TRAFFIC IMPACT STUDY AND PARKING JUSTIFICATION

2365-2377 LAKESHORE ROAD WEST

TOWN OF OAKVILLE
HALTON REGION

PREPARED FOR:
GRAYWOOD BRONTE VILLAGE C/O GRAYWOOD GROUP

PREPARED BY:
C.F. CROZIER & ASSOCIATES INC.
2800 HIGH POINT DRIVE, SUITE 100
MILTON, ON L9T 6P4

MARCH 2022

CFCA FILE NO. 2239-6282

CROZIER
CONSULTING ENGINEERS

Revision Number	Date	Comments
Rev.1	March 2022	Issued for OPA & ZBA Submission

Executive Summary

C.F. Crozier & Associates Inc. (Crozier) was retained by Graywood Bronte Limited Partnership to complete a Traffic Impact Study (TIS) and Parking Justification for a mixed-use residential development with ground-floor retail situated at 2365-2377 Lakeshore Road West, Town of Oakville, Halton Region.

The analysis undertaken herein was completed using the most recent Site Plan prepared by Diamond Schmitt, which envisions the construction of a 9-storey mixed-use residential building consisting of 180 units with 673 m^2 of ground floor retail. Additionally, a full-moves site access off Lakeshore Road West is proposed to access the development. A total of 161 parking spaces are proposed as part of the development.

Under 2022 existing conditions, the study road intersections all operate with a Level of Service "D" or better, however it is noted that the eastbound through movements (during the A.M. peak) and westbound through movements (during the P.M. peak) are near or operate at capacity at the intersections of Lakeshore Road West at Nelson Street and Jones Street, respectively.

Per the review of the Lakeshore Road Environmental Assessment (EA), it is noted that no major geometric roadway changes (lane configurations, widening) are proposed, and most changes are focused on improvements to geometry at existing intersections and along Lakeshore Road West to expand the active transportation facilities along the corridor. A conceptual drawing integrating the proposed site design into the envisioned Lakeshore EA elements has been included herein to demonstrate that the proposed site will not conflict with the EA but does require shifting the locations of the proposed on-street parking and pedestrian crosswalk along the site frontage.

Under 2025 and 2030 future background traffic conditions, the intersection of Lakeshore Road West and Bronte Road operates similarly to existing conditions with acceptable delays and under capacity. However, the capacity concerns at the intersections of Lakeshore Road West at Jones Street and Lakeshore Road West at Nelson Street are expected to worsen, with the eastbound and westbound through movements expected to operate above capacity during the A.M. and P.M. peaks, respectively. The Level of Service at these intersections has also reduced to Level of Service "E" during those peak hours.

Based on ITE Trip Generation estimates, the subject site is expected to generate 74 two-way (19 inbound and 54 outbound) trips during the weekday A.M. peak hour, and 95 (55 inbound and 40 outbound) trips during the weekday P.M. peak hour.

With the addition of site-generated traffic, the intersection of Lakeshore and Bronte is expected to continue operating similar to existing and future background conditions with no operational concerns. However, the capacity concerns for the eastbound and westbound through movements along Lakeshore at the intersections of Jones and Nelson are expected to continue to worsen to Level of Service "F".

To alleviate the capacity concerns at these intersections, signal optimization measures are recommended to improve traffic operations in the major east and west directions. Once the signal timing improvements are implemented, there would be no expected overcapacity movements and Levels of Service would improve to "C" at the two intersections in both peak hours.

The proposed site access is expected to operate with minimal delays and well under capacity during both peak hours in the ultimate horizon year. Furthermore, the sight lines and access spacing of the proposed access are sufficient per the Region's Access Management Guidelines and the Transportation Association of Canada Geometric Design Guide for Canadian Roads (TAC GDGCR).

Maneuvering assessments conducted at the site concluded that the expected design vehicles (LSU, waste truck, paratransit vehicle, and passenger vehicles) are expected to circulate the site without any expected encroachments or conflicts.

Transportation Demand Management (TDM) measures, including "hard" measures such as adequate cyclist and pedestrian facilities, and not oversupplying parking, as well as "soft" measures such as wayfinding, and educational measures and incentives were recommended at the site to reduce single-occupant vehicle trips and to promote non-auto modes of travel and transit.

The Parking Justification prepared as part of this Transportation Impact Study notes that the proposed parking supply of 161 spaces is expected to be sufficient, despite being below the Town's By-Law requirements by 39 spaces for the visitor and retail uses only. A review of proxy data for visitor demand showed that the Town's By-Law parking rates would result in an oversupply of parking at the site, especially when considering the development will have ample opportunities for transit and active transportation that will be further enhanced as part of the Lakeshore Road EA. Further, there are a significant number of amenities within walking distance that are expected to increase as the Bronte Village area continues to develop.

There are also significant TDM measures recommended at the site that would aid in promoting the use of alternative modes to private vehicles for trips such as bicycle parking, reduced vehicle parking that is unbundled from the sale of the units, and pedestrian facilities including an enhanced public realm along the site frontage. Therefore, the reduced parking supply at the proposed development is supportable.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) was retained by Graywood Bronte Limited Partnership to complete a Traffic Impact Study (TIS) and Parking Justification for a mixed-use residential development with ground-floor retail situated at 2365-2377 Lakeshore Road West, Town of Oakville, Halton Region to support a joint OPA and ZBLA application.

The purpose of the Transportation Impact Study is to evaluate the impacts of the proposed development on the surrounding road network and recommend transportation-related mitigation measures, if required.

The following intersections were reviewed in the scope of this study:

- Lakeshore Road West at Nelson Street
- Lakeshore Road West at Jones Street
- Lakeshore Road West at Bronte Road
- Lakeshore Road West at Proposed Site Access

The following horizon timeframes were included in this study:

- Existing conditions (2022)
- Build out year (2025) and five-year horizon from build-out (2030)
- Weekday morning and afternoon peak hours

A scope of study encompassing the aforementioned conditions was circulated to the Town of Oakville (the Town) on January 26, 2022, and comments were received on January 30, 2022. Correspondence from the Town is included in Appendix A.

2.0 Development Proposal

The proposed development envisions the construction of a nine (9) storey mixed-use building with the following characteristics:

- 180 residential units
- 673 m^2 gross floor area (GFA) of commercial space
- 161 parking spaces (155 underground, 6 surface)
- Full-movement site access connection to Lakeshore Road
- Internal connection to existing commercial development adjacent to the east of the subject development

The most recent Site Plan prepared by Diamond Schmitt Architects dated March 31, 2022 is included in Appendix B.

3.0 Existing Conditions

3.1 Development Lands

The subject lands cover an area of approximately 0.374 ha and currently consist of a vacant lot, as well as existing low-rise commercial development. The property, located in a mixed residential and commercial neighborhood, is bounded by residential development to the north, commercial development to the east, Lakeshore Road West to the south, and vacant land to the west.

The Site Location is included in Figure 1.

3.2 Boundary Road Network

Lakeshore Road West is an east-west roadway with an urban cross-section. Lakeshore Road West consists of two lanes and an additional two-way left-turn lane and has a posted speed limit of 50 km/h in the study area. Lakeshore Road W is under the jurisdiction of the Town of Oakville and is classified as a minor arterial per the Town of Oakville Official Plan (2009) Schedule C included in Appendix C. The roadway has sidewalks on both sides of the road, as well as cyclist sharrows on both sides of the road east of Bronte Street.

Nelson Street is a north-south roadway with a two-lane urban cross-section, with a posted speed limit of 50 km/h. Nelson Street is under the jurisdiction of the Town of Oakville and is classified as a local road per the Town's Official Plan. The roadway has on-street parking available on one side of the street (for a maximum of three hours). Nelson Street has sidewalks on both sides of the street, and no dedicated cyclist facilities.

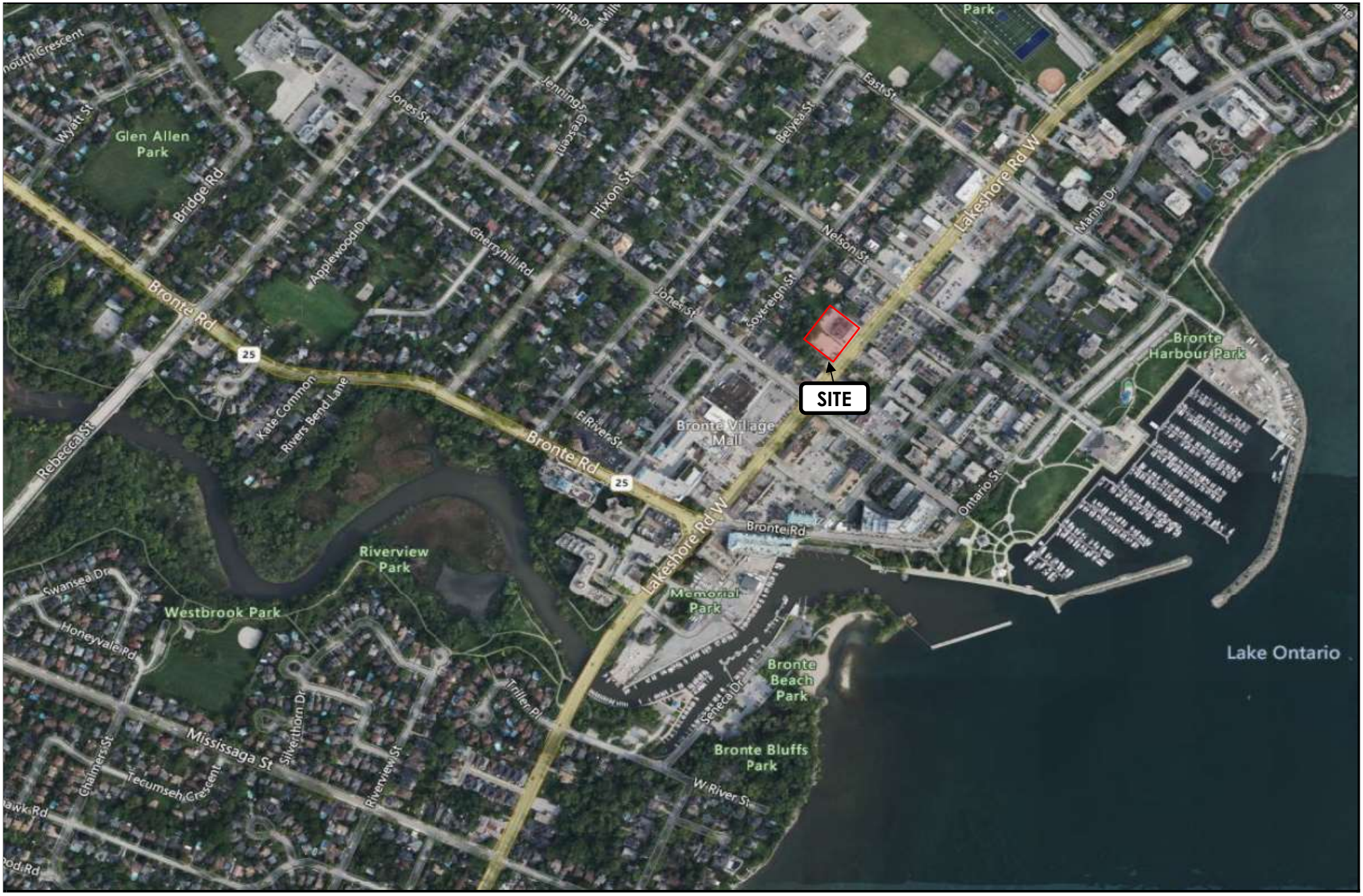
Jones Street is a north-south roadway with a two-lane urban cross-section, and a posted speed limit of 50 km/h. Jones Street is under the jurisdiction of the Town of Oakville and is classified as a local road per the Town's Official Plan. The segment of Jones Street south of Lakeshore has metered on-street parking available on both sides of the road. Jones Street has sidewalks on both sides of the road, and a signed bike route approximately 130 meters north of the intersection with Lakeshore Road West (i.e., one intersection north).

