%	4%	0%	0%	5%	3%	0%	2%	0%	5%	4%	17%
Adj. Flow (vph)	40	69	14	14	26	224	17	67	13	260	88	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	123	0	0	40	224	0	97	0	260	112	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
v/c Ratio		0.18			0.06	0.29		0.13		0.51	0.16	
Control Delay		10.1			10.2	3.0		9.7		16.4	9.1	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		10.1			10.2	3.0		9.7		16.4	9.1	
LOS		B			B	A		A		B	A	
Approach Delay		10.1			4.1			9.7			14.2	
Approach LOS		B			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 10.0		Intersection LOS: B	
Intersection Capacity Utilization 39.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Victoria Street South/Toronto Road & Lakeshore Road/Ridout Street



Lane Group	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	123	40	224	97	260	112
v/c Ratio	0.18	0.06	0.29	0.13	0.51	0.16
Control Delay	10.1	10.2	3.0	9.7	16.4	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	10.2	3.0	9.7	16.4	9.1
Queue Length 50th (m)	6.9	2.4	0.0	5.2	19.3	5.5
Queue Length 95th (m)	14.5	6.5	8.4	11.8	34.4	12.5
Internal Link Dist (m)	1028.7	144.4		211.6		65.2
Turn Bay Length (m)						
Base Capacity (vph)	686	690	773	725	513	718
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.06	0.29	0.13	0.51	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	58	12	12	22	188	14	56	11	218	74	20
Future Volume (vph)	34	58	12	12	22	188	14	56	11	218	74	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Frt		0.98			1.00	0.85		0.98		1.00	0.97	
Flt Protected		0.98			0.98	1.00		0.99		0.95	1.00	
Satd. Flow (prot)		1783			1809	1568		1824		1719	1722	
Flt Permitted		0.91			0.92	1.00		0.95		0.69	1.00	
Satd. Flow (perm)		1657			1688	1568		1755		1256	1722	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	40	69	14	14	26	224	17	67	13	260	88	24
RTOR Reduction (vph)	0	8	0	0	0	132	0	8	0	0	14	0
Lane Group Flow (vph)	0	115	0	0	40	92	0	89	0	260	98	0
Heavy Vehicles (%)	3%	4%	0%	0%	5%	3%	0%	2%	0%	5%	4%	17%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Effective Green, g (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Grp Cap (vph)		677			690	641		717		513	704	
v/s Ratio Prot											0.06	
v/s Ratio Perm		c0.07			0.02	0.06		0.05		c0.21		
v/c Ratio		0.17			0.06	0.14		0.12		0.51	0.14	
Uniform Delay, d1		10.3			9.8	10.2		10.1		12.1	10.2	
Progression Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.5			0.2	0.5		0.4		3.5	0.4	
Delay (s)		10.9			10.0	10.7		10.5		15.7	10.6	
Level of Service		B			A	B		B		B	B	
Approach Delay (s)		10.9			10.6			10.5			14.1	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.34				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	39.4%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1	0	0	3	8	0	42	0	7	38	29
Future Volume (vph)	8	1	0	0	3	8	0	42	0	7	38	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.904						0.947	
Flt Protected		0.957									0.995	
Satd. Flow (prot)	0	1818	0	0	1718	0	0	1810	0	0	1763	0
Flt Permitted		0.957									0.995	
Satd. Flow (perm)	0	1818	0	0	1718	0	0	1810	0	0	1763	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.2			66.3			50.0			235.6	
Travel Time (s)		3.7			4.8			3.6			17.0	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	3%	0%
Adj. Flow (vph)	10	1	0	0	4	10	0	54	0	9	49	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	14	0	0	54	0	0	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1	0	0	3	8	0	42	0	7	38	29
Future Volume (Veh/h)	8	1	0	0	3	8	0	42	0	7	38	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	10	1	0	0	4	10	0	54	0	9	49	37
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											236	
pX, platoon unblocked												
vC, conflicting volume	152	140	68	140	158	54	86			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	152	140	68	140	158	54	86			54		
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 %	99	100	100	100	99	99	100			99		
cM capacity (veh/h)	805	751	1002	830	734	1019	1523			1564		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	11	14	54	95
Volume Left	10	0	0	9
Volume Right	0	10	0	37
cSH	800	917	1523	1564
Volume to Capacity	0.01	0.02	0.00	0.01
Queue Length 95th (m)	0.3	0.4	0.0	0.1
Control Delay (s)	9.6	9.0	0.0	0.7
Lane LOS	A	A		A
Approach Delay (s)	9.6	9.0	0.0	0.7
Approach LOS	A	A		

Intersection Summary					
Average Delay		1.7			
Intersection Capacity Utilization		23.5%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	35	3	37	11	0	5	1	50	1	0	0
Future Volume (vph)	0	35	3	37	11	0	5	1	50	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989						0.878				
Flt Protected					0.963			0.996			0.950	
Satd. Flow (prot)	0	1721	0	0	1711	0	0	1662	0	0	1805	0
Flt Permitted					0.963			0.996			0.950	
Satd. Flow (perm)	0	1721	0	0	1711	0	0	1662	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.5			1052.7			82.7			71.4	
Travel Time (s)		7.2			75.8			6.0			5.1	
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
Heavy Vehicles (%)	0%	10%	0%	9%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	44	4	47	14	0	6	1	63	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	61	0	0	70	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	35	3	37	11	0	5	1	50	1	0	0
Future Volume (vph)	0	35	3	37	11	0	5	1	50	1	0	0
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	44	4	47	14	0	6	1	63	1	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	48	61	70	1
Volume Left (vph)	0	47	6	1
Volume Right (vph)	4	0	63	0
Hadj (s)	0.11	0.27	-0.52	0.20
Departure Headway (s)	4.2	4.4	3.6	4.4
Degree Utilization, x	0.06	0.07	0.07	0.00
Capacity (veh/h)	834	808	955	790
Control Delay (s)	7.5	7.7	6.9	7.4
Approach Delay (s)	7.5	7.7	6.9	7.4
Approach LOS	A	A	A	A

Intersection Summary					
Delay	7.3				
Level of Service	A				
Intersection Capacity Utilization	19.3%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	50	8	123	68	5	88
Future Volume (vph)	50	8	123	68	5	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981					0.850
Flt Protected				0.969	0.950	
Satd. Flow (prot)	1787	0	0	1775	1805	1524
Flt Permitted				0.969	0.950	
Satd. Flow (perm)	1787	0	0	1775	1805	1524
Link Speed (k/h)	50			50	50	
Link Distance (m)	183.1			244.8	101.4	
Travel Time (s)	13.2			17.6	7.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	0%	3%	5%	0%	6%
Adj. Flow (vph)	67	11	164	91	7	117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	0	255	7	117
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	50	8	123	68	5	88
Future Volume (Veh/h)	50	8	123	68	5	88
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	67	11	164	91	7	117
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				245		
pX, platoon unblocked						
vC, conflicting volume			78		492	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			78		492	72
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			89		99	88
cM capacity (veh/h)			1514		482	979

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	78	255	7	117
Volume Left	0	164	7	0
Volume Right	11	0	0	117
cSH	1700	1514	482	979
Volume to Capacity	0.05	0.11	0.01	0.12
Queue Length 95th (m)	0.0	2.9	0.4	3.2
Control Delay (s)	0.0	5.2	12.6	9.2
Lane LOS		A	B	A
Approach Delay (s)	0.0	5.2	9.4	
Approach LOS			A	

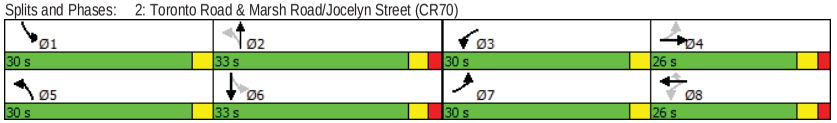
Intersection Summary				
Average Delay		5.5		
Intersection Capacity Utilization		27.1%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	51	34	130	78	96	61	314	131	99	284	66
Future Volume (vph)	57	51	34	130	78	96	61	314	131	99	284	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	30.0		0.0	25.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.940				0.850		0.956			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1694	0	1752	1881	1509	1736	1741	0	1752	1796	0
Flt Permitted	0.704			0.595			0.475			0.360		
Satd. Flow (perm)	1262	1694	0	1098	1881	1509	868	1741	0	664	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				100		16			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		244.8			299.9			1468.9			447.0	
Travel Time (s)		17.6			21.6			105.8			32.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	7%	3%	3%	1%	7%	4%	2%	10%	3%	3%	2%
Adj. Flow (vph)	59	53	35	135	81	100	64	327	136	103	296	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	88	0	135	81	100	64	463	0	103	365	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	15.0	15.0	4.0	26.0		4.0	27.0	
Minimum Split (s)	7.0	26.0		7.0	26.0	26.0	7.0	32.0		7.0	32.0	
Total Split (s)	30.0	26.0		30.0	26.0	26.0	30.0	33.0		30.0	33.0	
Total Split (%)	25.2%	21.8%		25.2%	21.8%	21.8%	25.2%	27.7%		25.2%	27.7%	
Maximum Green (s)	27.0	21.0		27.0	21.0	21.0	27.0	28.0		27.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		18.0			18.0	18.0		21.0			21.0	
Flash Dont Walk (s)		3.0			3.0	3.0		6.0			6.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	18.3	11.3		21.9	16.7	16.7	38.5	33.2		39.7	33.8	
Actuated g/C Ratio	0.28	0.17		0.33	0.25	0.25	0.58	0.50		0.60	0.51	
v/c Ratio	0.15	0.29		0.29	0.17	0.22	0.11	0.53		0.20	0.40	
Control Delay	16.7	24.4		18.2	26.8	7.8	8.7	21.3		9.3	18.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.7	24.4		18.2	26.8	7.8	8.7	21.3		9.3	18.3	
LOS	B	C		B	C	A	A	C		A	B	
Approach Delay		21.3			17.1			19.7			16.3	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 119			
Actuated Cycle Length: 66.5			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 55.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Toronto Road & Marsh Road/Jocelyn Street (CR70)