Bronte Road is a north-south roadway with a two-lane urban cross-section, and a posted speed limit of 50 k/h. Bronte Road is under the jurisdiction of the Town of Oakville and is classified as a minor arterial under the Town's Official Plan. The roadway has sidewalks on both sides of the road, and a signed bicycle route north of Lakeshore Road West. On-street parking is available on both sides of the Bronte Road south of Lakeshore Road West.

3.3 Study Intersections

The intersection of **Lakeshore Road West and Jones Street** is a four-legged signalized intersection. The eastbound and westbound approaches on Lakeshore Road West each consist of a single left-turn lane and a single shared through/right-turn lane. The north and southbound approaches on Nelson Street each consist of a single shared through/right/left-turn lane.

The intersection of **Lakeshore Road West and Jones Street** is a four-legged signalized intersection. The northbound approach on Jones Street consists of a single shared through/right/left-turn lane. All other approaches (south/east/westbound) consist of a single left-turn lane and a single through/right-turn lane.



Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure 1
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	Site Location		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C

The intersection of **Lakeshore Road West and Bronte Road** is a four-legged signalized intersection. The northbound and southbound approaches on Bronte Road each consist of a single auxiliary left-turn lane, a single through lane and a channelized right-turn lane. The westbound approach on Lakeshore Road West consists of a single right turn lane, a single through lane and a single left-turn lane. The eastbound approach on Lakeshore Road West consists of a single auxiliary left-turn lane and a shared through/right-turn lane.

Figure 2 illustrates the study roadways.

3.4 Transit

Transit in the Town of Oakville is operated by Oakville Transit, and the following transit route stops are available at the intersection of Lakeshore Road West and Jones Street, summarized in Table 1. Transit maps and schedules are provided in Appendix D.

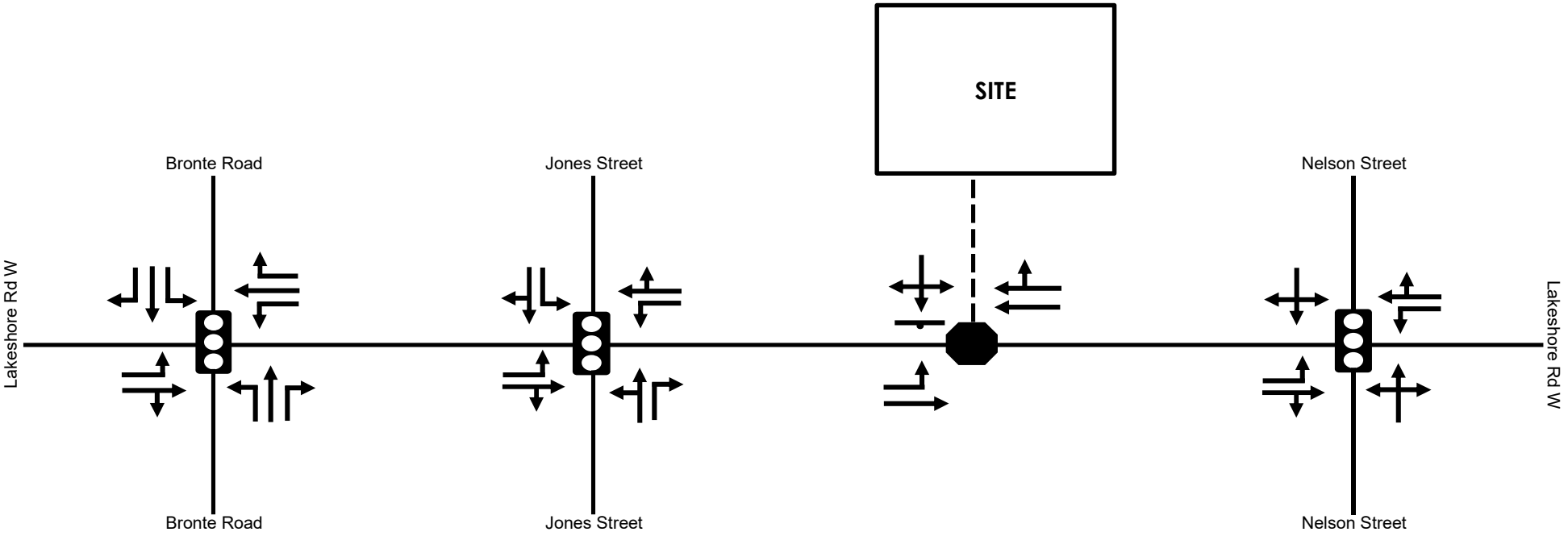
Table 1: Existing Transit near Site

Oakville Transit Route	Time of Operation (Headway)	Major Destinations
Route 14 Lakeshore Road West (via Great Lakes Blvd)	Mon-Fri 6:37 A.M. – 10:49 P.M. (30 minutes) Sat 7:40 A.M. – 8:33 P.M. Sun 8:40 A.M. – 10:33 P.M (30 minutes, alternating)	Appleby GO Station Wyecroft Rd/Burloak Dr Great Lakes Blvd/Lakeshore Rd W Lakeshore Rd W/Bronte Rd Lakeshore Road W/Third Line Lakeshore Road W/Rebecca St Oakville GO Station
Route 14A Lakeshore Road West (via Burloak Drive)	Mon-Fri 6:05 A.M. – 12:18 A.M. (30 minutes) Sat 7:10 A.M. – 12:18 A.M. Sun 8:10 A.M. – 10:07 P.M (30 minutes, alternating)	Appleby GO Station Wyecroft Rd/Burloak Dr Burloak Drive/Lakeshore Rd W Great Lakes Blvd/Lakeshore Rd W (merge with Route 14) Oakville GO Station
Route 3 "Third Line"	Mon-Fri 5:51 A.M. – 11:59 P.M. (30 minutes) Sat 7:00 A.M. – 11:59 P.M. Sun 8:00 A.M. – 8:00 P.M (60 minutes)	Oakville Trafalgar Memorial Hospital Bronte GO Station Third Line/Rebecca St Rebecca St/Bronte Rd Lakeshore Rd W/Bronte Rd Third Line/Lakeshore Rd W South Oakville Centre

Oakville Transit also operates the Care-A-Van specialized transit service which offers subsidized taxi fare (equivalent to public transit fare) for persons with disabilities. Taxi services are expected to use the pick-up/drop-off space designated at the site.

3.5 Active Transportation

The existing sidewalk network in the study area provides ample opportunities for pedestrians, as all roadways in the vicinity of the site have sidewalks on at least one side of the roadway. Lakeshore in particular has wide sidewalks on both side of the roadway that allow for pedestrian trips to the numerous nearby local amenities/restaurants. There are also bike lanes present along Lakeshore Road and a signed route on Bronte Road north of Lakeshore Road. In addition, the Waterfront/Trans-Canada Trail is accessible approximately 300 meters south of the site, which provides east-west connectivity for both cyclists and pedestrians along the Waterfront.



Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes
{xx} Weekend Peak Hour Traffic Volumes

2365-2377 Lakeshore Road West

Existing Roadway Configuration

CROZIER CONSULTING ENGINEERS

Figure 2

Project No. 2239-6282
Date. 2022.02.04
Analyst. Farah C

3.6 Traffic Data

Turning movement counts (TMC) at the intersections were provided by the Town of Oakville on February 7, 2022, containing A.M. peak, P.M. peak, and total-day TMC data. Additionally, signal timing plan data for the study intersections were provided by the Town on March 2, 2022.

The data collection dates of the traffic data (as identified within the respective data documents) are summarized in Table 2. All traffic data used for analysis is provided in Appendix E.

Table 2: Traffic Data Collection

Intersection	Traffic Data	Date of Data Collection
Lakeshore and Bronte	Turning Movement Count	June 11, 2019
	Signal Timing Plan	March 2, 2022
Lakeshore and Jones	Turning Movement Count	April 23, 2019
	Signal Timing Plan	March 2, 2022
Lakeshore and Nelson	Turning Movement Count	April 29, 2019
	Signal Timing Plan	March 2, 2022

In consideration that the traffic data was collected in 2019, a conservative growth rate of 2.0% per annum was applied to all traffic movements to reflect 2022 conditions as per the agreed upon Terms of Reference with the City, which is included in Appendix A. Grown volumes to reflect 2022 existing conditions are illustrated in Figure 3.

3.7 Traffic Modelling

The evaluation of intersections within this report is conducted based on the methodology outlined in the Highway Capacity Manual (2010), using Synchro 11 modelling software. Intersections are assessed using a Level of Service (LOS) metric, with ranges of intersection delays assigned a letter from "A" to "F". For stop-controlled intersections, a Level of Service "A" or "B" would typically be measured during off-peak hours when lesser traffic volumes are on the roadways. Levels of Service "C" through "F" would typically be observed during commuter peak hours when significant vehicle volumes would cause lengthy travel times. The Level of Service definitions for signalized and stop-controlled intersections are included in Appendix F.

Per the Halton Region Transportation Impact Study Guidelines, critical operations indicators (requiring mitigation measures) are as the following for signalized intersections:

- Volume to capacity (v/c) ratios exceeding 0.85 for through, or shared through/turning movements, or v/c ratios exceeding 0.95 for exclusive movements.
- Queues for individual movements exceeding turning lane storage.

A peak hour factor of 0.92 was used for the analysis, per the Region's TIS guidelines. It is noted that the Region's Guidelines were followed as per the

3.8 Intersection Operations

The traffic operations at the study intersections were analyzed based on 2022 traffic volumes during the weekday A.M. and P.M. peak hours. Detailed capacity analyses are included in Appendix G. Table 3 summarizes the existing traffic operations within the study area.

Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure 3
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	2022 Existing Traffic Volumes		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C

Table 3: 2022 Existing Levels of Service

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical V/C Ratio [2] (Approach)	95th Percentile Queue Length > Storage Length
Lakeshore Road West at Bronte Road	Signal	A.M.	B	14.7	0.67 (EBT)	None
		P.M.	B	18.1	0.61 (WBT)	None
Lakeshore Road West at Jones Street	Signal	A.M.	C	30.7	**0.96 (EBT)**	None
		P.M.	C	28.0	**0.95 (WBT)**	None
Lakeshore Road West at Nelson Street	Signal	A.M.	D	38.3	**1.00 (EBT)**	None
		P.M.	C	28.2	0.92 (WBT)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU).

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for through or shared/through movements, and 0.95 for exclusive movements are outlined and highlighted.

As indicated in Table 3, the intersection of Lakeshore Road West and Bronte Road currently operates with a Level of Service "B" during the weekday A.M. and P.M. peak hour, A maximum volume-to-capacity (v/c) ratio of 0.67 and 0.61 was observed for the east and westbound movements during the weekday A.M. and P.M. peak hours, respectively.

The intersection of Lakeshore Road West at Jones Street currently operates with a Level of Service "C" during the weekday A.M. and P.M. peak hours. The eastbound and westbound through movements during the A.M. and P.M. peak periods (respectively) are currently operating with critical capacities.

The intersection of Lakeshore Road West at Nelson Street currently operates with a Level of Service "D" during the A.M. peak, and Level of Service "C" during the P.M. peak. The eastbound through movement currently operates at capacity during the A.M. peak and nears critical capacity for the westbound through movement during the P.M. peak.

No queuing issues were identified for existing conditions based on the Synchro analysis.

4.0 Future Background Conditions

4.1 Study Horizons

Following consultation with Town of Oakville Staff, horizon years corresponding to the build-out year of 2025 and five years post-build out (2030) were considered for analysis purposes.

4.2 Background Development

Per available information on the Town of Oakville's list of active development applications, the following background developments were identified as part of the study area, summarized in Table 4. It is noted that while the development at 2441 Lakeshore Road West has been constructed and occupied, this was not the case on the date of the traffic counts in 2019 and therefore it was included in the background development assessment.

Table 4: Background Developments

Reference No.	Development Address	Development Description	Source
OPA 1728.66 Z.1728.66	77 East Street (83 East Street and 2262 & 2266 Lakeshore Road West)	15-storey mixed-use building with 245 dwelling units and 446 m^2 ground-floor retail	NexTrans Report (June 2021)
Z.1729.004/10 Z.1729.004/11	2441 Lakeshore Road West (Bronte Village Mall)	564 residential condo units, 5417 m^2 retail, 574 m^2 office	BA Group Report (August 2017)
Z.1729.073/01	2342 – 2455 Lakeshore Road West and 87-99 Bronte Road (J.M. Lakeshore-Bronte Inc.)	6-storey mixed-use building with 188 residential units and 2210 m^2 ground floor retail	Internal Crozier Report

Figure 4 illustrates the total background development volumes, and Appendix H contains the trips generated by each background development on the study road network.

4.3 Active Transportation Network

The Town of Oakville Active Transportation Master Plan (ATMP) dated June 2017 recommends the following active transportation network improvements:

- Lakeshore Road West – Buffered Bike Lane
- Jones Street (north of Lakeshore Road West) – Signed Route

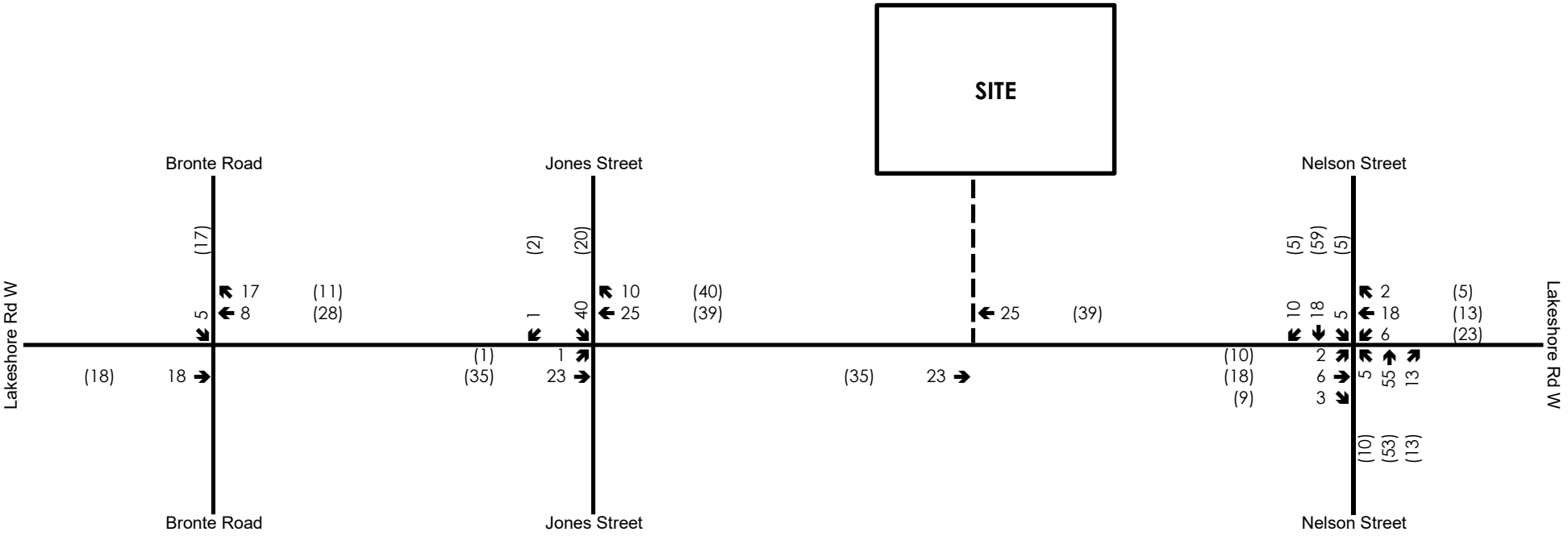
The implementation of the buffered bicycle lane on Lakeshore Road West is identified in the Lakeshore Road West Environmental Assessment (discussed in the following section).

4.4 Transportation Improvements

4.4.1 General EA Improvements

The Lakeshore Road West Environmental Assessment (Lakeshore Road EA) was conducted by the Town of Oakville to evaluate options to increase roadway capacity to accommodate future growth and improve accessibility for non-motorized modes of travel.

Draft design drawings provided in the Lakeshore Road EA were reviewed, and the following changes were identified in the study area, summarized in Table 5. Relevant excerpts from the EA, including the design drawings, are provided in Appendix I.



Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure 4
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	Total Background Development Volumes		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C

Table 5: Lakeshore EA Changes

Overall Roadway	Changes
Lakeshore Road West	• Addition of buffered bike lane on both sides of roadway. • Maintain sidewalks on both sides of roadway. • Reduce number of lanes to two-lane cross-section with two-way left-turn median in most sections of roadway.
Intersection/Segment Changes	**Changes**
Lakeshore Road West and Bronte Road	**Northbound Approach:** • Removal of right-turn channelization. • New configuration keeps existing auxiliary left-turn lane and through/right-turn lane to replace previous channelization. • Extension of pedestrian crossing across length of northbound approach.
	Eastbound Approach: • Removal of second receiving lane. • Extension of pedestrian crossing across length of eastbound approach.
	Southbound Approach: • Removal of right-turn channelization. • New configuration keeps existing auxiliary left-turn lane and through lane, adds right-turn lane to replace previous channelization. • Extension of pedestrian crossing across length of southbound approach.
	Westbound Approach: • Extension of pedestrian crossing across length of westbound approach.
Lakeshore Road West and Jones Street	**Northbound Approach:** • Addition of median and setback of parking to change approach lane to single through/right/left-turn movement to remove previous right-turn lane ahead of on-street parking.
Lakeshore Road West between Jones Street and Nelson Street	• Addition of median island. • Potential on-street parking.
Lakeshore Road West and Nelson Street	• No change

As the phasing of the improvements noted in the Lakeshore Road EA are not clear at this time, it is assumed that the above noted roadway changes will be implemented by the 2030 horizon. As such, the analysis for the 2030 horizon incorporates the above noted roadway changes.

4.4.2 Site-Related Impacts

To incorporate the vision of the Lakeshore EA with the proposed site features, Figure 5 was prepared to illustrate a conceptual plan where the site integrates with the preliminary design of the Lakeshore Road EA drawings for the segment of Lakeshore Road near the site.

As shown in the figure, it is envisioned that the proposed pedestrian crossing and median at the mid-block of Lakeshore Road between Jones Street and Nelson Street would be moved slightly to the west given the proposed site access location conflicts with the original location shown in the EA. This location was chosen to in order to not conflict with any existing driveways on Lakeshore Road. The shown location is also located near the mid-point between the Jones Street and Nelson Street intersections being approximately 100 meters from both intersections. However, it is noted that the EA considered the proposed pedestrian crossings as a "long-list" of potential crossings and acknowledged that not all of them may be viable/warranted as the design progresses.

The conceptual drawing also shows some potential lay-by parking locations along the north and south side of Lakeshore Road near the site as envisioned in the EA. It is noted that details related to the existing driveways on the south side of Lakeshore were not available at the time of preparing this plan, but the locations shown were estimated using Google imagery.