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	59	88	135	81	100	64	463	103	365
v/c Ratio	0.15	0.29	0.29	0.17	0.22	0.11	0.53	0.20	0.40
Control Delay	16.7	24.4	18.2	26.8	7.8	8.7	21.3	9.3	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	24.4	18.2	26.8	7.8	8.7	21.3	9.3	18.3
Queue Length 50th (m)	5.5	8.1	13.2	10.0	0.0	4.1	53.8	6.7	38.8
Queue Length 95th (m)	13.4	21.9	26.2	22.7	12.3	9.8	94.5	14.2	68.3
Internal Link Dist (m)		220.8		275.9			1444.9		423.0
Turn Bay Length (m)	15.0		30.0			25.0		30.0	
Base Capacity (vph)	782	611	803	661	595	930	877	903	917
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.14	0.17	0.12	0.17	0.07	0.53	0.11	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	51	34	130	78	96	61	314	131	99	284	66
Future Volume (vph)	57	51	34	130	78	96	61	314	131	99	284	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	1695		1752	1881	1509	1736	1741		1752	1796	
Flt Permitted	0.70	1.00		0.60	1.00	1.00	0.48	1.00		0.36	1.00	
Satd. Flow (perm)	1263	1695		1098	1881	1509	869	1741		664	1796	
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)	59	53	35	135	81	100	64	327	136	103	296	69
RTOR Reduction (vph)	0	21	0	0	0	85	0	9	0	0	5	0
Lane Group Flow (vph)	59	67	0	135	81	15	64	454	0	103	360	0
Heavy Vehicles (%)	6%	7%	3%	3%	1%	7%	4%	2%	10%	3%	3%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	14.7	9.1		17.9	10.7	10.7	36.3	31.2		37.5	31.8	
Effective Green, g (s)	14.7	9.1		17.9	10.7	10.7	36.3	31.2		37.5	31.8	
Actuated g/C Ratio	0.21	0.13		0.26	0.15	0.15	0.52	0.45		0.54	0.46	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	303	222		352	290	233	519	784		449	825	
v/s Ratio Prot	0.02	0.04		c0.04	0.04		0.01	c0.26		c0.02	0.20	
v/s Ratio Perm	0.03			c0.06		0.01	0.06			0.11		
v/c Ratio	0.19	0.30		0.38	0.28	0.07	0.12	0.58		0.23	0.44	
Uniform Delay, d1	22.2	27.2		20.6	25.8	25.0	8.2	14.1		8.3	12.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.8		0.7	0.5	0.1	0.1	3.1		0.3	1.7	
Delay (s)	22.5	28.0		21.3	26.4	25.1	8.3	17.2		8.6	14.3	
Level of Service	C	C		C	C	C	A	B		A	B	
Approach Delay (s)		25.8			23.8			16.2			13.1	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	55.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	3	331	68	1	363
Future Volume (vph)	47	3	331	68	1	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	45.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt	0.992		0.977			
Flt Protected	0.955					
Satd. Flow (prot)	1767	0	1811	0	0	3539
Flt Permitted	0.955					
Satd. Flow (perm)	1767	0	1811	0	0	3539
Link Speed (k/h)	60		60			50
Link Distance (m)	315.9		89.2			1468.9
Travel Time (s)	19.0		5.4			105.8
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	33%	2%	5%	0%	2%
Adj. Flow (vph)	50	3	352	72	1	386
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	424	0	0	387
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	3	331	68	1	363
Future Volume (Veh/h)	47	3	331	68	1	363
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	50	3	352	72	1	386
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (m)			89			
pX, platoon unblocked	1.00	1.00			1.00	
vC, conflicting volume	583	388			424	
vC1, stage 1 conf vol	388					
vC2, stage 2 conf vol	195					
vCu, unblocked vol	579	383			419	
tC, single (s)	6.8	7.6			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.6			2.2	
p0 queue free %	92	99			100	
cM capacity (veh/h)	610	533			1146	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	53	424	130	257
Volume Left	50	0	1	0
Volume Right	3	72	0	0
cSH	605	1700	1146	1700
Volume to Capacity	0.09	0.25	0.00	0.15
Queue Length 95th (m)	2.3	0.0	0.0	0.0
Control Delay (s)	11.5	0.0	0.1	0.0
Lane LOS	B		A	
Approach Delay (s)	11.5	0.0	0.0	
Approach LOS	B			

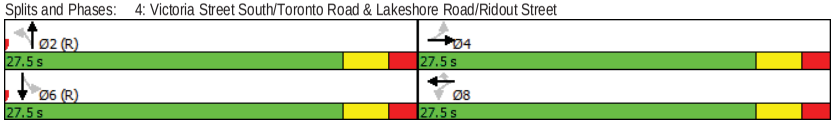
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	57	12	17	46	261	23	110	17	222	125	46
Future Volume (vph)	48	57	12	17	46	261	23	110	17	222	125	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986				0.850		0.985			0.960	
Flt Protected		0.980			0.987			0.992		0.950		
Satd. Flow (prot)	0	1736	0	0	1809	1568	0	1830	0	1787	1788	0
Flt Permitted		0.878			0.929			0.944		0.719		
Satd. Flow (perm)	0	1556	0	0	1703	1568	0	1741	0	1353	1788	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				284		14			41	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1052.7			168.4			235.6			89.2	
Travel Time (s)		75.8			12.1			17.0			6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	9%	0%	5%	3%	0%	2%	0%	1%	2%	2%
Adj. Flow (vph)	52	62	13	18	50	284	25	120	18	241	136	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	127	0	0	68	284	0	163	0	241	186	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
v/c Ratio		0.20			0.10	0.35		0.23		0.44	0.25	
Control Delay		10.4			10.6	3.1		10.7		14.8	9.3	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		10.4			10.6	3.1		10.7		14.8	9.3	
LOS		B			B	A		B		B	A	
Approach Delay		10.4			4.5			10.7			12.4	
Approach LOS		B			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 9.3		Intersection LOS: A	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Victoria Street South/Toronto Road & Lakeshore Road/Ridout Street



Lane Group	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	127	68	284	163	241	186
v/c Ratio	0.20	0.10	0.35	0.23	0.44	0.25
Control Delay	10.4	10.6	3.1	10.7	14.8	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.4	10.6	3.1	10.7	14.8	9.3
Queue Length 50th (m)	7.2	4.2	0.0	9.6	17.3	9.3
Queue Length 95th (m)	16.4	10.4	11.5	20.2	33.8	20.4
Internal Link Dist (m)	1028.7	144.4		211.6		65.2
Turn Bay Length (m)						
Base Capacity (vph)	644	696	809	720	553	755
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.10	0.35	0.23	0.44	0.25

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	57	12	17	46	261	23	110	17	222	125	46
Future Volume (vph)	48	57	12	17	46	261	23	110	17	222	125	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Frt		0.99			1.00	0.85		0.99		1.00	0.96	
Flt Protected		0.98			0.99	1.00		0.99		0.95	1.00	
Satd. Flow (prot)		1736			1809	1568		1830		1787	1788	
Flt Permitted		0.88			0.93	1.00		0.94		0.72	1.00	
Satd. Flow (perm)		1555			1702	1568		1741		1352	1788	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	62	13	18	50	284	25	120	18	241	136	50
RTOR Reduction (vph)	0	8	0	0	0	168	0	8	0	0	24	0
Lane Group Flow (vph)	0	119	0	0	68	116	0	155	0	241	162	0
Heavy Vehicles (%)	7%	4%	9%	0%	5%	3%	0%	2%	0%	1%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Effective Green, g (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Grp Cap (vph)		636			696	641		712		553	731	
v/s Ratio Prot											0.09	
v/s Ratio Perm		c0.08			0.04	0.07		0.09		c0.18		
v/c Ratio		0.19			0.10	0.18		0.22		0.44	0.22	
Uniform Delay, d1		10.4			10.0	10.4		10.5		11.7	10.6	
Progression Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.7			0.3	0.6		0.7		2.5	0.7	
Delay (s)		11.1			10.3	11.0		11.2		14.2	11.3	
Level of Service		B			B	B		B		B	B	
Approach Delay (s)		11.1			10.9			11.2			12.9	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.31				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	45.9%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	3	0	1	3	10	0	72	0	7	62	28
Future Volume (vph)	27	3	0	1	3	10	0	72	0	7	62	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.901						0.961	
Flt Protected		0.957			0.997						0.997	
Satd. Flow (prot)	0	1818	0	0	1707	0	0	1900	0	0	1820	0
Flt Permitted		0.957			0.997						0.997	
Satd. Flow (perm)	0	1818	0	0	1707	0	0	1900	0	0	1820	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.2			66.3			50.0			235.6	
Travel Time (s)		3.7			4.8			3.6			17.0	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	36	4	0	1	4	14	0	97	0	9	84	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	19	0	0	97	0	0	131	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.0%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	3	0	1	3	10	0	72	0	7	62	28
Future Volume (Veh/h)	27	3	0	1	3	10	0	72	0	7	62	28
Sign Control		Stop			Stop			Free			Free	
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)	36	4	0	1	4	14	0	97	0	9	84	38
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											236	
pX, platoon unblocked												
vC, conflicting volume	234	218	103	220	237	97	122			97		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	234	218	103	220	237	97	122			97		
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 %	95	99	100	100	99	99	100			99		
cM capacity (veh/h)	708	680	957	734	663	965	1478			1509		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	40	19	97	131
Volume Left	36	1	0	9
Volume Right	0	14	0	38
cSH	705	867	1478	1509
Volume to Capacity	0.06	0.02	0.00	0.01
Queue Length 95th (m)	1.4	0.5	0.0	0.1
Control Delay (s)	10.4	9.2	0.0	0.6
Lane LOS	B	A		A
Approach Delay (s)	10.4	9.2	0.0	0.6
Approach LOS	B	A		

Intersection Summary					
Average Delay	2.3				
Intersection Capacity Utilization	26.0%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	43	10	64	41	1	7	0	58	1	0	0
Future Volume (vph)	0	43	10	64	41	1	7	0	58	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974			0.999			0.879				
Flt Protected					0.971			0.995			0.950	
Satd. Flow (prot)	0	1699	0	0	1780	0	0	1551	0	0	1805	0
Flt Permitted					0.971			0.995			0.950	
Satd. Flow (perm)	0	1699	0	0	1780	0	0	1551	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.5			1052.7			82.7			71.4	
Travel Time (s)		7.2			75.8			6.0			5.1	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	8%	13%	2%	6%	0%	0%	0%	8%	0%	0%	0%
Adj. Flow (vph)	0	51	12	75	48	1	8	0	68	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	124	0	0	76	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	43	10	64	41	1	7	0	58	1	0	0
Future Volume (vph)	0	43	10	64	41	1	7	0	58	1	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	51	12	75	48	1	8	0	68	1	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	63	124	76	1
Volume Left (vph)	0	75	8	1
Volume Right (vph)	12	1	68	0
Hadj (s)	0.04	0.18	-0.39	0.20
Departure Headway (s)	4.2	4.3	3.9	4.6
Degree Utilization, x	0.07	0.15	0.08	0.00
Capacity (veh/h)	828	818	869	734
Control Delay (s)	7.6	8.1	7.3	7.6
Approach Delay (s)	7.6	8.1	7.3	7.6
Approach LOS	A	A	A	A

Intersection Summary					
Delay	7.7				
Level of Service	A				
Intersection Capacity Utilization	22.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Appendix E

2022 Total Traffic Operations Reports – Scenario A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	53	5	63	38	5	105
Future Volume (vph)	53	5	63	38	5	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988					0.850
Flt Protected				0.970	0.950	
Satd. Flow (prot)	1735	0	0	1636	1805	1538
Flt Permitted				0.970	0.950	
Satd. Flow (perm)	1735	0	0	1636	1805	1538
Link Speed (k/h)	50			50	50	
Link Distance (m)	183.1			244.8	101.4	
Travel Time (s)	13.2			17.6	7.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	0%	16%	7%	0%	5%
Adj. Flow (vph)	59	6	70	42	6	117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	112	6	117
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	53	5	63	38	5	105
Future Volume (Veh/h)	53	5	63	38	5	105
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)	59	6	70	42	6	117
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				245		
pX, platoon unblocked						
vC, conflicting volume			65		244	62
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			65		244	62
tC, single (s)			4.3		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			95		99	88
cM capacity (veh/h)			1452		713	995

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	65	112	6	117
Volume Left	0	70	6	0
Volume Right	6	0	0	117
cSH	1700	1452	713	995
Volume to Capacity	0.04	0.05	0.01	0.12
Queue Length 95th (m)	0.0	1.2	0.2	3.2
Control Delay (s)	0.0	4.9	10.1	9.1
Lane LOS		A	B	A
Approach Delay (s)	0.0	4.9	9.2	
Approach LOS			A	