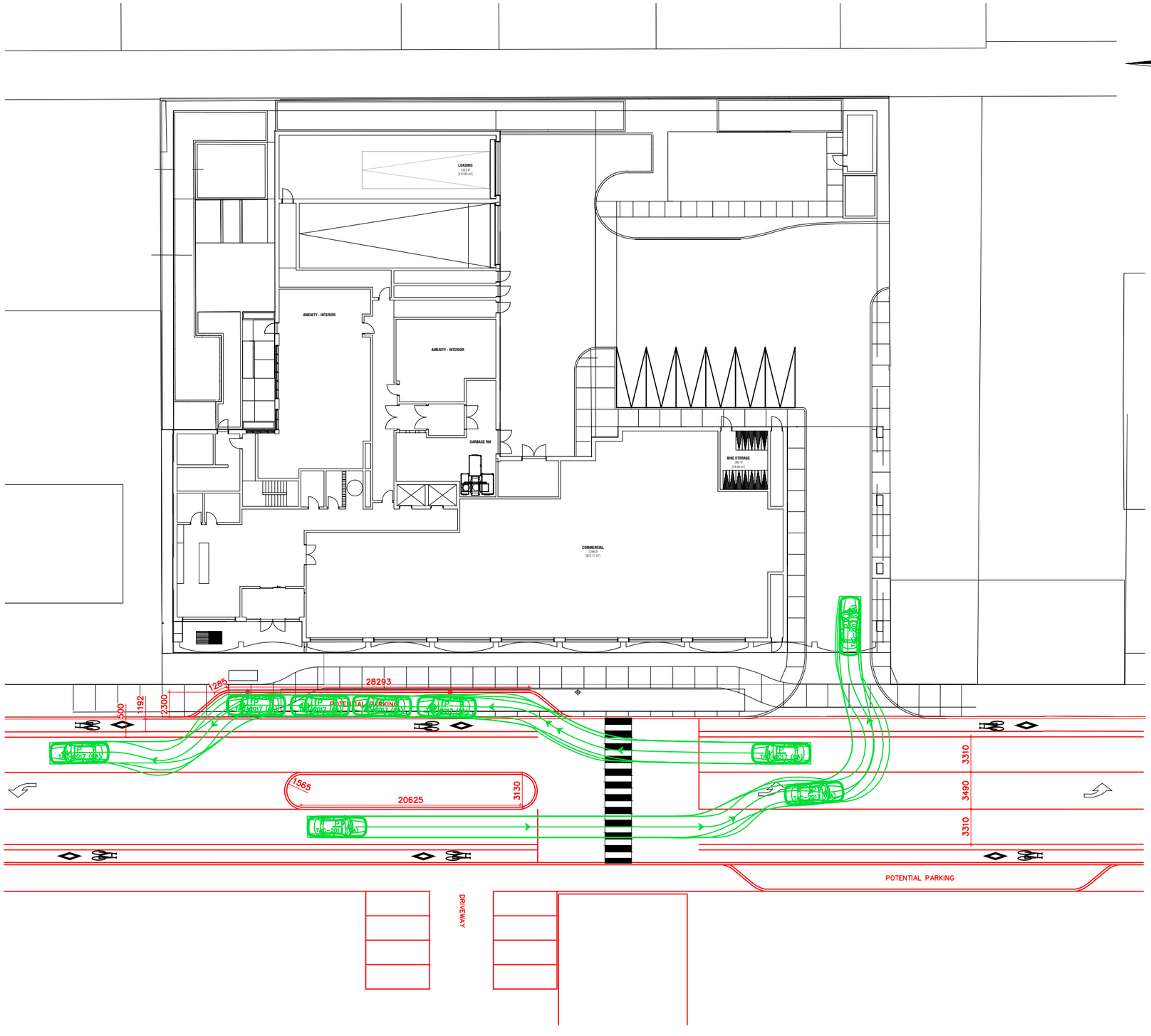
4.5 Traffic Growth Rates

Following consultation with the Town, an industry standard growth rate of 2.0% per annum was applied to through movements along Lakeshore Road West to reflect community and employment growth in the area. Figure 7 and Figure 8 illustrates the future background traffic volumes for the 2025 and 2030 horizon years, in addition to the background development site-generated traffic.

4.6 Intersection Operations

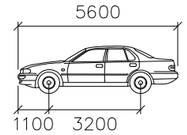
Traffic operations at the study intersections were analyzed following addition of volumes from associated growth rates and background development volumes.

Table 6 and Table 7 and summarizes the 2025 and 2030 future background Levels of Service respectively. Detailed capacity analyses are included in Appendix J and K for the 2025 and 2030 future background Synchro reports, respectively.



N

VEHICLE PROFILE



P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

2365–2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

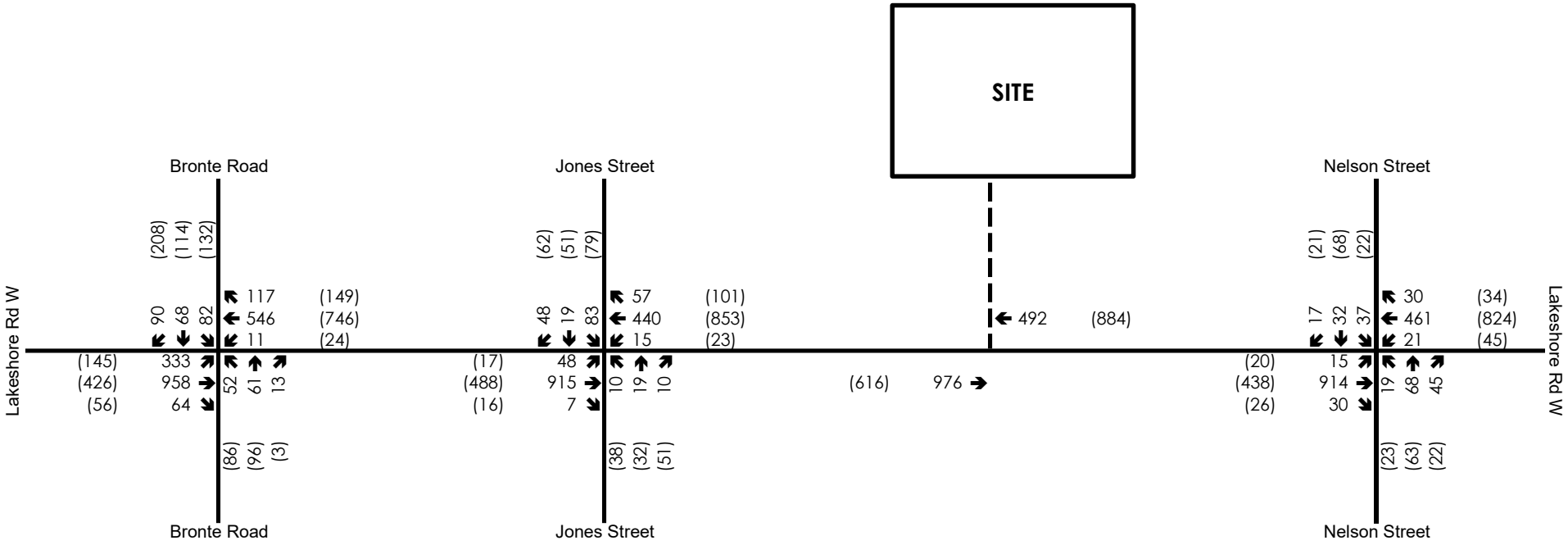
Drawing

CONCEPTUAL SITE PLAN
POST LAKESHORE EA

CROZIER
CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
A.D.	A.D.		2239–6282
Check By	Check By	Scale	Drawing
B.B.	B.B.	1:200	FIG 05

Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure 6
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	2025 Future Background Volumes		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C



Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure 7
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	2030 Future Background Volumes		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C

Table 6: 2025 Future Background Levels of Service (pre-EA)

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical V/C Ratio [2] (Approach)	95th Percentile Queue Length > Storage Length
Lakeshore Road West at Bronte Road	Signal	A.M.	B	16.2	0.73 (EBT)	None
		P.M.	B	19.3	0.69 (WBT)	None
Lakeshore Road West at Jones Street	Signal	A.M.	D	42.9	**1.05 (EBT)**	None
		P.M.	D	52.1	**1.11 (WBT)**	None
Lakeshore Road West at Nelson Street	Signal	A.M.	D	48.8	**1.08 (EBT)**	None
		P.M.	C	32.7	**0.98 (WBT)**	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU).
Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for through or shared/through movements, and 0.95 for exclusive movements are outlined and highlighted.

Table 7: 2030 Future Background Levels of Service (post-EA)

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical V/C Ratio [2] (Approach)	95th Percentile Queue Length > Storage Length
Lakeshore Road West at Bronte Road	Signal	A.M.	B	18.2	0.80 (EBT)	None
		P.M.	B	20.3	0.76 (WBT)	30 m > 20 m (NBL)
Lakeshore Road West at Jones Street	Signal	A.M.	E	64.9	**1.15 (EBT)**	None
		P.M.	E	73.2	**1.20 (WBT)**	None
Lakeshore Road West at Nelson Street	Signal	A.M.	E	72.4	**1.18 (EBT)**	None
		P.M.	D	47.9	**1.07 (WBT)**	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU).
Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for through or shared/through movements, and 0.95 for exclusive movements are outlined and highlighted.

As indicated by the results contained above, the intersection of Lakeshore Road West at Bronte Road is forecasted to continue operating with a Level of Service "B" during all peak periods during the 2025 and 2030 horizon years. The intersection is expected to operate below capacity; however, it is noted that the 95th percentile queue would exceed the storage length for the northbound left-turn movement during the P.M. peak. This said, the average queue (represented by the 50th percentile queue) for the northbound left-turn movement is within available storage during the P.M. peak.

The intersection of Lakeshore Road and Jones Street is forecasted to operate with a Level of Service "D" for both peak periods under 2025 future background traffic conditions, and "E" for both peak periods for the 2030 horizon. The eastbound through movement is forecasted to exceed capacity during the A.M. peak for both horizon years, and the westbound through movement is also expected to operate over capacity during the P.M. peak for both horizon years.

The intersection of Lakeshore Road West at Nelson Street operates with a Level of Service "D" or better during the 2025 horizon, and a Level of Service "E" or better during the 2030 horizon under future background traffic conditions. Similar to the intersection at Jones Street, the eastbound through movement is forecasted to exceed capacity during the A.M. peak for both horizon years, and the westbound through movement is also expected to operate over capacity during the P.M. peak for both horizon years.

It is noted that commuter patterns for external trips to the west from Toronto and other parts of the GTA (outbound during the A.M. peak and inbound during the P.M. peak) are expected to cause higher volumes for through traffic along Lakeshore Road West. Additionally, as noted later in Section 6.2, mitigation measures are examined to improve operations at the intersections at Lakeshore Road West at Nelson and Jones Street.

5.0 Site Generated Traffic

The proposed development will result in additional vehicles on the boundary road network that previously did not exist. The proposed development will also result in additional turning movements on the boundary road intersections.

5.1 ITE Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition was used to forecast the number of trips generated by the proposed mixed-use residential and retail development. As the development proposes a nine-storey building, the most appropriate land use was determined to be Land Use Code (LUC) 221 "Multifamily Housing (Mid-Rise)" for the residential portion of the development, and Land Use Code (LUC) 820 "Shopping Center" for the retail portion of the development.

Relevant excerpts from the ITE Trip Generation Manual 11th Edition are included in Appendix L**.** Table 8: ITE Trip Generation. Table 8 summarizes the number of trips forecasted to be generated by the proposed development.

Table 8: ITE Trip Generation

Land Use	Units/GFA	Peak Period	Equation Used	In	Out	Two-Way
Multifamily Housing (Mid Rise) LUC 221	180 Units	A.M.	T = 0.44 X - 11.61	16	52	68
		P.M.	T = 0.39 X + 0.34	43	28	71
Shopping Center LUC 820	7246 SF	A.M.	0.84	4	2	6
		P.M.	3.40	12	13	25
Total A.M. Trips				**20**	**54**	**74**
Total P.M. Trips				**55**	**40**	**95**

The subject site is expected to generate 74 two-way (19 inbound and 54 outbound) trips during the weekday A.M. peak hour, and 95 (55 inbound and 40 outbound) trips during the weekday P.M. peak hour.