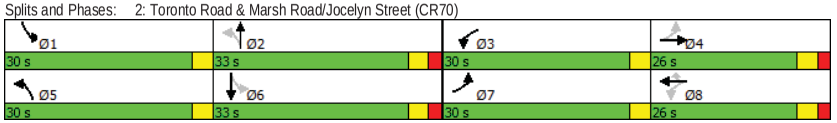
Intersection Summary				
Average Delay		5.6		
Intersection Capacity Utilization		22.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	38	68	95	26	101	43	307	97	75	296	29
Future Volume (vph)	70	38	68	95	26	101	43	307	97	75	296	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	30.0		0.0	25.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.904				0.850		0.964			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1560	0	1687	1743	1568	1805	1701	0	1687	1802	0
Flt Permitted	0.737			0.645			0.482			0.338		
Satd. Flow (perm)	1334	1560	0	1145	1743	1568	916	1701	0	600	1802	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		65				119		12			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		244.8			299.9			1468.9			447.0	
Travel Time (s)		17.6			21.6			105.8			32.2	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	12%	9%	7%	9%	3%	0%	6%	13%	7%	3%	15%
Adj. Flow (vph)	82	45	80	112	31	119	51	361	114	88	348	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	125	0	112	31	119	51	475	0	88	382	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	15.0	15.0	4.0	26.0		4.0	27.0	
Minimum Split (s)	7.0	26.0		7.0	26.0	26.0	7.0	32.0		7.0	32.0	
Total Split (s)	30.0	26.0		30.0	26.0	26.0	30.0	33.0		30.0	33.0	
Total Split (%)	25.2%	21.8%		25.2%	21.8%	21.8%	25.2%	27.7%		25.2%	27.7%	
Maximum Green (s)	27.0	21.0		27.0	21.0	21.0	27.0	28.0		27.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		18.0			18.0	18.0		21.0			21.0	
Flash Dont Walk (s)		3.0			3.0	3.0		6.0			6.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	20.1	12.4		21.3	16.7	16.7	38.3	33.3		40.1	35.6	
Actuated g/C Ratio	0.30	0.19		0.32	0.25	0.25	0.57	0.50		0.60	0.53	
v/c Ratio	0.18	0.37		0.26	0.07	0.25	0.08	0.56		0.18	0.40	
Control Delay	16.7	18.7		17.5	26.0	7.5	8.9	22.9		9.6	17.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.7	18.7		17.5	26.0	7.5	8.9	22.9		9.6	17.9	
LOS	B	B		B	C	A	A	C		A	B	
Approach Delay		17.9			14.0			21.5			16.3	
Approach LOS		B			B			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 119			
Actuated Cycle Length: 67			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 50.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Toronto Road & Marsh Road/Jocelyn Street (CR70)



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	125	112	31	119	51	475	88	382
v/c Ratio	0.18	0.37	0.26	0.07	0.25	0.08	0.56	0.18	0.40
Control Delay	16.7	18.7	17.5	26.0	7.5	8.9	22.9	9.6	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	18.7	17.5	26.0	7.5	8.9	22.9	9.6	17.9
Queue Length 50th (m)	7.7	7.5	10.7	3.8	0.0	3.3	57.5	5.8	42.2
Queue Length 95th (m)	16.1	21.2	20.8	10.6	11.5	8.0	92.2	12.2	67.7
Internal Link Dist (m)		220.8		275.9			1444.9		423.0
Turn Bay Length (m)	15.0		30.0			25.0		30.0	
Base Capacity (vph)	796	588	779	609	625	962	851	857	960
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.21	0.14	0.05	0.19	0.05	0.56	0.10	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	38	68	95	26	101	43	307	97	75	296	29
Future Volume (vph)	70	38	68	95	26	101	43	307	97	75	296	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1560		1687	1743	1568	1805	1701		1687	1801	
Flt Permitted	0.74	1.00		0.65	1.00	1.00	0.48	1.00		0.34	1.00	
Satd. Flow (perm)	1334	1560		1146	1743	1568	915	1701		601	1801	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	82	45	80	112	31	119	51	361	114	88	348	34
RTOR Reduction (vph)	0	56	0	0	0	101	0	7	0	0	2	0
Lane Group Flow (vph)	82	69	0	112	31	18	51	468	0	88	380	0
Heavy Vehicles (%)	5%	12%	9%	7%	9%	3%	0%	6%	13%	7%	3%	15%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	16.4	10.2		17.4	10.7	10.7	35.7	31.9		39.1	33.6	
Effective Green, g (s)	16.4	10.2		17.4	10.7	10.7	35.7	31.9		39.1	33.6	
Actuated g/C Ratio	0.23	0.15		0.25	0.15	0.15	0.51	0.45		0.56	0.48	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	345	226		335	265	238	512	771		419	860	
v/s Ratio Prot	0.02	0.04		c0.03	0.02		0.01	c0.28		c0.02	0.21	
v/s Ratio Perm	0.03			c0.05		0.01	0.05			0.10		
v/c Ratio	0.24	0.31		0.33	0.12	0.08	0.10	0.61		0.21	0.44	
Uniform Delay, d1	21.7	26.9		21.3	25.7	25.6	8.8	14.5		8.2	12.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.8		0.6	0.2	0.1	0.1	3.5		0.3	1.6	
Delay (s)	22.1	27.7		21.9	25.9	25.7	8.9	18.0		8.4	13.8	
Level of Service	C	C		C	C	C	A	B		A	B	
Approach Delay (s)		25.4			24.1			17.1			12.8	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	50.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	59	1	324	52	2	287
Future Volume (vph)	59	1	324	52	2	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	45.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt	0.998		0.981			
Flt Protected	0.953					
Satd. Flow (prot)	1772	0	1810	0	0	3407
Flt Permitted	0.953					
Satd. Flow (perm)	1772	0	1810	0	0	3407
Link Speed (k/h)	60		60			50
Link Distance (m)	315.9		89.2			1468.9
Travel Time (s)	19.0		5.4			105.8
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	2%	0%	3%	3%	0%	6%
Adj. Flow (vph)	71	1	390	63	2	346
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	0	453	0	0	348
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	59	1	324	52	2	287
Future Volume (Veh/h)	59	1	324	52	2	287
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	71	1	390	63	2	346
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (m)			89			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	598	422			453	
vC1, stage 1 conf vol	422					
vC2, stage 2 conf vol	177					
vCu, unblocked vol	561	376			409	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	100			100	
cM capacity (veh/h)	594	602			1114	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	72	453	117	231
Volume Left	71	0	2	0
Volume Right	1	63	0	0
cSH	594	1700	1114	1700
Volume to Capacity	0.12	0.27	0.00	0.14
Queue Length 95th (m)	3.3	0.0	0.0	0.0
Control Delay (s)	11.9	0.0	0.2	0.0
Lane LOS	B		A	
Approach Delay (s)	11.9	0.0	0.1	
Approach LOS	B			

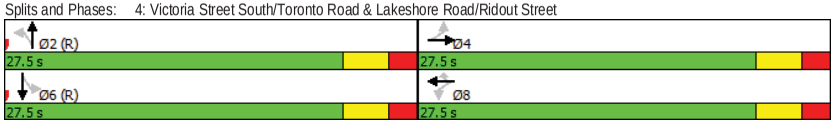
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	66	12	23	25	188	14	136	44	218	100	27
Future Volume (vph)	54	66	12	23	25	188	14	136	44	218	100	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988				0.850		0.970			0.968	
Flt Protected		0.980			0.977			0.996		0.950		
Satd. Flow (prot)	0	1782	0	0	1809	1568	0	1810	0	1719	1723	0
Flt Permitted		0.874			0.861			0.977		0.639		
Satd. Flow (perm)	0	1589	0	0	1594	1568	0	1776	0	1156	1723	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				224		32			30	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1052.7			168.4			235.6			89.2	
Travel Time (s)		75.8			12.1			17.0			6.4	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	3%	4%	0%	0%	5%	3%	0%	2%	0%	5%	4%	17%
Adj. Flow (vph)	64	79	14	27	30	224	17	162	52	260	119	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	157	0	0	57	224	0	231	0	260	151	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
v/c Ratio		0.24			0.09	0.29		0.31		0.55	0.21	
Control Delay		11.1			10.5	3.0		10.8		17.9	9.4	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		11.1			10.5	3.0		10.8		17.9	9.4	
LOS		B			B	A		B		B	A	
Approach Delay		11.1			4.5			10.8			14.7	
Approach LOS		B			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 49.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Victoria Street South/Toronto Road & Lakeshore Road/Ridout Street



Lane Group	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	157	57	224	231	260	151
v/c Ratio	0.24	0.09	0.29	0.31	0.55	0.21
Control Delay	11.1	10.5	3.0	10.8	17.9	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	10.5	3.0	10.8	17.9	9.4
Queue Length 50th (m)	9.5	3.5	0.0	13.2	19.8	7.7
Queue Length 95th (m)	18.4	8.5	8.4	24.1	35.9	16.1
Internal Link Dist (m)	1028.7	144.4		211.6		65.2
Turn Bay Length (m)						
Base Capacity (vph)	656	652	773	745	472	722
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.09	0.29	0.31	0.55	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	66	12	23	25	188	14	136	44	218	100	27
Future Volume (vph)	54	66	12	23	25	188	14	136	44	218	100	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Frt		0.99			1.00	0.85		0.97		1.00	0.97	
Flt Protected		0.98			0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1782			1808	1568		1810		1719	1723	
Flt Permitted		0.87			0.86	1.00		0.98		0.64	1.00	
Satd. Flow (perm)		1590			1593	1568		1775		1156	1723	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	64	79	14	27	30	224	17	162	52	260	119	32
RTOR Reduction (vph)	0	7	0	0	0	132	0	19	0	0	18	0
Lane Group Flow (vph)	0	151	0	0	57	92	0	212	0	260	133	0
Heavy Vehicles (%)	3%	4%	0%	0%	5%	3%	0%	2%	0%	5%	4%	17%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Effective Green, g (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Grp Cap (vph)		650			651	641		726		472	704	
v/s Ratio Prot											0.08	
v/s Ratio Perm		c0.09			0.04	0.06		0.12		c0.22		
v/c Ratio		0.23			0.09	0.14		0.29		0.55	0.19	
Uniform Delay, d1		10.6			10.0	10.2		10.9		12.4	10.4	
Progression Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.8			0.3	0.5		1.0		4.6	0.6	
Delay (s)		11.4			10.2	10.7		11.9		17.0	11.0	
Level of Service		B			B	B		B		B	B	
Approach Delay (s)		11.4			10.6			11.9			14.8	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.39				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	49.0%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	18	0	0	9	8	0	42	0	7	38	66
Future Volume (vph)	121	18	0	0	9	8	0	42	0	7	38	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.939						0.920	
Flt Protected		0.958									0.997	
Satd. Flow (prot)	0	1820	0	0	1784	0	0	1810	0	0	1725	0
Flt Permitted		0.958									0.997	
Satd. Flow (perm)	0	1820	0	0	1784	0	0	1810	0	0	1725	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		284.5			66.3			50.0			235.6	
Travel Time (s)		20.5			4.8			3.6			17.0	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	3%	0%
Adj. Flow (vph)	155	23	0	0	12	10	0	54	0	9	49	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	178	0	0	22	0	0	54	0	0	143	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	18	0	0	9	8	0	42	0	7	38	66
Future Volume (Veh/h)	121	18	0	0	9	8	0	42	0	7	38	66
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	155	23	0	0	12	10	0	54	0	9	49	85
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											236	
pX, platoon unblocked												
vC, conflicting volume	180	164	92	175	206	54	134			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	180	164	92	175	206	54	134			54		
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 %	80	97	100	100	98	99	100			99		
cM capacity (veh/h)	765	728	971	770	690	1019	1463			1564		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	178	22	54	143
Volume Left	155	0	0	9
Volume Right	0	10	0	85
cSH	760	809	1463	1564
Volume to Capacity	0.23	0.03	0.00	0.01
Queue Length 95th (m)	7.2	0.7	0.0	0.1
Control Delay (s)	11.2	9.6	0.0	0.5
Lane LOS	B	A		A
Approach Delay (s)	11.2	9.6	0.0	0.5
Approach LOS	B	A		

Intersection Summary					
Average Delay		5.7			
Intersection Capacity Utilization		33.3%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	35	6	46	11	0	13	1	78	1	0	0
Future Volume (vph)	0	35	6	46	11	0	13	1	78	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979						0.885				
Flt Protected					0.961			0.993			0.950	
Satd. Flow (prot)	0	1715	0	0	1702	0	0	1670	0	0	1805	0
Flt Permitted					0.961			0.993			0.950	
Satd. Flow (perm)	0	1715	0	0	1702	0	0	1670	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.5			1052.7			82.7			71.4	
Travel Time (s)		7.2			75.8			6.0			5.1	
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
Heavy Vehicles (%)	0%	10%	0%	9%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	44	8	58	14	0	16	1	99	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	72	0	0	116	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	35	6	46	11	0	13	1	78	1	0	0
Future Volume (vph)	0	35	6	46	11	0	13	1	78	1	0	0
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	44	8	58	14	0	16	1	99	1	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	52	72	116	1
Volume Left (vph)	0	58	16	1
Volume Right (vph)	8	0	99	0
Hadj (s)	0.05	0.28	-0.48	0.20
Departure Headway (s)	4.3	4.5	3.7	4.5
Degree Utilization, x	0.06	0.09	0.12	0.00
Capacity (veh/h)	816	781	935	770
Control Delay (s)	7.5	7.9	7.2	7.5
Approach Delay (s)	7.5	7.9	7.2	7.5
Approach LOS	A	A	A	A

Intersection Summary					
Delay		7.5			
Level of Service		A			
Intersection Capacity Utilization		21.7%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	130	1	31	43	0	8
Future Volume (vph)	130	1	31	43	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.865	
Flt Protected				0.979		
Satd. Flow (prot)	1898	0	0	1860	1644	0
Flt Permitted				0.979		
Satd. Flow (perm)	1898	0	0	1860	1644	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	64.0			284.5	61.0	
Travel Time (s)	4.6			20.5	4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	1	34	47	0	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	0	0	81	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	130	1	31	43	0	8
Future Volume (Veh/h)	130	1	31	43	0	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	141	1	34	47	0	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			142		256	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			142		256	142
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	99
cM capacity (veh/h)			1453		719	912

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	142	81	9
Volume Left	0	34	0
Volume Right	1	0	9
cSH	1700	1453	912
Volume to Capacity	0.08	0.02	0.01
Queue Length 95th (m)	0.0	0.6	0.2
Control Delay (s)	0.0	3.3	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	3.3	9.0
Approach LOS			A

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	50	8	123	73	5	88
Future Volume (vph)	50	8	123	73	5	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981					0.850
Flt Protected				0.970	0.950	
Satd. Flow (prot)	1787	0	0	1777	1805	1524
Flt Permitted				0.970	0.950	
Satd. Flow (perm)	1787	0	0	1777	1805	1524
Link Speed (k/h)	50			50	50	
Link Distance (m)	183.1			244.8	101.4	
Travel Time (s)	13.2			17.6	7.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	0%	3%	5%	0%	6%
Adj. Flow (vph)	67	11	164	97	7	117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	0	261	7	117
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	50	8	123	73	5	88
Future Volume (Veh/h)	50	8	123	73	5	88
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	67	11	164	97	7	117
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				245		
pX, platoon unblocked						
vC, conflicting volume			78		498	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			78		498	72
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			89		99	88
cM capacity (veh/h)			1514		478	979

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	78	261	7	117
Volume Left	0	164	7	0
Volume Right	11	0	0	117
cSH	1700	1514	478	979
Volume to Capacity	0.05	0.11	0.01	0.12
Queue Length 95th (m)	0.0	2.9	0.4	3.2
Control Delay (s)	0.0	5.1	12.6	9.2
Lane LOS		A	B	A
Approach Delay (s)	0.0	5.1	9.4	
Approach LOS			A	

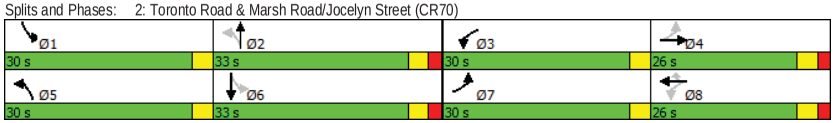
Intersection Summary				
Average Delay		5.4		
Intersection Capacity Utilization		27.3%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	51	43	158	78	96	66	352	147	99	349	66
Future Volume (vph)	57	51	43	158	78	96	66	352	147	99	349	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	30.0		0.0	25.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.931				0.850		0.956			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1682	0	1752	1881	1509	1736	1741	0	1752	1803	0
Flt Permitted	0.704			0.520			0.365			0.254		
Satd. Flow (perm)	1262	1682	0	959	1881	1509	667	1741	0	469	1803	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31				100		16			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		244.8			299.9			1468.9			447.0	
Travel Time (s)		17.6			21.6			105.8			32.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	7%	3%	3%	1%	7%	4%	2%	10%	3%	3%	2%
Adj. Flow (vph)	59	53	45	165	81	100	69	367	153	103	364	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	98	0	165	81	100	69	520	0	103	433	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	15.0	15.0	4.0	26.0		4.0	27.0	
Minimum Split (s)	7.0	26.0		7.0	26.0	26.0	7.0	32.0		7.0	32.0	
Total Split (s)	30.0	26.0		30.0	26.0	26.0	30.0	33.0		30.0	33.0	
Total Split (%)	25.2%	21.8%		25.2%	21.8%	21.8%	25.2%	27.7%		25.2%	27.7%	
Maximum Green (s)	27.0	21.0		27.0	21.0	21.0	27.0	28.0		27.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		18.0			18.0	18.0		21.0			21.0	
Flash Dont Walk (s)		3.0			3.0	3.0		6.0			6.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	17.9	10.5		25.7	15.6	15.6	36.2	28.6		37.3	29.2	
Actuated g/C Ratio	0.25	0.15		0.36	0.22	0.22	0.51	0.40		0.53	0.41	
v/c Ratio	0.16	0.36		0.34	0.20	0.24	0.15	0.73		0.27	0.58	
Control Delay	16.9	25.3		18.5	26.9	8.0	9.3	27.7		10.3	21.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.9	25.3		18.5	26.9	8.0	9.3	27.7		10.3	21.9	
LOS	B	C		B	C	A	A	C		B	C	
Approach Delay		22.2			17.4			25.5			19.7	
Approach LOS		C			B			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 119			
Actuated Cycle Length: 70.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 21.6		Intersection LOS: C	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Toronto Road & Marsh Road/Jocelyn Street (CR70)



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	59	98	165	81	100	69	520	103	433
v/c Ratio	0.16	0.36	0.34	0.20	0.24	0.15	0.73	0.27	0.58
Control Delay	16.9	25.3	18.5	26.9	8.0	9.3	27.7	10.3	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	25.3	18.5	26.9	8.0	9.3	27.7	10.3	21.9
Queue Length 50th (m)	5.5	8.7	16.4	9.9	0.0	4.4	63.4	6.6	48.7
Queue Length 95th (m)	13.4	23.5	31.3	22.7	12.2	10.9	#128.1	14.9	87.4
Internal Link Dist (m)		220.8		275.9			1444.9		423.0
Turn Bay Length (m)	15.0		30.0			25.0		30.0	
Base Capacity (vph)	679	530	693	569	526	783	712	757	746
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.18	0.24	0.14	0.19	0.09	0.73	0.14	0.58

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	51	43	158	78	96	66	352	147	99	349	66
Future Volume (vph)	57	51	43	158	78	96	66	352	147	99	349	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	1682		1752	1881	1509	1736	1740		1752	1803	
Flt Permitted	0.70	1.00		0.52	1.00	1.00	0.37	1.00		0.25	1.00	
Satd. Flow (perm)	1263	1682		960	1881	1509	667	1740		468	1803	
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)	59	53	45	165	81	100	69	367	153	103	364	69
RTOR Reduction (vph)	0	27	0	0	0	78	0	10	0	0	4	0
Lane Group Flow (vph)	59	71	0	165	81	22	69	510	0	103	429	0
Heavy Vehicles (%)	6%	7%	3%	3%	1%	7%	4%	2%	10%	3%	3%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	14.9	9.0		24.9	16.0	16.0	34.1	28.6		35.3	29.2	
Effective Green, g (s)	14.9	9.0		24.9	16.0	16.0	34.1	28.6		35.3	29.2	
Actuated g/C Ratio	0.21	0.12		0.34	0.22	0.22	0.47	0.39		0.49	0.40	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	294	208		469	414	332	394	685		335	725	
v/s Ratio Prot	0.02	0.04		c0.06	0.04		0.01	c0.29		c0.03	0.24	
v/s Ratio Perm	0.02			c0.06		0.01	0.07			0.12		
v/c Ratio	0.20	0.34		0.35	0.20	0.07	0.18	0.74		0.31	0.59	
Uniform Delay, d1	23.8	29.1		17.4	23.1	22.4	11.1	18.9		11.6	17.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.0		0.5	0.2	0.1	0.2	7.2		0.5	3.5	
Delay (s)	24.1	30.1		17.8	23.3	22.5	11.3	26.1		12.1	20.5	
Level of Service	C	C		B	C	C	B	C		B	C	
Approach Delay (s)		27.8			20.4			24.4			18.9	
Approach LOS		C			C			C			B	

Intersection Summary				
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	60.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	56	3	391	73	1	465
Future Volume (vph)	56	3	391	73	1	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	45.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt	0.994		0.979			
Flt Protected	0.955					
Satd. Flow (prot)	1776	0	1815	0	0	3539
Flt Permitted	0.955					
Satd. Flow (perm)	1776	0	1815	0	0	3539
Link Speed (k/h)	60		60			50
Link Distance (m)	315.9		89.2			1468.9
Travel Time (s)	19.0		5.4			105.8
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	33%	2%	5%	0%	2%
Adj. Flow (vph)	60	3	416	78	1	495
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	494	0	0	496
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	56	3	391	73	1	465
Future Volume (Veh/h)	56	3	391	73	1	465
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	60	3	416	78	1	495
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (m)			89			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	704	455			494	
vC1, stage 1 conf vol	455					
vC2, stage 2 conf vol	250					
vCu, unblocked vol	670	410			451	
tC, single (s)	6.8	7.6			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.6			2.2	
p0 queue free %	89	99			100	
cM capacity (veh/h)	560	491			1074	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	63	494	166	330
Volume Left	60	0	1	0
Volume Right	3	78	0	0
cSH	556	1700	1074	1700
Volume to Capacity	0.11	0.29	0.00	0.19
Queue Length 95th (m)	3.0	0.0	0.0	0.0
Control Delay (s)	12.3	0.0	0.1	0.0
Lane LOS	B		A	
Approach Delay (s)	12.3	0.0	0.0	
Approach LOS	B			

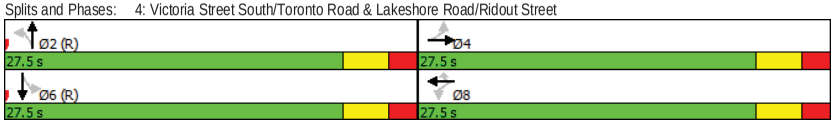
Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		35.0%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	62	12	54	55	261	23	162	39	222	214	68
Future Volume (vph)	61	62	12	54	55	261	23	162	39	222	214	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988				0.850		0.977			0.964	
Flt Protected		0.978			0.976			0.995		0.950		
Satd. Flow (prot)	0	1735	0	0	1809	1568	0	1821	0	1787	1796	0
Flt Permitted		0.838			0.821			0.950		0.626		
Satd. Flow (perm)	0	1487	0	0	1522	1568	0	1738	0	1178	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				284		23			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1052.7			168.4			235.6			89.2	
Travel Time (s)		75.8			12.1			17.0			6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	9%	0%	5%	3%	0%	2%	0%	1%	2%	2%
Adj. Flow (vph)	66	67	13	59	60	284	25	176	42	241	233	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	146	0	0	119	284	0	243	0	241	307	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
v/c Ratio		0.24			0.19	0.35		0.34		0.50	0.41	
Control Delay		11.1			11.5	3.1		11.6		16.6	12.1	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		11.1			11.5	3.1		11.6		16.6	12.1	
LOS		B			B	A		B		B	B	
Approach Delay		11.1			5.6			11.6			14.1	
Approach LOS		B			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 54.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Victoria Street South/Toronto Road & Lakeshore Road/Ridout Street