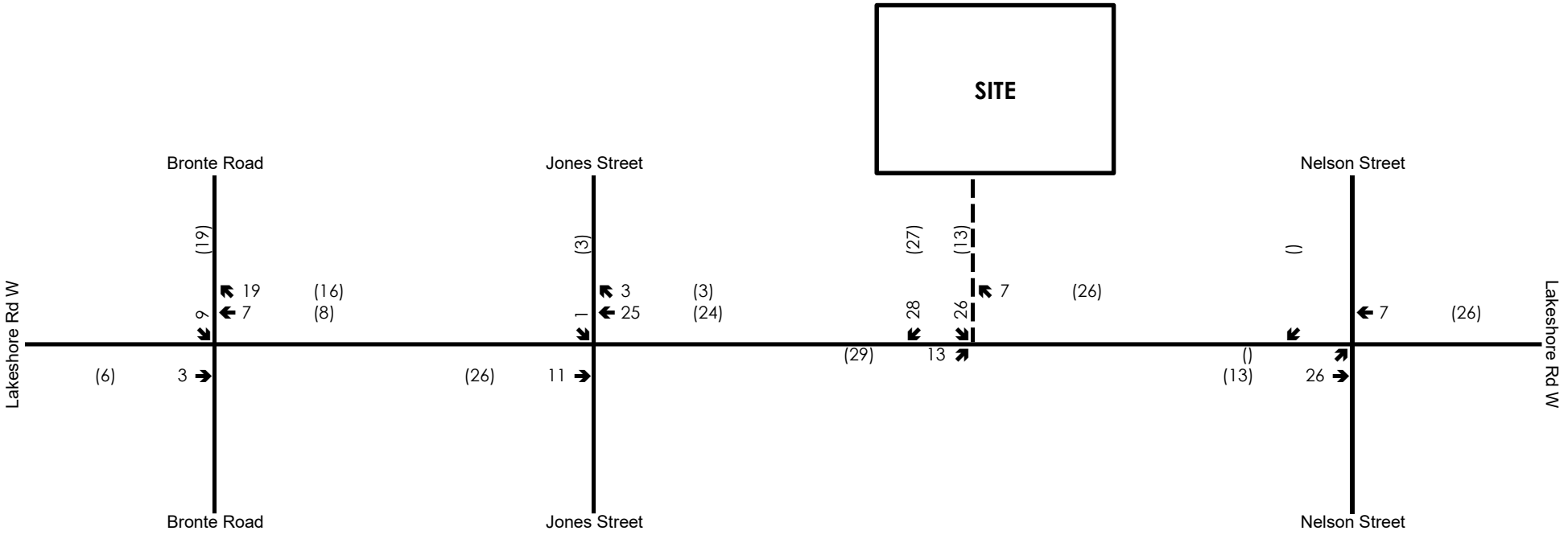
5.2 Trip Distribution and Assignment

2016 Transportation Tomorrow Survey (TTS) data was used to derive the distribution of residential trips in the study area. Trip patterns for the subject GTA Zone 4005, as well as neighboring residential GTA zones 4004, 4001, and 4006 were considered for analysis. Trips were filtered for residential inbound and outbound trips out of the study zones during the morning (6:30 A.M. to 9:30 A.M.) and afternoon (3:30 P.M. to 6:30 P.M.). Distribution Table below outlines the trip distribution for the proposed development, divided into time and direction of travel.

The detailed TTS results are included in Appendix M. Figure 8 shows the trip assignment for the proposed development.

Table 9: Site Distribution

Direction	AM (IN)	AM (OUT)	PM (IN)	PM (OUT)
North via Bronte Rd	45%	34%	35%	40%
South via Bronte Rd	0%	0%	0%	0%
North via Jones St	7%	5%	6%	7%
South via Jones St	0%	0%	0%	0%
North via Nelson St	1%	1%	0%	1%
South via Nelson St	0%	0%	0%	0%
East via Lakeshore Rd	34%	48%	47%	32%
West via Lakeshore Rd	13%	12%	12%	20%



Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure 8
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	Site Generated Trips		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C

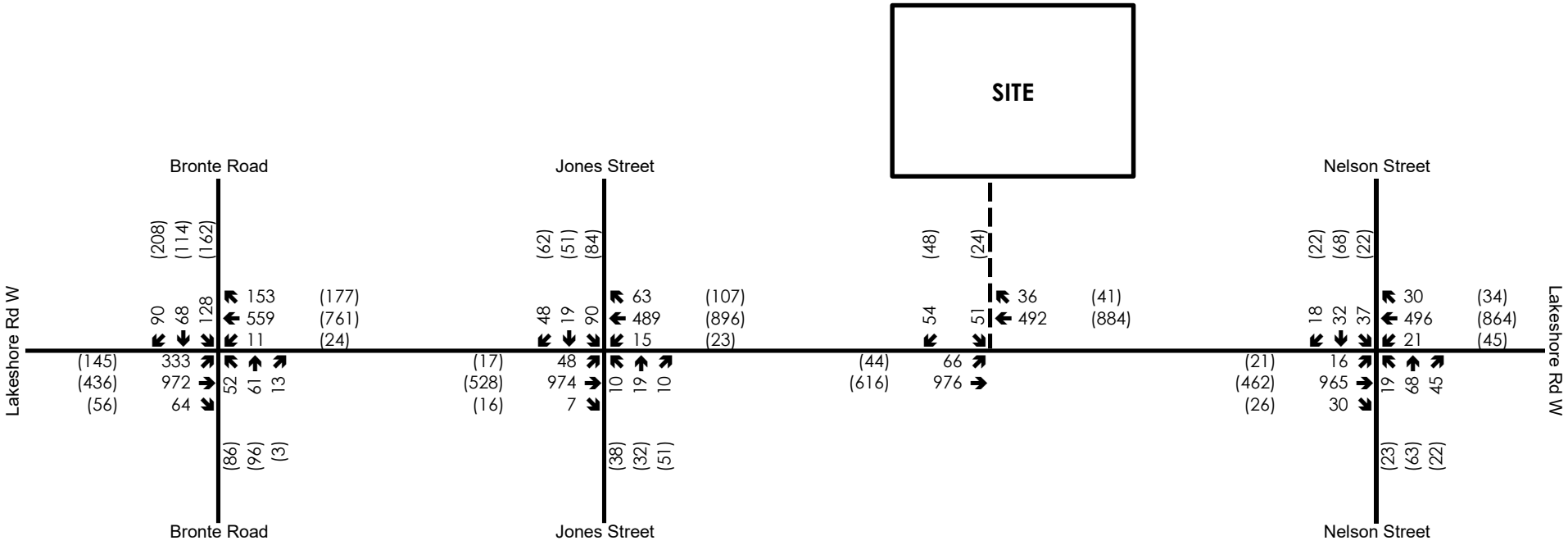
6.0 Future Total Traffic Conditions

6.1 Intersection Operations

Traffic operations at the study intersections were analyzed with the addition of the site generated traffic to the future background traffic. The 2025 and 2030 future total traffic volumes are illustrated in Figure 9 and Figure 10, respectively.

Table 10 and Table 11 outlines the 2025 and 2030 future total traffic Levels of Service, respectively. Detailed capacity analysis worksheets are included for the 2025 and 2030 future total conditions in Appendix N and O, respectively.

Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure 9
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	2025 Future Total Volumes		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C



Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes
{xx} Weekend Peak Hour Traffic Volumes

2365-2377 Lakeshore Road West

2030 Future Total Volumes

CROZIER CONSULTING ENGINEERS

Figure 10

Project No. 2239-6282
Date. 2022.02.04
Analyst. Farah C

Table 10: 2025 Future Total Levels of Service (pre-EA)

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical V/C Ratio [2] (Approach)	95th Percentile Queue Length > Storage Length
Lakeshore Road West at Bronte Road	Signal	A.M.	B	16.9	0.74 (EBT)	None
		P.M.	B	20.3	0.72 (WBT)	30 m > 25 m (WBR) 30 m > 20 m (NBL)
Lakeshore Road West at Jones Street	Signal	A.M.	D	45.4	**1.06 (EBT)**	None
		P.M.	E	63.2	**1.16 (WBT)**	None
Lakeshore Road West at Nelson Street	Signal	A.M.	D	55.7	**1.11 (EBT)**	None
		P.M.	D	39.1	**1.03 (WBT)**	None
Lakeshore Road West at Site Access	Stop Control (Minor)	A.M.	C	15.4	0.29 (WB)	None
		P.M.	C	17.8	0.54 (WB)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU).

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for through or shared/through movements, and 0.95 for exclusive movements are outlined and highlighted.

Table 11: 2030 Future Total Levels of Service (post-EA)

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical V/C Ratio [2] (Approach)	95th Percentile Queue Length > Storage Length
Lakeshore Road West at Bronte Road	Signal	A.M.	B	18.2	0.80 (EBT)	None
		P.M.	B	22.2	0.82 (WBT)	30 m > 25 m (WBR) 30 m > 20 m (NBL)
Lakeshore Road West at Jones Street	Signal	A.M.	**F**	81.8	**1.23 (EBT)**	None
		P.M.	**F**	87.2	**1.26 (WBT)**	None
Lakeshore Road West at Nelson Street	Signal	A.M.	**F**	72.4	**1.25 (EBT)**	None
		P.M.	E	58.0	**1.12 (WBT)**	None
Lakeshore Road West at Site Access	Stop Control (Minor)	A.M.	C	15.4	0.29 (WB)	None
		P.M.	C	22.1	0.59 (WB)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU).

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for through or shared/through movements, and 0.95 for exclusive movements are outlined and highlighted.

The intersection of Lakeshore Road West and Bronte Road is forecasted to operate with a Level of Service "C" or better under future total conditions, with no capacity issues. While the 95th percentile queue for the westbound right-turn and northbound left-turn movements exceed the storage, the average queue (50th percentile queue) is well within the storage length.

The proposed site access is forecasted to operate with a Level of Service "C" or better, with no capacity concerns.

The intersections of Lakeshore Road West at Jones Street and Nelson Street are forecasted to continue with capacity concerns for the eastbound through movements during the A.M. peak and westbound through movement during the P.M. peak under both horizon years.

6.2 Mitigation Measures

To address the capacity concerns identified at the intersections of Lakeshore Road West at Jones Street and Nelson Street, we have identified the following signal timing improvements that can be implemented to mitigate the capacity concerns (summarized in Table 12).

It is noted per correspondence with Town of Oakville staff, the intersections of Lakeshore Road West at Jones Street and Nelson are not coordinated with other intersections along Lakeshore Road West. This has been done in consideration that the study area is situated in a Business Improvement Area (BIA) and stopping in the area is intended to promote more interest to local businesses.

However, given that Bronte Village is expected to experience significant growth and that the existing movements are approaching or at capacity, the City may consider signal timing improvements be implemented to mitigate overcapacity east and westbound movements along Lakeshore Road West.

Table 12: Recommendations

Intersection	Recommendation	Implementation Year
Lakeshore Road West at Jones Street	• Increase cycle time to 90.0 seconds • Optimize splits	By 2025
Lakeshore Road West at Nelson Street	• Increase cycle time to 90.0 seconds • Optimize splits	By 2025

The signal timing improvements outlined in Table 12 reduce capacity issues along the Lakeshore Road West corridor within the thresholds set out by the Halton Region TIS Guidelines, as shown in Table 13. The capacity analysis worksheets for the optimized scenario are provided in Appendix P.

Table 13: 2030 Future Total Optimized Levels of Service (post-EA)

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical V/C Ratio [2] (Approach)	95th Percentile Queue Length > Storage Length
Lakeshore Road West at Jones Street	Signal	A.M.	C	20.7	0.89 (EBT)	None
		P.M.	C	22.0	0.81 (WBT)	None
Lakeshore Road West at Nelson Street	Signal	A.M.	C	28.4	0.95 (EBT)	None
		P.M.	C	22.4	0.90 (WBT)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU).
Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for through or shared/through movements, and 0.95 for exclusive movements are outlined and highlighted.