Lane Group	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	146	119	284	243	241	307
v/c Ratio	0.24	0.19	0.35	0.34	0.50	0.41
Control Delay	11.1	11.5	3.1	11.6	16.6	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	11.5	3.1	11.6	16.6	12.1
Queue Length 50th (m)	8.8	7.6	0.0	14.8	17.9	18.9
Queue Length 95th (m)	19.1	16.7	11.5	29.0	36.1	35.8
Internal Link Dist (m)	1028.7	144.4		211.6		65.2
Turn Bay Length (m)						
Base Capacity (vph)	614	622	809	724	481	755
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.19	0.35	0.34	0.50	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	62	12	54	55	261	23	162	39	222	214	68
Future Volume (vph)	61	62	12	54	55	261	23	162	39	222	214	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Frt		0.99			1.00	0.85		0.98		1.00	0.96	
Flt Protected		0.98			0.98	1.00		0.99		0.95	1.00	
Satd. Flow (prot)		1735			1808	1568		1820		1787	1795	
Flt Permitted		0.84			0.82	1.00		0.95		0.63	1.00	
Satd. Flow (perm)		1487			1521	1568		1737		1177	1795	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	67	13	59	60	284	25	176	42	241	233	74
RTOR Reduction (vph)	0	7	0	0	0	168	0	14	0	0	21	0
Lane Group Flow (vph)	0	140	0	0	119	116	0	229	0	241	286	0
Heavy Vehicles (%)	7%	4%	9%	0%	5%	3%	0%	2%	0%	1%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Effective Green, g (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Grp Cap (vph)		608			622	641		710		481	734	
v/s Ratio Prot											0.16	
v/s Ratio Perm		c0.09			0.08	0.07		0.13		c0.20		
v/c Ratio		0.23			0.19	0.18		0.32		0.50	0.39	
Uniform Delay, d1		10.6			10.4	10.4		11.1		12.1	11.4	
Progression Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.9			0.7	0.6		1.2		3.7	1.6	
Delay (s)		11.5			11.1	11.0		12.3		15.8	13.0	
Level of Service		B			B	B		B		B	B	
Approach Delay (s)		11.5			11.0			12.3			14.2	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.36				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	54.1%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	14	0	1	22	10	0	72	0	7	62	154
Future Volume (vph)	101	14	0	1	22	10	0	72	0	7	62	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.958						0.907	
Flt Protected		0.958			0.999						0.999	
Satd. Flow (prot)	0	1820	0	0	1818	0	0	1900	0	0	1722	0
Flt Permitted		0.958			0.999						0.999	
Satd. Flow (perm)	0	1820	0	0	1818	0	0	1900	0	0	1722	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		355.5			66.3			50.0			235.6	
Travel Time (s)		25.6			4.8			3.6			17.0	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	136	19	0	1	30	14	0	97	0	9	84	208
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	155	0	0	45	0	0	97	0	0	301	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	14	0	1	22	10	0	72	0	7	62	154
Future Volume (Veh/h)	101	14	0	1	22	10	0	72	0	7	62	154
Sign Control		Stop			Stop			Free			Free	
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)	136	19	0	1	30	14	0	97	0	9	84	208
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											236	
pX, platoon unblocked												
vC, conflicting volume	332	303	188	312	407	97	292			97		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	332	303	188	312	407	97	292			97		
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 %	77	97	100	100	94	99	100			99		
cM capacity (veh/h)	587	610	859	626	533	965	1281			1509		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	155	45	97	301
Volume Left	136	1	0	9
Volume Right	0	14	0	208
cSH	590	622	1281	1509
Volume to Capacity	0.26	0.07	0.00	0.01
Queue Length 95th (m)	8.4	1.9	0.0	0.1
Control Delay (s)	13.3	11.2	0.0	0.3
Lane LOS	B	B		A
Approach Delay (s)	13.3	11.2	0.0	0.3
Approach LOS	B	B		

Intersection Summary					
Average Delay		4.4			
Intersection Capacity Utilization		38.6%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	43	19	96	41	1	12	0	77	1	0	0
Future Volume (vph)	0	43	19	96	41	1	12	0	77	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.959			0.999			0.883				
Flt Protected					0.966			0.993			0.950	
Satd. Flow (prot)	0	1664	0	0	1777	0	0	1558	0	0	1805	0
Flt Permitted					0.966			0.993			0.950	
Satd. Flow (perm)	0	1664	0	0	1777	0	0	1558	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.5			1052.7			82.7			71.4	
Travel Time (s)		7.2			75.8			6.0			5.1	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	8%	13%	2%	6%	0%	0%	0%	8%	0%	0%	0%
Adj. Flow (vph)	0	51	22	113	48	1	14	0	91	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	73	0	0	162	0	0	105	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	43	19	96	41	1	12	0	77	1	0	0
Future Volume (vph)	0	43	19	96	41	1	12	0	77	1	0	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	51	22	113	48	1	14	0	91	1	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	73	162	105	1
Volume Left (vph)	0	113	14	1
Volume Right (vph)	22	1	91	0
Hadj (s)	-0.02	0.19	-0.38	0.20
Departure Headway (s)	4.3	4.4	4.1	4.8
Degree Utilization, x	0.09	0.20	0.12	0.00
Capacity (veh/h)	810	798	835	703
Control Delay (s)	7.7	8.5	7.6	7.8
Approach Delay (s)	7.7	8.5	7.6	7.8
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.0		
Level of Service	A		
Intersection Capacity Utilization	26.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	85	1	29	145	1	25
Future Volume (vph)	85	1	29	145	1	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.870	
Flt Protected				0.992	0.998	
Satd. Flow (prot)	1898	0	0	1885	1650	0
Flt Permitted				0.992	0.998	
Satd. Flow (perm)	1898	0	0	1885	1650	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.5			355.5	78.7	
Travel Time (s)	5.2			25.6	5.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	92	1	32	158	1	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	93	0	0	190	28	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	85	1	29	145	1	25
Future Volume (Veh/h)	85	1	29	145	1	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	92	1	32	158	1	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			93		314	92
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			93		314	92
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	97
cM capacity (veh/h)			1514		668	970

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	93	190	28
Volume Left	0	32	1
Volume Right	1	0	27
cSH	1700	1514	955
Volume to Capacity	0.05	0.02	0.03
Queue Length 95th (m)	0.0	0.5	0.7
Control Delay (s)	0.0	1.4	8.9
Lane LOS		A	A
Approach Delay (s)	0.0	1.4	8.9
Approach LOS			A

Intersection Summary					
Average Delay		1.7			
Intersection Capacity Utilization		25.9%	ICU Level of Service		A
Analysis Period (min)		15			

Appendix F

2022 Total Traffic Operations Reports – Scenario B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	56	5	63	43	5	105
Future Volume (vph)	56	5	63	43	5	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988					0.850
Flt Protected				0.971	0.950	
Satd. Flow (prot)	1735	0	0	1642	1805	1538
Flt Permitted				0.971	0.950	
Satd. Flow (perm)	1735	0	0	1642	1805	1538
Link Speed (k/h)	50			50	50	
Link Distance (m)	183.1			244.8	101.4	
Travel Time (s)	13.2			17.6	7.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	0%	16%	7%	0%	5%
Adj. Flow (vph)	62	6	70	48	6	117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	0	118	6	117
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	56	5	63	43	5	105
Future Volume (Veh/h)	56	5	63	43	5	105
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)	62	6	70	48	6	117
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				245		
pX, platoon unblocked						
vC, conflicting volume			68		253	65
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		253	65
tC, single (s)			4.3		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			95		99	88
cM capacity (veh/h)			1449		704	991

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	68	118	6	117
Volume Left	0	70	6	0
Volume Right	6	0	0	117
cSH	1700	1449	704	991
Volume to Capacity	0.04	0.05	0.01	0.12
Queue Length 95th (m)	0.0	1.2	0.2	3.2
Control Delay (s)	0.0	4.7	10.2	9.1
Lane LOS		A	B	A
Approach Delay (s)	0.0	4.7	9.2	
Approach LOS			A	

Intersection Summary				
Average Delay		5.4		
Intersection Capacity Utilization		22.4%	ICU Level of Service	A
Analysis Period (min)		15		

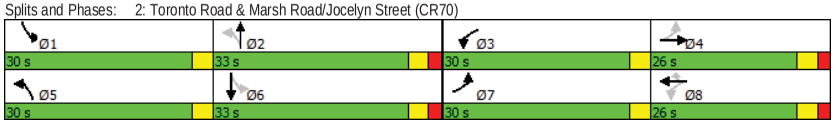
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	38	71	105	26	101	48	345	114	75	320	29
Future Volume (vph)	70	38	71	105	26	101	48	345	114	75	320	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	30.0		0.0	25.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.902				0.850		0.963			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1557	0	1687	1743	1568	1805	1698	0	1687	1805	0
Flt Permitted	0.737			0.624			0.456			0.280		
Satd. Flow (perm)	1334	1557	0	1108	1743	1568	866	1698	0	497	1805	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		69				119		13			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		244.8			299.9			1468.9			447.0	
Travel Time (s)		17.6			21.6			105.8			32.2	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	12%	9%	7%	9%	3%	0%	6%	13%	7%	3%	15%
Adj. Flow (vph)	82	45	84	124	31	119	56	406	134	88	376	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	129	0	124	31	119	56	540	0	88	410	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	15.0	15.0	4.0	26.0		4.0	27.0	
Minimum Split (s)	7.0	26.0		7.0	26.0	26.0	7.0	32.0		7.0	32.0	
Total Split (s)	30.0	26.0		30.0	26.0	26.0	30.0	33.0		30.0	33.0	
Total Split (%)	25.2%	21.8%		25.2%	21.8%	21.8%	25.2%	27.7%		25.2%	27.7%	
Maximum Green (s)	27.0	21.0		27.0	21.0	21.0	27.0	28.0		27.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		18.0			18.0	18.0		21.0			21.0	
Flash Dont Walk (s)		3.0			3.0	3.0		6.0			6.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	19.8	12.1		21.7	16.7	16.7	38.4	33.3		40.1	35.6	
Actuated g/C Ratio	0.30	0.18		0.32	0.25	0.25	0.57	0.50		0.60	0.53	
v/c Ratio	0.18	0.38		0.28	0.07	0.25	0.09	0.64		0.20	0.43	
Control Delay	16.7	18.8		17.8	26.0	7.6	9.0	25.4		9.8	18.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.7	18.8		17.8	26.0	7.6	9.0	25.4		9.8	18.4	
LOS	B	B		B	C	A	A	C		A	B	
Approach Delay		18.0			14.3			23.8			16.9	
Approach LOS		B			B			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 119
Actuated Cycle Length: 67
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 19.2 Intersection LOS: B
Intersection Capacity Utilization 53.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Toronto Road & Marsh Road/Jocelyn Street (CR70)



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	129	124	31	119	56	540	88	410
v/c Ratio	0.18	0.38	0.28	0.07	0.25	0.09	0.64	0.20	0.43
Control Delay	16.7	18.8	17.8	26.0	7.6	9.0	25.4	9.8	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	18.8	17.8	26.0	7.6	9.0	25.4	9.8	18.4
Queue Length 50th (m)	7.7	7.6	12.0	3.8	0.0	3.6	69.2	5.8	46.4
Queue Length 95th (m)	16.2	21.7	22.8	10.6	11.6	8.6	#122.9	12.2	73.9
Internal Link Dist (m)		220.8		275.9			1444.9		423.0
Turn Bay Length (m)	15.0		30.0			25.0		30.0	
Base Capacity (vph)	796	589	778	609	625	954	850	840	960
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.22	0.16	0.05	0.19	0.06	0.64	0.10	0.43

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	38	71	105	26	101	48	345	114	75	320	29
Future Volume (vph)	70	38	71	105	26	101	48	345	114	75	320	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1558		1687	1743	1568	1805	1698		1687	1804	
Flt Permitted	0.74	1.00		0.62	1.00	1.00	0.46	1.00		0.28	1.00	
Satd. Flow (perm)	1334	1558		1108	1743	1568	866	1698		496	1804	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	82	45	84	124	31	119	56	406	134	88	376	34
RTOR Reduction (vph)	0	59	0	0	0	101	0	7	0	0	2	0
Lane Group Flow (vph)	82	70	0	124	31	18	56	533	0	88	408	0
Heavy Vehicles (%)	5%	12%	9%	7%	9%	3%	0%	6%	13%	7%	3%	15%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	16.1	9.9		17.7	10.7	10.7	35.6	31.8		39.2	33.6	
Effective Green, g (s)	16.1	9.9		17.7	10.7	10.7	35.6	31.8		39.2	33.6	
Actuated g/C Ratio	0.23	0.14		0.25	0.15	0.15	0.51	0.45		0.56	0.48	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	339	219		336	265	238	489	768		371	862	
v/s Ratio Prot	0.02	0.04		c0.04	0.02		0.01	c0.31		c0.02	0.23	
v/s Ratio Perm	0.03			c0.06		0.01	0.05			0.11		
v/c Ratio	0.24	0.32		0.37	0.12	0.08	0.11	0.69		0.24	0.47	
Uniform Delay, d1	21.9	27.2		21.2	25.7	25.6	9.0	15.4		8.7	12.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.8		0.7	0.2	0.1	0.1	5.1		0.3	1.9	
Delay (s)	22.3	28.0		21.9	25.9	25.7	9.1	20.5		9.0	14.2	
Level of Service	C	C		C	C	C	A	C		A	B	
Approach Delay (s)		25.8			24.0			19.4			13.3	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	53.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	62	1	383	57	2	325
Future Volume (vph)	62	1	383	57	2	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	45.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt	0.998		0.982			
Flt Protected	0.953					
Satd. Flow (prot)	1772	0	1811	0	0	3407
Flt Permitted	0.953					
Satd. Flow (perm)	1772	0	1811	0	0	3407
Link Speed (k/h)	60		60			50
Link Distance (m)	315.9		89.2			1468.9
Travel Time (s)	19.0		5.4			105.8
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	2%	0%	3%	3%	0%	6%
Adj. Flow (vph)	75	1	461	69	2	392
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	0	530	0	0	394
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	62	1	383	57	2	325
Future Volume (Veh/h)	62	1	383	57	2	325
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	75	1	461	69	2	392
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (m)			89			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	696	496			530	
vC1, stage 1 conf vol	496					
vC2, stage 2 conf vol	200					
vCu, unblocked vol	662	453			489	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	100			100	
cM capacity (veh/h)	543	537			1041	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	76	530	133	261
Volume Left	75	0	2	0
Volume Right	1	69	0	0
cSH	542	1700	1041	1700
Volume to Capacity	0.14	0.31	0.00	0.15
Queue Length 95th (m)	3.9	0.0	0.0	0.0
Control Delay (s)	12.7	0.0	0.1	0.0
Lane LOS	B		A	
Approach Delay (s)	12.7	0.0	0.0	
Approach LOS	B			

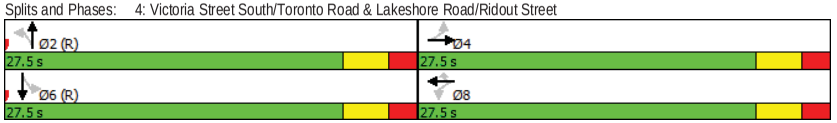
Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		33.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	93	12	23	42	188	14	136	44	218	100	68
Future Volume (vph)	119	93	12	23	42	188	14	136	44	218	100	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993				0.850		0.970			0.939	
Flt Protected		0.974			0.983			0.996		0.950		
Satd. Flow (prot)	0	1780	0	0	1809	1568	0	1810	0	1719	1633	0
Flt Permitted		0.797			0.864			0.974		0.639		
Satd. Flow (perm)	0	1456	0	0	1590	1568	0	1770	0	1156	1633	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				224		32			75	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1052.7			168.4			235.6			89.2	
Travel Time (s)		75.8			12.1			17.0			6.4	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	3%	4%	0%	0%	5%	3%	0%	2%	0%	5%	4%	17%
Adj. Flow (vph)	142	111	14	27	50	224	17	162	52	260	119	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	267	0	0	77	224	0	231	0	260	200	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
v/c Ratio		0.45			0.12	0.29		0.31		0.55	0.28	
Control Delay		14.4			10.8	3.0		10.8		17.9	8.1	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		14.4			10.8	3.0		10.8		17.9	8.1	
LOS		B			B	A		B		B	A	
Approach Delay		14.4			5.0			10.8			13.6	
Approach LOS		B			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 54.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Victoria Street South/Toronto Road & Lakeshore Road/Ridout Street



Lane Group	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	267	77	224	231	260	200
v/c Ratio	0.45	0.12	0.29	0.31	0.55	0.28
Control Delay	14.4	10.8	3.0	10.8	17.9	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	10.8	3.0	10.8	17.9	8.1
Queue Length 50th (m)	18.8	4.8	0.0	13.3	19.8	8.0
Queue Length 95th (m)	32.7	10.7	8.4	24.1	35.9	17.5
Internal Link Dist (m)	1028.7	144.4		211.6		65.2
Turn Bay Length (m)						
Base Capacity (vph)	599	650	773	743	472	712
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.12	0.29	0.31	0.55	0.28

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	93	12	23	42	188	14	136	44	218	100	68
Future Volume (vph)	119	93	12	23	42	188	14	136	44	218	100	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Frt		0.99			1.00	0.85		0.97		1.00	0.94	
Flt Protected		0.97			0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1780			1809	1568		1810		1719	1633	
Flt Permitted		0.80			0.86	1.00		0.97		0.64	1.00	
Satd. Flow (perm)		1457			1589	1568		1770		1156	1633	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	142	111	14	27	50	224	17	162	52	260	119	81
RTOR Reduction (vph)	0	4	0	0	0	132	0	19	0	0	44	0
Lane Group Flow (vph)	0	263	0	0	77	92	0	212	0	260	156	0
Heavy Vehicles (%)	3%	4%	0%	0%	5%	3%	0%	2%	0%	5%	4%	17%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Effective Green, g (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Grp Cap (vph)		596			650	641		724		472	668	
v/s Ratio Prot											0.10	
v/s Ratio Perm		c0.18			0.05	0.06		0.12		c0.22		
v/c Ratio		0.44			0.12	0.14		0.29		0.55	0.23	
Uniform Delay, d1		11.7			10.1	10.2		10.9		12.4	10.6	
Progression Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		2.4			0.4	0.5		1.0		4.6	0.8	
Delay (s)		14.1			10.5	10.7		11.9		17.0	11.4	
Level of Service		B			B	B		B		B	B	
Approach Delay (s)		14.1			10.6			11.9			14.6	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	54.1%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	29	0	0	16	8	0	42	0	7	38	66
Future Volume (vph)	121	29	0	0	16	8	0	42	0	7	38	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.956						0.920	
Flt Protected		0.961									0.997	
Satd. Flow (prot)	0	1826	0	0	1816	0	0	1810	0	0	1725	0
Flt Permitted		0.961									0.997	
Satd. Flow (perm)	0	1826	0	0	1816	0	0	1810	0	0	1725	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		284.5			66.3			50.0			235.6	
Travel Time (s)		20.5			4.8			3.6			17.0	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	3%	0%
Adj. Flow (vph)	155	37	0	0	21	10	0	54	0	9	49	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	192	0	0	31	0	0	54	0	0	143	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	29	0	0	16	8	0	42	0	7	38	66
Future Volume (Veh/h)	121	29	0	0	16	8	0	42	0	7	38	66
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	155	37	0	0	21	10	0	54	0	9	49	85
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											236	
pX, platoon unblocked												
vC, conflicting volume	184	164	92	182	206	54	134			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	184	164	92	182	206	54	134			54		
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 %	79	95	100	100	97	99	100			99		
cM capacity (veh/h)	753	728	971	750	690	1019	1463			1564		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	192	31	54	143
Volume Left	155	0	0	9
Volume Right	0	10	0	85
cSH	748	770	1463	1564
Volume to Capacity	0.26	0.04	0.00	0.01
Queue Length 95th (m)	8.2	1.0	0.0	0.1
Control Delay (s)	11.5	9.9	0.0	0.5
Lane LOS	B	A		A
Approach Delay (s)	11.5	9.9	0.0	0.5
Approach LOS	B	A		

Intersection Summary					
Average Delay		6.1			
Intersection Capacity Utilization		33.9%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	35	6	46	11	59	13	8	78	93	11	5
Future Volume (vph)	3	35	6	46	11	59	13	8	78	93	11	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981			0.931			0.893			0.994	
Flt Protected		0.996			0.981			0.994			0.959	
Satd. Flow (prot)	0	1721	0	0	1676	0	0	1687	0	0	1811	0
Flt Permitted		0.996			0.981			0.994			0.959	
Satd. Flow (perm)	0	1721	0	0	1676	0	0	1687	0	0	1811	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.5			1052.7			82.7			71.4	
Travel Time (s)		7.2			75.8			6.0			5.1	
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
Heavy Vehicles (%)	0%	10%	0%	9%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	44	8	58	14	75	16	10	99	118	14	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	0	0	147	0	0	125	0	0	138	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization	32.8%				ICU Level of Service A							
Analysis Period (min)	15											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	3	35	6	46	11	59	13	8	78	93	11	5
Future Volume (vph)	3	35	6	46	11	59	13	8	78	93	11	5
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)	4	44	8	58	14	75	16	10	99	118	14	6

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	56	147	125	138
Volume Left (vph)	4	58	16	118
Volume Right (vph)	8	75	99	6
Hadj (s)	0.06	-0.17	-0.45	0.14
Departure Headway (s)	4.7	4.4	4.1	4.7
Degree Utilization, x	0.07	0.18	0.14	0.18
Capacity (veh/h)	700	763	827	729
Control Delay (s)	8.1	8.4	7.8	8.7
Approach Delay (s)	8.1	8.4	7.8	8.7
Approach LOS	A	A	A	A

Intersection Summary												
Delay			8.3									
Level of Service			A									
Intersection Capacity Utilization			32.8%		ICU Level of Service				A			
Analysis Period (min)			15									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	141	1	31	50	0	8
Future Volume (vph)	141	1	31	50	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.865	
Flt Protected				0.981		
Satd. Flow (prot)	1898	0	0	1864	1644	0
Flt Permitted				0.981		
Satd. Flow (perm)	1898	0	0	1864	1644	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	64.0			284.5	61.0	
Travel Time (s)	4.6			20.5	4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	153	1	34	54	0	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	154	0	0	88	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	141	1	31	50	0	8
Future Volume (Veh/h)	141	1	31	50	0	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	153	1	34	54	0	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			154		276	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			154		276	154
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	99
cM capacity (veh/h)			1439		701	898

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	154	88	9
Volume Left	0	34	0
Volume Right	1	0	9
cSH	1700	1439	898
Volume to Capacity	0.09	0.02	0.01
Queue Length 95th (m)	0.0	0.6	0.2
Control Delay (s)	0.0	3.0	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	3.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	58	8	123	80	5	88
Future Volume (vph)	58	8	123	80	5	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983					0.850
Flt Protected				0.971	0.950	
Satd. Flow (prot)	1789	0	0	1778	1805	1524
Flt Permitted				0.971	0.950	
Satd. Flow (perm)	1789	0	0	1778	1805	1524
Link Speed (k/h)	50			50	50	
Link Distance (m)	183.1			244.8	101.4	
Travel Time (s)	13.2			17.6	7.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	5%	0%	3%	5%	0%	6%
Adj. Flow (vph)	77	11	164	107	7	117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	0	271	7	117
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	58	8	123	80	5	88
Future Volume (Veh/h)	58	8	123	80	5	88
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	77	11	164	107	7	117
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				245		
pX, platoon unblocked						
vC, conflicting volume			88		518	82
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			88		518	82
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			89		98	88
cM capacity (veh/h)			1501		465	966