7.0 Site Access Review

7.1 Sight Distance

Per the Halton Region Access Management Guideline (January 2015), full movement accesses should ensure that sight distance requirements are met per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) requirements. As such, the available sightlines at the proposed site access were measured and compared to the standards set out in the TAC-GDGCR. Sight distance was measured from the site access using the following assumptions:

- A standard driver eye height of 1.08 m for a passenger car, and
- A 4.4 m setback from the approximate extension of the outer curb to represent a vehicle waiting to exit the Site.

Intersection sight distance is calculated using Equation 9.9.1 from the GDGCR as outlined below:

$$ISD = 0.278 * V\ major * tg$$

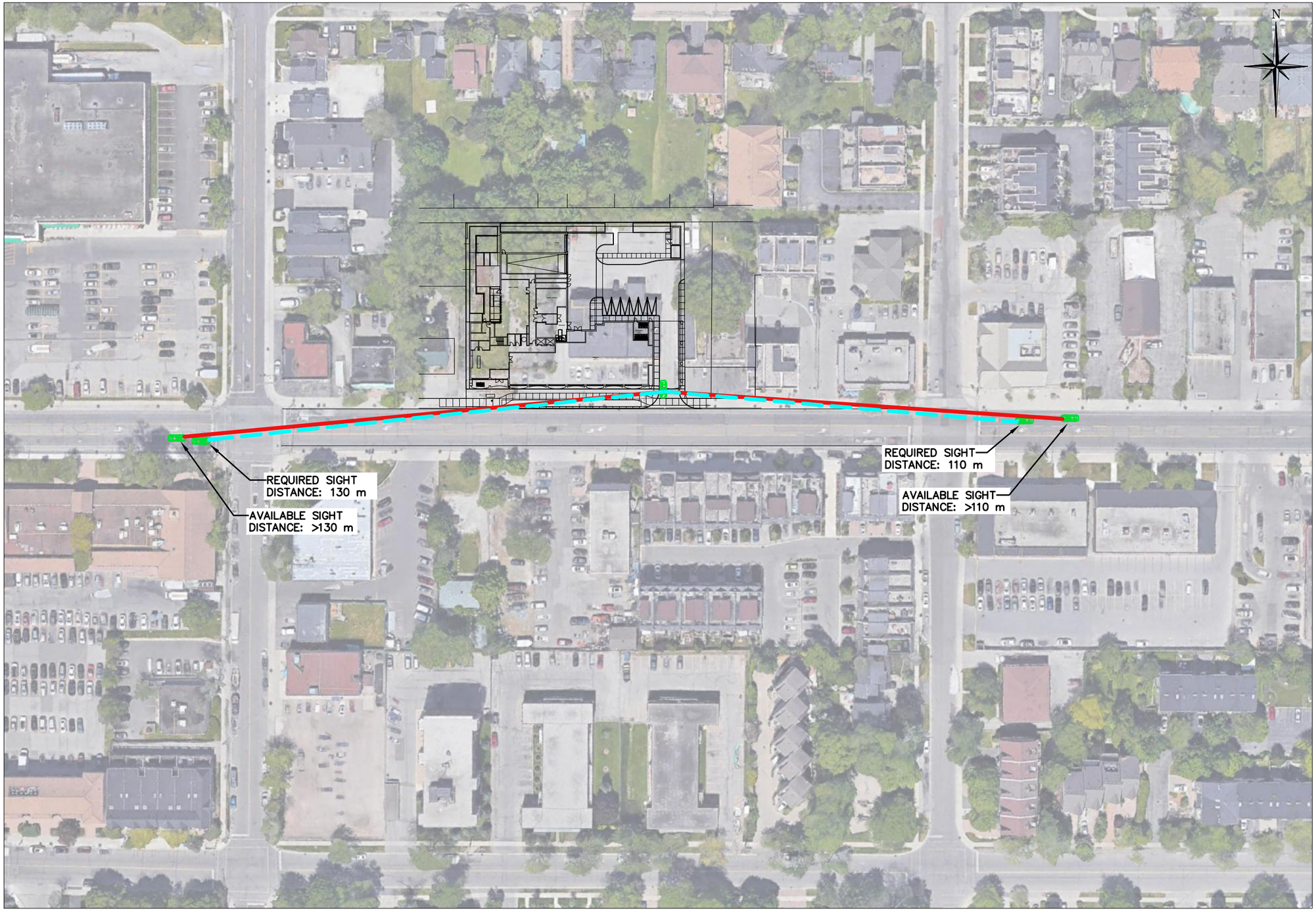
Where:
ISD = Intersection Sight Distance
V major = design speed of roadway (km/h)
tg = assumed time gap for vehicles to turn from stop onto roadway (s)

Table 14 summarizes the required and available sight lines at the proposed site access. Figure SL-01 illustrates the sight lines at the site.

Table 14: Sight Distance Analysis

Feature	Site Access off Lakeshore Road West
Access Type	Full-Movement
Assumed Speed Limit of Roadway	50 km/h
Assumed Design Speed	60 km/h
Base Time Gap [1]	6.5 s (right) 7.5 s (left)
Grade of Roadway	Less than 3%
Horizontal Alignment of Roadway	Straight
Required Sight Distance to the left (right-turn) [2]	110 m
Required Sight Distance to the right (left-turn) [2]	130 m
Available Sight Distance to the left (right-turn)	>110 m
Available Sight Distance to the right (left-turn)	>130 m
Minimum Sight Distances Satisfied?	Yes

Note 1: Time gap for left-turning vehicles from a stop onto a two-lane highway with no median and with a grade less than 3%. Value from Table 9.9.3 in the TAC-GDGCR.
Note 2: Sight distance values calculated from Intersection Sight Distance equation 9.9.1 in the GDGCR.



LEGEND:

- AVAILABLE SIGHT DISTANCE
- REQUIRED SIGHT DISTANCE
- PASSENGER VEHICLE

Sight Distance Calculation

Feature	Site Access off Lakeshore Road West
Access Type	Full-Movement
Posted Speed Limit	50 km/h
Assumed Design Speed	60 km/h
Base Time Gap [1]	6.5s (right), 7.5s (left)
Grade of Roadway	Less than 3%
Horizontal Alignment of Roadway	Straight
Required Sight Distance to the left (right-turn) [2]	110 m
Required Sight Distance to the right (left-turn) [2]	130 m
Available Sight Distance to the left (right-turn)	>110m
Available Sight Distance to the right (left-turn)	>130m

Note 1: Time gap for left-turning vehicles from a stop onto a two-lane highway with no median and with a grade less than 3%. Value from Table 9.9.3 in the TAC-GDGCR.

Note 2: Sight Distance values calculated from equation 9.9.1 in the GDGCR.

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

2365-2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

Drawing

SIGHT DISTANCE ANALYSIS

CROZIER CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
A.D.	A.D.		2239-6282
Check By	Check By	Scale	Drawing
F.C.	B.B.	N.T.S.	SL01

Per the results summarized in Table 14, the proposed site access off Lakeshore Road West would meet sight distance requirements and provide sufficient visibility to drivers on the road.

7.2 Access Spacing

Per Figure 8.9.2 from the TAC GDGCR, the minimum spacing between adjacent driveways for a residential development is 1.0 meters (curb return to curb return). The subject site access provides greater than this required spacing between the existing site access to the east (2341-2347 Lakeshore Road W) and west (2381 Lakeshore Road West).

In consideration of the existing land uses in the surrounding area and that no sight line concerns are present, the location of the proposed site access can be supported from a transportation perspective.

8.0 Maneuvering Assessment

A maneuvering assessment was conducted to ensure the proposed site design provides adequate space for the design vehicles expected at the site. The maneuvers of these design vehicles are elaborated upon in the following section.

It is noted that given the location of the proposed principal access being located within 15 metres of the travelled lanes on Lakeshore Road West, emergency vehicles would be expected to access the site directly from Lakeshore Road West rather than circulating internal to the site.

8.1 Waste Vehicles

A maneuvering assessment was conducted for a Region of Halton front-loading waste vehicle as shown in Figure SC01 and SC02 for the inbound and outbound maneuvers respectively.

The inbound maneuver can enter the site via Lakeshore Road West, maneuver through the internal roadway and enter the loading area in a forward motion with no conflicts.

The outbound maneuver can reverse out of the loading area using the hammerhead at the rear of the property and then proceed forward out of the hammerhead. It is noted that when exiting the hammerhead, the vehicle must briefly reverse to avoid encroaching on the proposed bike and vehicle parking located on the north side of the building. The vehicle can then circulate the site and exit via the driveway onto Lakeshore Road West with no issues. It is proposed that a signal warning system be implemented to notify passenger vehicles exiting the parking garage that truck maneuvering is in progress at the top of the ramp to prevent conflicts at the top of the parking ramp. Details on the warning system will be provided as part of future site plan application submissions.

8.2 Paratransit Vehicles

A maneuvering assessment was also conducted for a Paratransit Vehicle using a minibus vehicle measuring 8.2 metres in length. As shown in the Figure SC03, the vehicle can enter and exit the site and maneuver into the paratransit pick up and drop off area by reversing in and fronting out, without any conflicts or encroachments. A reverse-in maneuver is recommended to avoid reversing over the top of the parking garage ramp.

8.3 Loading Vehicles

A maneuvering assessment was undertaken to verify the maneuvering of a Light Single Unit (LSU) truck in and out of the loading space at the back of the property, as shown in Figure SC04. The LSU truck, as shown, can enter and reverse out of the loading space into the hammerhead to the rear of the property with no conflicts.

The LSU can also circulate through the north-south driveway and turn east to access the property to the east without any curb encroachments as shown in Figure SC05.

8.4 Passenger Vehicles

8.4.1 Ground Floor

A maneuvering assessment of the ground floor was conducted using a Passenger TAC (P-TAC) vehicle as shown in Figure SC06, which demonstrates that passenger vehicles can enter and exit the property via the driveway simultaneously without encroaching on each other's paths. Passenger vehicles can also enter the ramp to the below grade parking and the east driveway connection simultaneously without encroachments or conflicting on each other's paths.

As noted above, a signal warning system is proposed that will notify exiting passenger vehicles from the underground parking ramp of truck movements occurring on the ground level at the top of the ramp in order to increase safety and minimize conflicts.