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	88	271	7	117
Volume Left	0	164	7	0
Volume Right	11	0	0	117
cSH	1700	1501	465	966
Volume to Capacity	0.05	0.11	0.02	0.12
Queue Length 95th (m)	0.0	2.9	0.4	3.3
Control Delay (s)	0.0	5.0	12.9	9.2
Lane LOS		A	B	A
Approach Delay (s)	0.0	5.0	9.4	
Approach LOS			A	

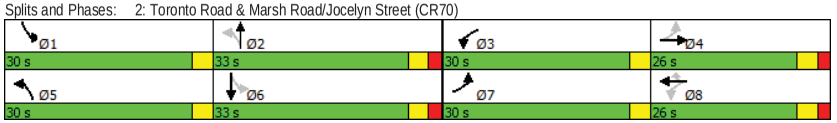
Intersection Summary				
Average Delay		5.2		
Intersection Capacity Utilization		27.7%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	51	51	181	78	96	73	399	167	99	403	66
Future Volume (vph)	57	51	51	181	78	96	73	399	167	99	403	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	30.0		0.0	25.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.925				0.850		0.956			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1674	0	1752	1881	1509	1736	1741	0	1752	1808	0
Flt Permitted	0.704			0.512			0.299			0.183		
Satd. Flow (perm)	1262	1674	0	944	1881	1509	546	1741	0	338	1808	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37				100		17			6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		244.8			299.9			1468.9			447.0	
Travel Time (s)		17.6			21.6			105.8			32.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	7%	3%	3%	1%	7%	4%	2%	10%	3%	3%	2%
Adj. Flow (vph)	59	53	53	189	81	100	76	416	174	103	420	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	106	0	189	81	100	76	590	0	103	489	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	15.0	15.0	4.0	26.0		4.0	27.0	
Minimum Split (s)	7.0	26.0		7.0	26.0	26.0	7.0	32.0		7.0	32.0	
Total Split (s)	30.0	26.0		30.0	26.0	26.0	30.0	33.0		30.0	33.0	
Total Split (%)	25.2%	21.8%		25.2%	21.8%	21.8%	25.2%	27.7%		25.2%	27.7%	
Maximum Green (s)	27.0	21.0		27.0	21.0	21.0	27.0	28.0		27.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		18.0			18.0	18.0		21.0			21.0	
Flash Dont Walk (s)		3.0			3.0	3.0		6.0			6.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	17.5	10.1		26.0	15.9	15.9	36.4	28.6		37.2	29.0	
Actuated g/C Ratio	0.25	0.14		0.37	0.22	0.22	0.51	0.40		0.52	0.41	
v/c Ratio	0.17	0.39		0.38	0.19	0.24	0.19	0.83		0.31	0.66	
Control Delay	17.0	25.7		19.0	26.7	7.8	9.9	34.1		11.4	24.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	17.0	25.7		19.0	26.7	7.8	9.9	34.1		11.4	24.8	
LOS	B	C		B	C	A	A	C		B	C	
Approach Delay		22.6			17.6			31.4			22.5	
Approach LOS		C			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 119			
Actuated Cycle Length: 71.2			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 24.8		Intersection LOS: C	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Toronto Road & Marsh Road/Jocelyn Street (CR70)



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	59	106	189	81	100	76	590	103	489
v/c Ratio	0.17	0.39	0.38	0.19	0.24	0.19	0.83	0.31	0.66
Control Delay	17.0	25.7	19.0	26.7	7.8	9.9	34.1	11.4	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	25.7	19.0	26.7	7.8	9.9	34.1	11.4	24.8
Queue Length 50th (m)	5.5	9.1	19.1	9.9	0.0	4.8	76.5	6.6	57.7
Queue Length 95th (m)	13.3	24.8	35.3	22.4	11.9	12.2	#159.8	15.7	#110.6
Internal Link Dist (m)		220.8		275.9			1444.9		423.0
Turn Bay Length (m)	15.0		30.0			25.0		30.0	
Base Capacity (vph)	681	530	694	566	524	760	709	732	740
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.20	0.27	0.14	0.19	0.10	0.83	0.14	0.66

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	51	51	181	78	96	73	399	167	99	403	66
Future Volume (vph)	57	51	51	181	78	96	73	399	167	99	403	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	1674		1752	1881	1509	1736	1740		1752	1808	
Flt Permitted	0.70	1.00		0.51	1.00	1.00	0.30	1.00		0.18	1.00	
Satd. Flow (perm)	1263	1674		944	1881	1509	546	1740		338	1808	
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)	59	53	53	189	81	100	76	416	174	103	420	69
RTOR Reduction (vph)	0	33	0	0	0	77	0	10	0	0	4	0
Lane Group Flow (vph)	59	73	0	189	81	23	76	580	0	103	485	0
Heavy Vehicles (%)	6%	7%	3%	3%	1%	7%	4%	2%	10%	3%	3%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	14.5	8.7		25.3	16.5	16.5	34.4	28.7		35.2	29.1	
Effective Green, g (s)	14.5	8.7		25.3	16.5	16.5	34.4	28.7		35.2	29.1	
Actuated g/C Ratio	0.20	0.12		0.35	0.23	0.23	0.47	0.39		0.48	0.40	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	285	199		477	424	340	349	683		280	719	
v/s Ratio Prot	0.02	0.04		c0.07	0.04		0.02	c0.33		c0.03	0.27	
v/s Ratio Perm	0.02			c0.06		0.01	0.09			0.15		
v/c Ratio	0.21	0.37		0.40	0.19	0.07	0.22	0.85		0.37	0.68	
Uniform Delay, d1	24.3	29.7		17.6	22.9	22.2	11.6	20.2		12.7	18.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.2		0.5	0.2	0.1	0.3	12.5		0.8	5.0	
Delay (s)	24.7	30.8		18.1	23.1	22.3	11.9	32.7		13.5	23.1	
Level of Service	C	C		B	C	C	B	C		B	C	
Approach Delay (s)		28.6			20.4			30.3			21.5	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	65.0%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	3	465	80	1	549
Future Volume (vph)	63	3	465	80	1	549
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	45.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt	0.994		0.980			
Flt Protected	0.954					
Satd. Flow (prot)	1777	0	1818	0	0	3539
Flt Permitted	0.954					
Satd. Flow (perm)	1777	0	1818	0	0	3539
Link Speed (k/h)	60		60			50
Link Distance (m)	315.9		89.2			1468.9
Travel Time (s)	19.0		5.4			105.8
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	33%	2%	5%	0%	2%
Adj. Flow (vph)	67	3	495	85	1	584
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	0	580	0	0	585
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	63	3	465	80	1	549
Future Volume (Veh/h)	63	3	465	80	1	549
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	67	3	495	85	1	584
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (m)			89			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	832	538			580	
vC1, stage 1 conf vol	538					
vC2, stage 2 conf vol	294					
vCu, unblocked vol	802	495			539	
tC, single (s)	6.8	7.6			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.6			2.2	
p0 queue free %	87	99			100	
cM capacity (veh/h)	503	427			995	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	70	580	196	389
Volume Left	67	0	1	0
Volume Right	3	85	0	0
cSH	499	1700	995	1700
Volume to Capacity	0.14	0.34	0.00	0.23
Queue Length 95th (m)	3.9	0.0	0.0	0.0
Control Delay (s)	13.4	0.0	0.1	0.0
Lane LOS	B		A	
Approach Delay (s)	13.4	0.0	0.0	
Approach LOS	B			

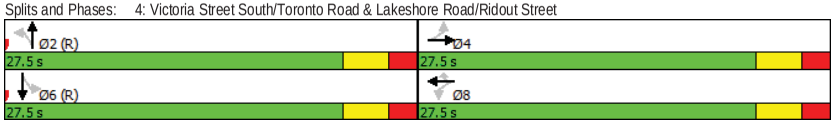
Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		39.7%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	95	12	54	93	261	23	162	39	222	214	159
Future Volume (vph)	141	95	12	54	93	261	23	162	39	222	214	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993				0.850		0.977			0.936	
Flt Protected		0.972			0.982			0.995		0.950		
Satd. Flow (prot)	0	1731	0	0	1809	1568	0	1821	0	1787	1744	0
Flt Permitted		0.739			0.819			0.940		0.626		
Satd. Flow (perm)	0	1316	0	0	1508	1568	0	1720	0	1178	1744	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				284		23			82	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1052.7			168.4			235.6			89.2	
Travel Time (s)		75.8			12.1			17.0			6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	9%	0%	5%	3%	0%	2%	0%	1%	2%	2%
Adj. Flow (vph)	153	103	13	59	101	284	25	176	42	241	233	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	269	0	0	160	284	0	243	0	241	406	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (s)	27.5	27.5		27.5	27.5	27.5	27.5	27.5		27.5	27.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
v/c Ratio		0.50			0.26	0.35		0.34		0.50	0.53	
Control Delay		15.7			12.2	3.1		11.7		16.6	12.7	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		15.7			12.2	3.1		11.7		16.6	12.7	
LOS		B			B	A		B		B	B	
Approach Delay		15.7			6.4			11.7			14.2	
Approach LOS		B			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: Victoria Street South/Toronto Road & Lakeshore Road/Ridout Street



Lane Group	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	269	160	284	243	241	406
v/c Ratio	0.50	0.26	0.35	0.34	0.50	0.53
Control Delay	15.7	12.2	3.1	11.7	16.6	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	12.2	3.1	11.7	16.6	12.7
Queue Length 50th (m)	19.4	10.6	0.0	14.9	17.9	23.5
Queue Length 95th (m)	38.0	21.7	11.5	29.1	36.1	45.8
Internal Link Dist (m)	1028.7	144.4		211.6		65.2
Turn Bay Length (m)						
Base Capacity (vph)	541	616	809	717	481	761
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.26	0.35	0.34	0.50	0.53

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	95	12	54	93	261	23	162	39	222	214	159
Future Volume (vph)	141	95	12	54	93	261	23	162	39	222	214	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Frt		0.99			1.00	0.85		0.98		1.00	0.94	
Flt Protected		0.97			0.98	1.00		0.99		0.95	1.00	
Satd. Flow (prot)		1732			1809	1568		1820		1787	1744	
Flt Permitted		0.74			0.82	1.00		0.94		0.63	1.00	
Satd. Flow (perm)		1316			1509	1568		1719		1177	1744	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	153	103	13	59	101	284	25	176	42	241	233	173
RTOR Reduction (vph)	0	4	0	0	0	168	0	14	0	0	48	0
Lane Group Flow (vph)	0	265	0	0	160	116	0	229	0	241	358	0
Heavy Vehicles (%)	7%	4%	9%	0%	5%	3%	0%	2%	0%	1%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Effective Green, g (s)		22.5			22.5	22.5		22.5		22.5	22.5	
Actuated g/C Ratio		0.41			0.41	0.41		0.41		0.41	0.41	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lane Grp Cap (vph)		538			617	641		703		481	713	
v/s Ratio Prot											c0.21	
v/s Ratio Perm		c0.20			0.11	0.07		0.13		0.20		
v/c Ratio		0.49			0.26	0.18		0.33		0.50	0.50	
Uniform Delay, d1		12.0			10.7	10.4		11.1		12.1	12.1	
Progression Factor		1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		3.2			1.0	0.6		1.2		3.7	2.5	
Delay (s)		15.2			11.8	11.0		12.3		15.8	14.6	
Level of Service		B			B	B		B		B	B	
Approach Delay (s)		15.2			11.3			12.3			15.0	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	65.8%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	27	0	1	37	10	0	72	0	7	62	154
Future Volume (vph)	101	27	0	1	37	10	0	72	0	7	62	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.971						0.907	
Flt Protected		0.962			0.999						0.999	
Satd. Flow (prot)	0	1828	0	0	1843	0	0	1900	0	0	1722	0
Flt Permitted		0.962			0.999						0.999	
Satd. Flow (perm)	0	1828	0	0	1843	0	0	1900	0	0	1722	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		355.5			66.3			50.0			235.6	
Travel Time (s)		25.6			4.8			3.6			17.0	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	136	36	0	1	50	14	0	97	0	9	84	208
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	172	0	0	65	0	0	97	0	0	301	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	27	0	1	37	10	0	72	0	7	62	154
Future Volume (Veh/h)	101	27	0	1	37	10	0	72	0	7	62	154
Sign Control		Stop			Stop			Free			Free	
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)	136	36	0	1	50	14	0	97	0	9	84	208
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											236	
pX, platoon unblocked												
vC, conflicting volume	342	303	188	321	407	97	292			97		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342	303	188	321	407	97	292			97		
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 %	76	94	100	100	91	99	100			99		
cM capacity (veh/h)	561	610	859	604	533	965	1281			1509		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	172	65	97	301
Volume Left	136	1	0	9
Volume Right	0	14	0	208
cSH	570	591	1281	1509
Volume to Capacity	0.30	0.11	0.00	0.01
Queue Length 95th (m)	10.1	2.9	0.0	0.1
Control Delay (s)	14.0	11.8	0.0	0.3
Lane LOS	B	B		A
Approach Delay (s)	14.0	11.8	0.0	0.3
Approach LOS	B	B		

Intersection Summary					
Average Delay		5.1			
Intersection Capacity Utilization		39.3%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	43	19	96	41	131	12	15	77	115	13	7
Future Volume (vph)	8	43	19	96	41	131	12	15	77	115	13	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.964			0.934			0.900			0.993	
Flt Protected		0.995			0.982			0.994			0.959	
Satd. Flow (prot)	0	1680	0	0	1715	0	0	1605	0	0	1809	0
Flt Permitted		0.995			0.982			0.994			0.959	
Satd. Flow (perm)	0	1680	0	0	1715	0	0	1605	0	0	1809	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.5			1052.7			82.7			71.4	
Travel Time (s)		7.2			75.8			6.0			5.1	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	8%	13%	2%	6%	0%	0%	0%	8%	0%	0%	0%
Adj. Flow (vph)	9	51	22	113	48	154	14	18	91	135	15	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	0	315	0	0	123	0	0	158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization	43.0%				ICU Level of Service A							
Analysis Period (min)	15											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	43	19	96	41	131	12	15	77	115	13	7
Future Volume (vph)	8	43	19	96	41	131	12	15	77	115	13	7
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	9	51	22	113	48	154	14	18	91	135	15	8

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	82	315	123	158
Volume Left (vph)	9	113	14	135
Volume Right (vph)	22	154	91	8
Hadj (s)	0.00	-0.19	-0.32	0.14
Departure Headway (s)	5.0	4.5	4.8	5.2
Degree Utilization, x	0.11	0.40	0.16	0.23
Capacity (veh/h)	650	749	685	640
Control Delay (s)	8.7	10.5	8.7	9.7
Approach Delay (s)	8.7	10.5	8.7	9.7
Approach LOS	A	B	A	A

Intersection Summary												
Delay			9.8									
Level of Service			A									
Intersection Capacity Utilization			43.0%		ICU Level of Service				A			
Analysis Period (min)			15									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	98	1	29	160	1	25
Future Volume (vph)	98	1	29	160	1	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.870	
Flt Protected				0.992	0.998	
Satd. Flow (prot)	1898	0	0	1885	1650	0
Flt Permitted				0.992	0.998	
Satd. Flow (perm)	1898	0	0	1885	1650	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	72.5			355.5	78.7	
Travel Time (s)	5.2			25.6	5.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	107	1	32	174	1	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	0	206	28	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

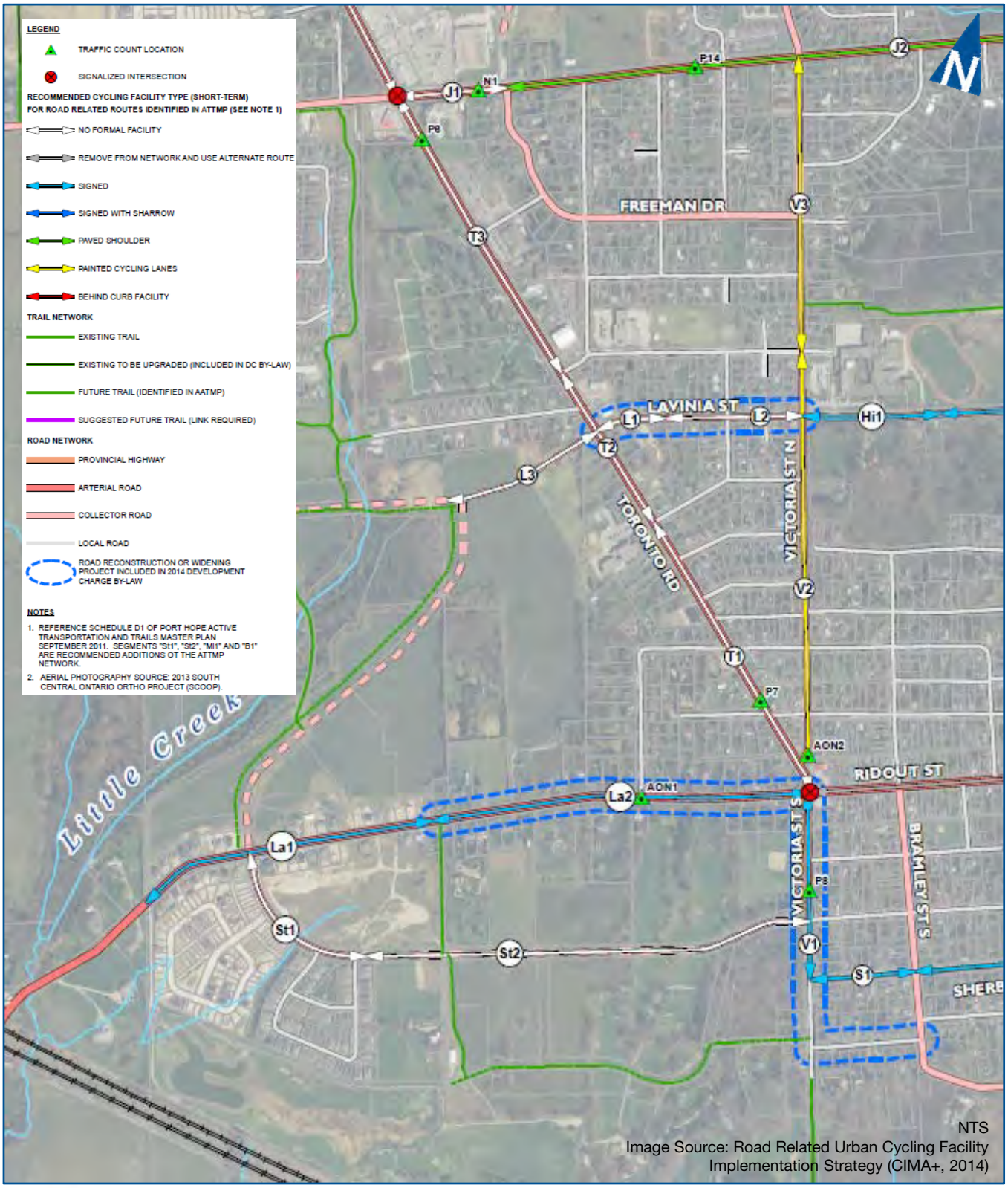
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	98	1	29	160	1	25
Future Volume (Veh/h)	98	1	29	160	1	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	107	1	32	174	1	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			108		346	108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			108		346	108
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	97
cM capacity (veh/h)			1495		641	952

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	108	206	28
Volume Left	0	32	1
Volume Right	1	0	27
cSH	1700	1495	936
Volume to Capacity	0.06	0.02	0.03
Queue Length 95th (m)	0.0	0.5	0.7
Control Delay (s)	0.0	1.3	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	1.3	9.0
Approach LOS			A

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	26.7%	ICU Level of Service		A
Analysis Period (min)	15			

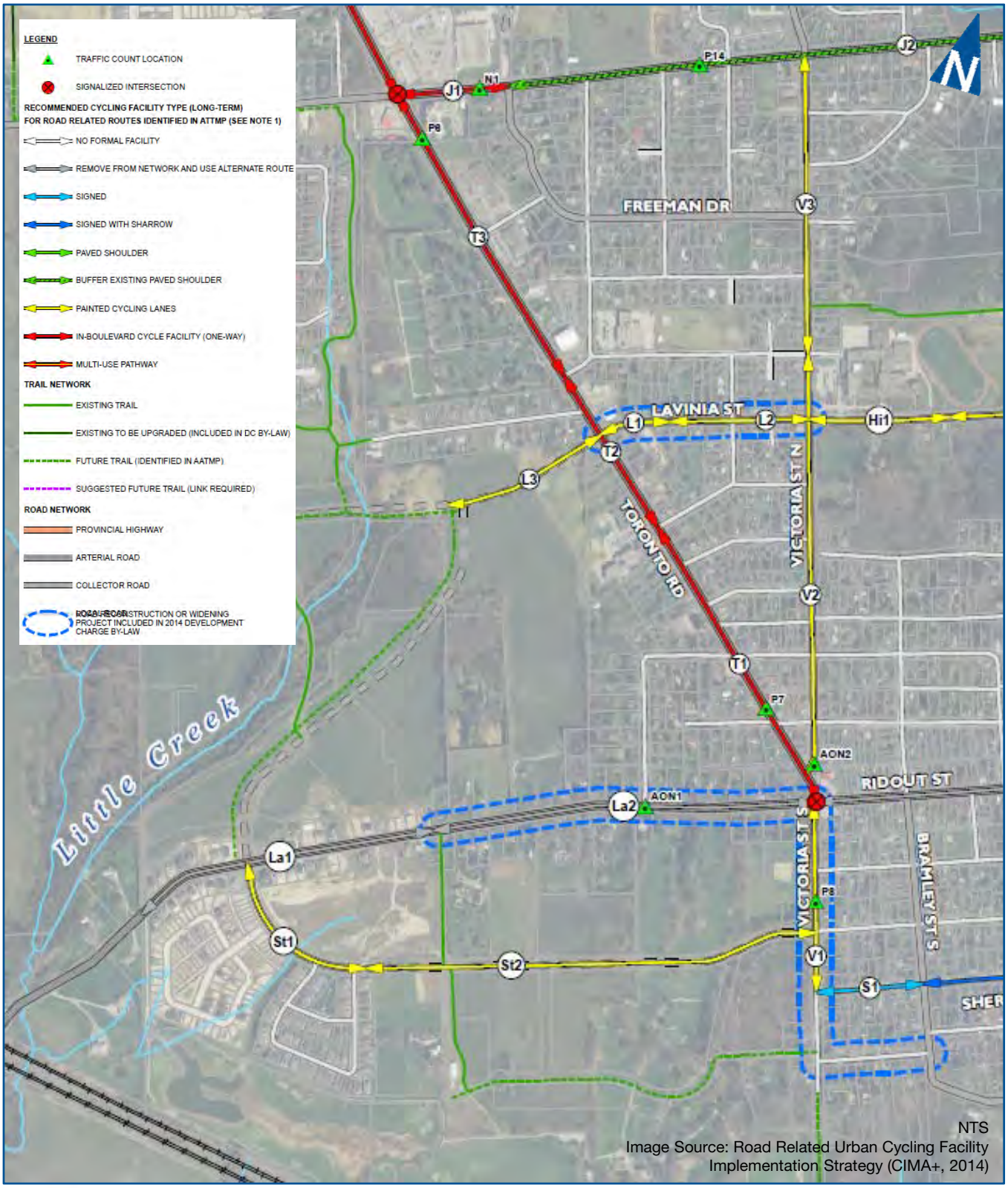
Appendix G

Proposed Cycling Facility Types Maps



NTS
Image Source: Road Related Urban Cycling Facility Implementation Strategy (CIMA+, 2014)

Proposed Short-Term Cycling Facility Types



NTS
Image Source: Road Related Urban Cycling Facility Implementation Strategy (CIMA+, 2014)

Proposed Long-Term Cycling Facility Types