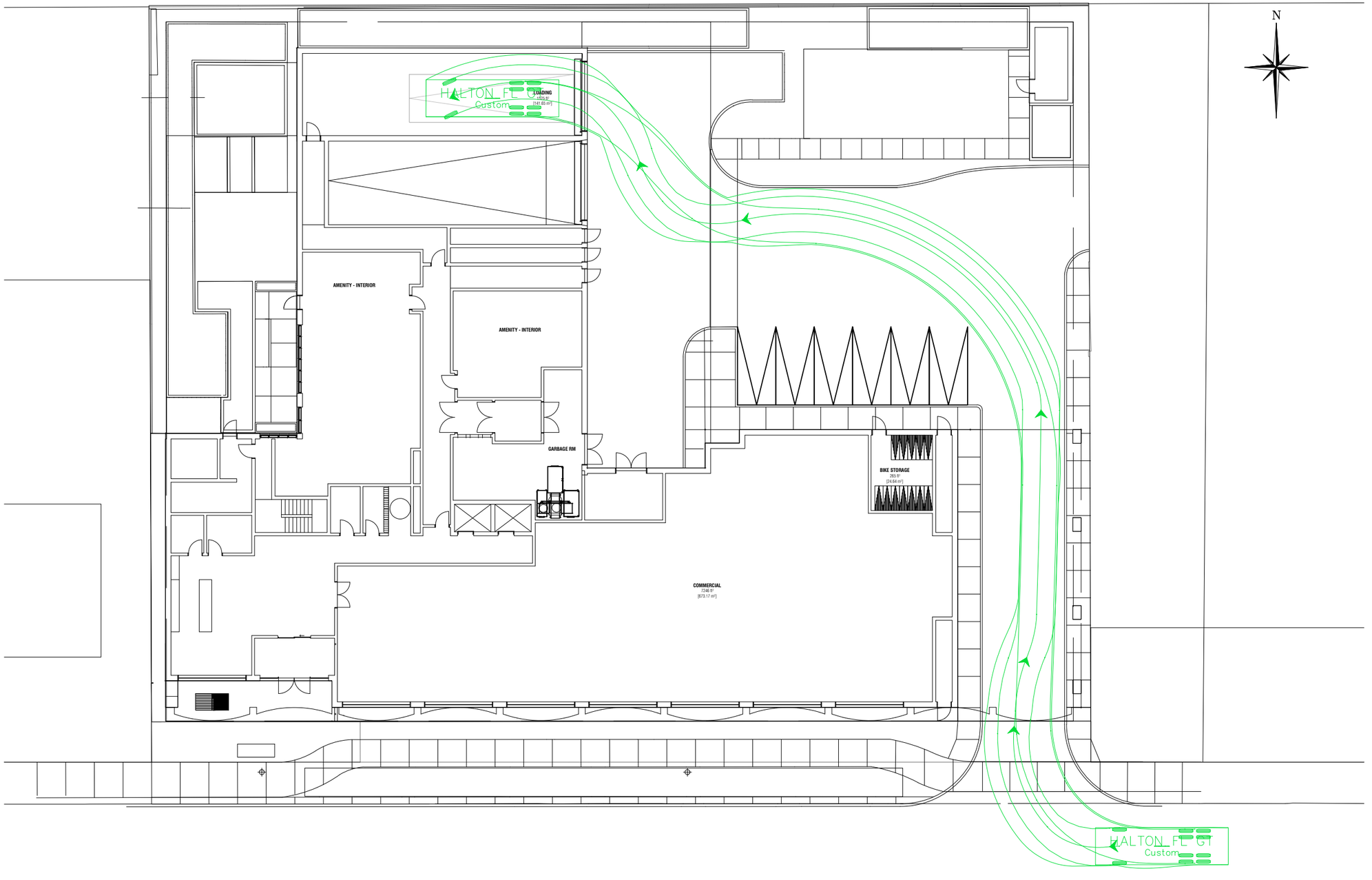
8.4.2 Underground

A maneuvering assessment of the underground parking garage was also conducted using a Passenger TAC (P-TAC) vehicle as shown in Figure SC07 and SC08 for P1 and P2 respectively.

For P1, P-TAC vehicles can maneuver the proposed parking garage ramp inbound and outbound simultaneously without encroaching on each other's paths. Some typical encroachments are expected in the corners of the garage and convex mirrors are recommended to be placed in all corners of the garage and on the corners of the ramp. No maneuvering issues were identified with any of the proposed parking spaces.

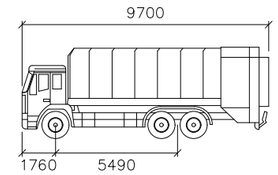
For P2, the layout remains similar to P1 and P-TAC vehicles are expected to be able to maneuver throughout the garage. However, a P-TAC would not be able to maneuver out of the dead-end space at the bottom of P2 using a two-point maneuver. Therefore, it may be necessary to designate this space as a small car space to ensure maneuverability. No other issues were identified.

Based on the assessments completed above, the development can be supported from a maneuverability perspective.



N

VEHICLE PROFILE



HALTON FL GT

	mm
Width	: 2700
Track	: 2700
Lock to Lock Time	: 6.0
Steering Angle	: 35.3

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

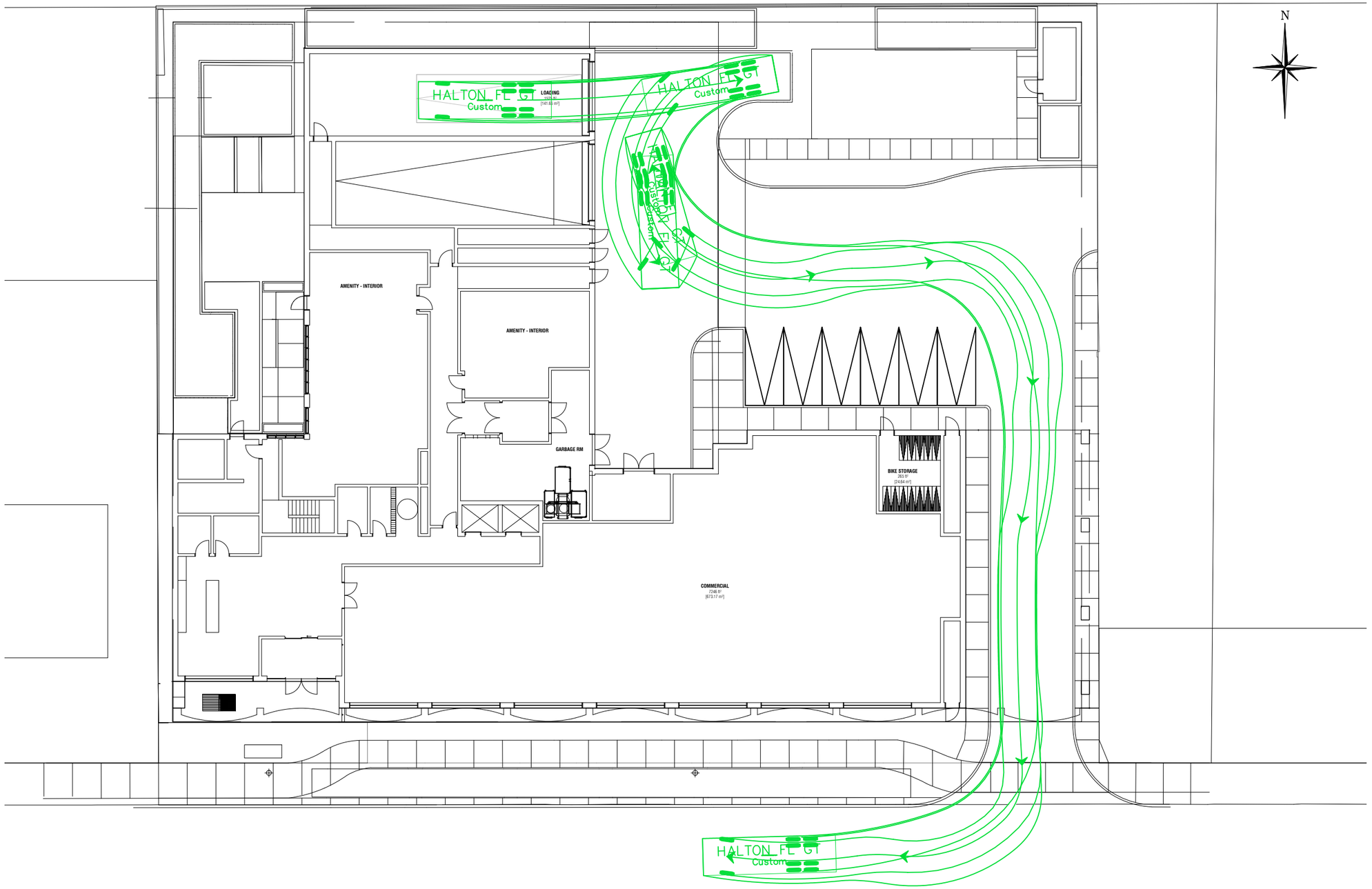
2365–2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

Drawing

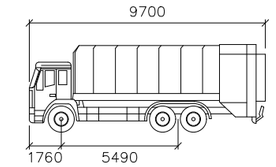
VEHICLE MANEUVERING DIAGRAM
GARBAGE TRUCK

CROZIER
CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
A.D.	A.D.		2239–6282
Check By	Check By	Scale	Drawing
B.B.	B.B.	1:150	SC01



VEHICLE PROFILE



HALTON FL GT

	mm
Width	: 2700
Track	: 2700
Lock to Lock Time	: 6.0
Steering Angle	: 35.3

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

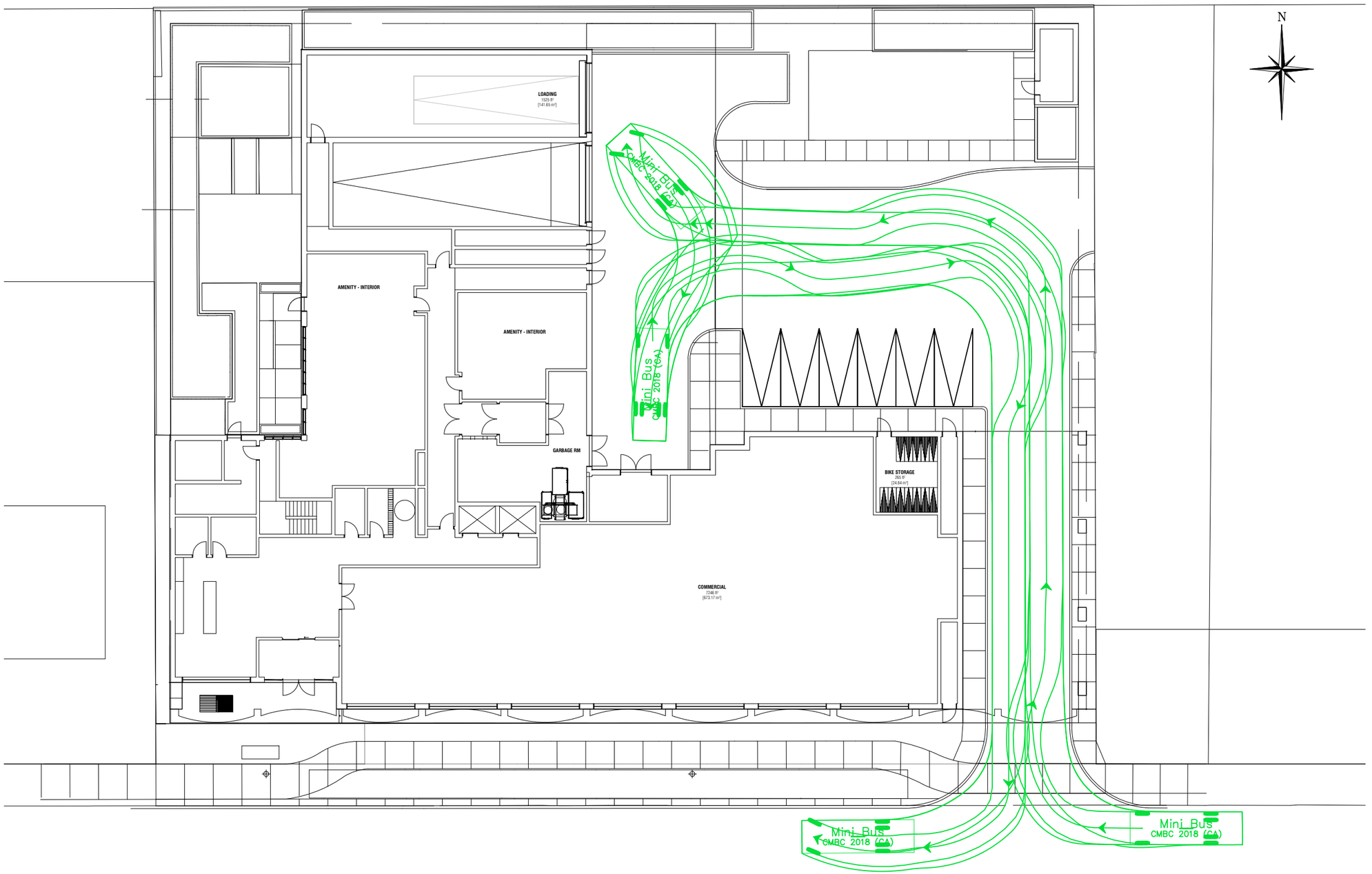
2365–2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

Drawing

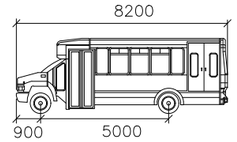
VEHICLE MANEUVERING DIAGRAM
GARBAGE TRUCK

CROZIER
CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
A.D.	A.D.		2239–6282
Check By	Check By	Scale	Drawing
B.B.	B.B.	1:150	SC02



VEHICLE PROFILE



Mini Bus	mm
Width	: 2400
Track	: 2400
Lock to Lock Time	: 6.0
Steering Angle	: 38.0

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

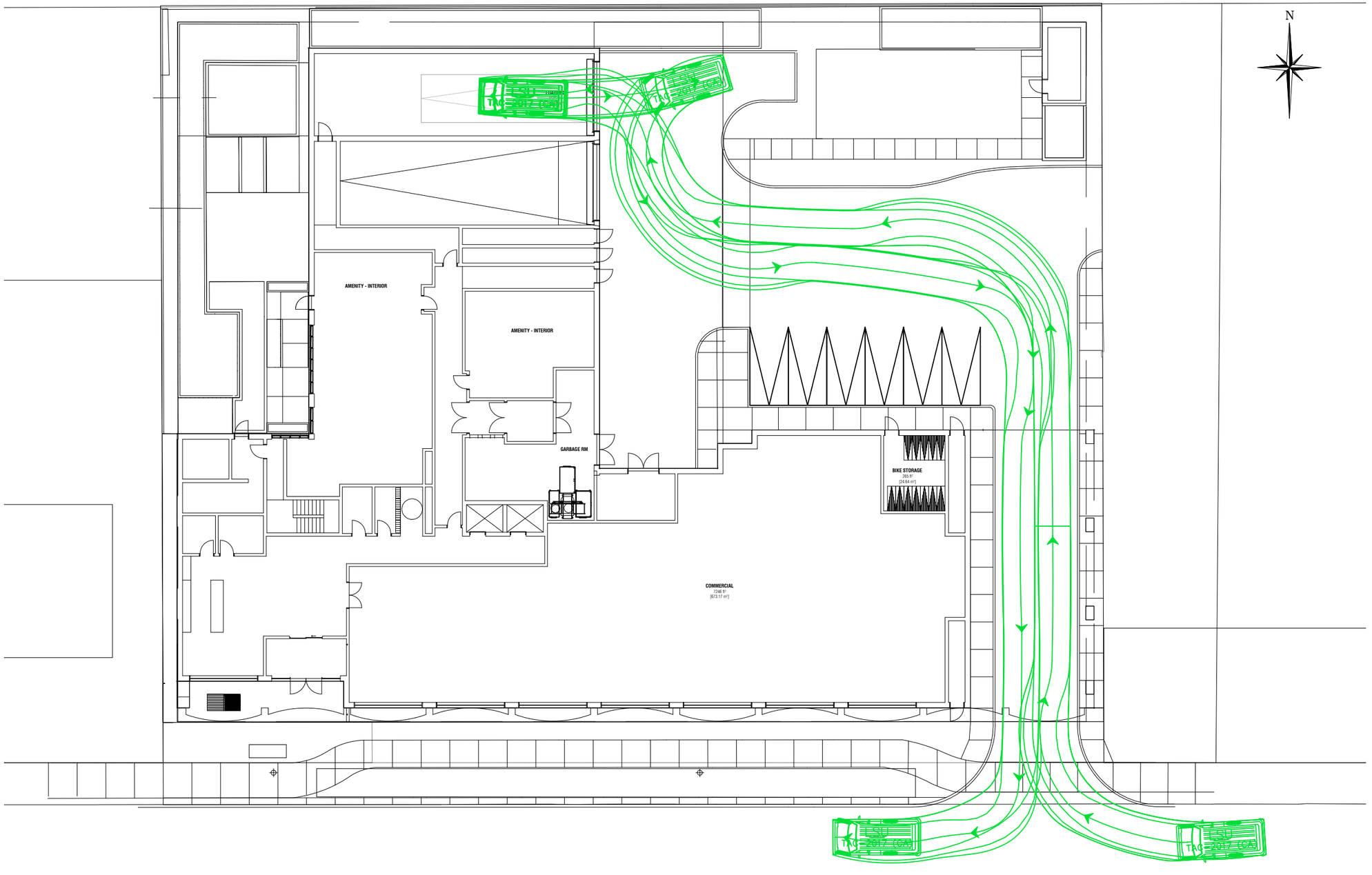
2365–2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

Drawing

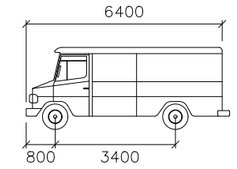
VEHICLE MANEUVERING DIAGRAM
PARATRANSIT

CROZIER
CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
A.D.	A.D.		2239–6282
Check By	Check By	Scale	Drawing
B.B.	B.B.	1:150	SC03



VEHICLE PROFILE



LSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

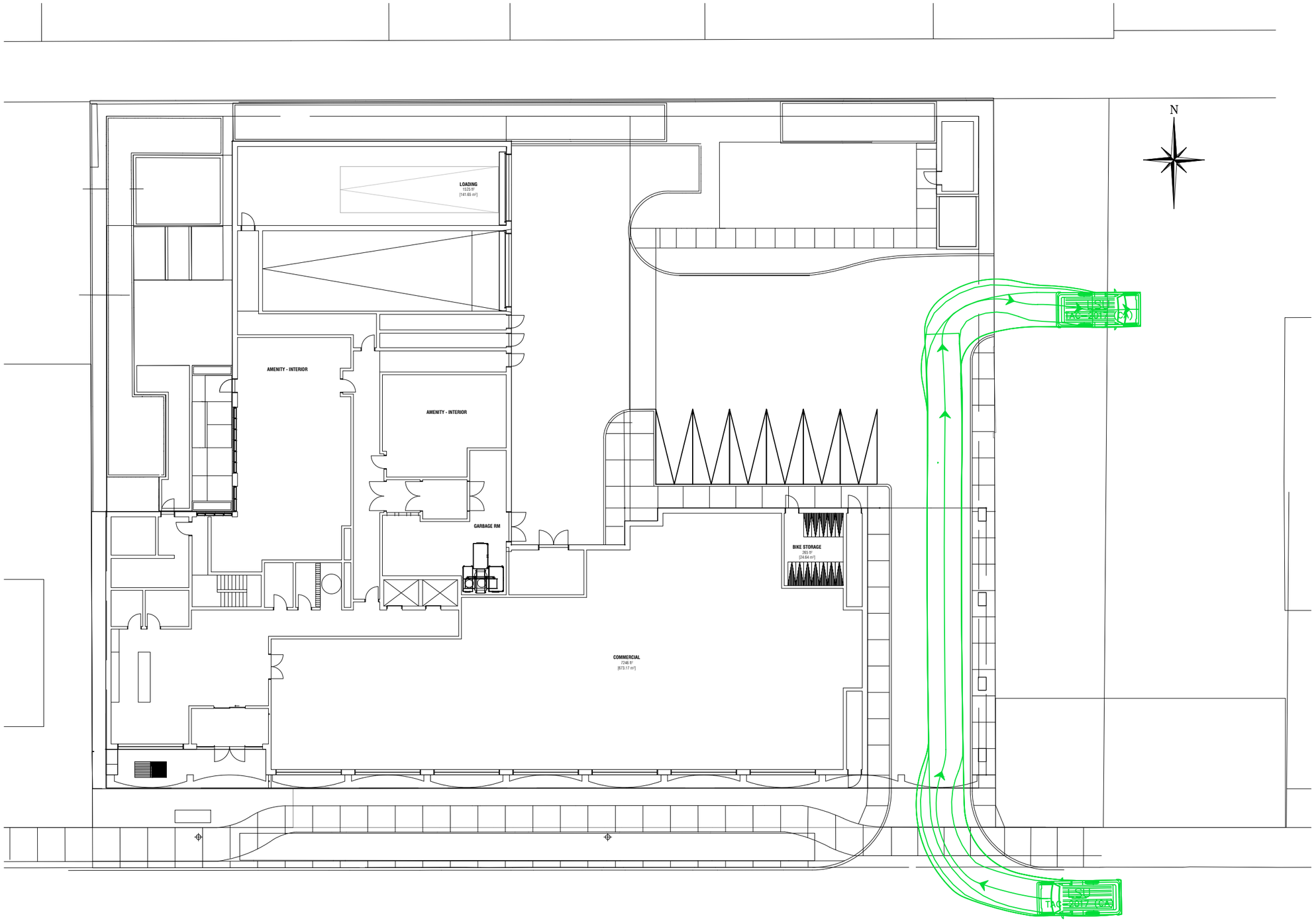
2365–2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

Drawing

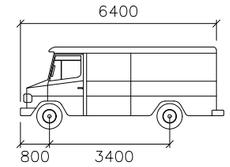
VEHICLE MANEUVERING DIAGRAM
LSU

CROZIER
CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
A.D.	A.D.		2239–6282
Check By	Check By	Scale	Drawing
B.B.	B.B.	1:150	SC04



VEHICLE PROFILE



LSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

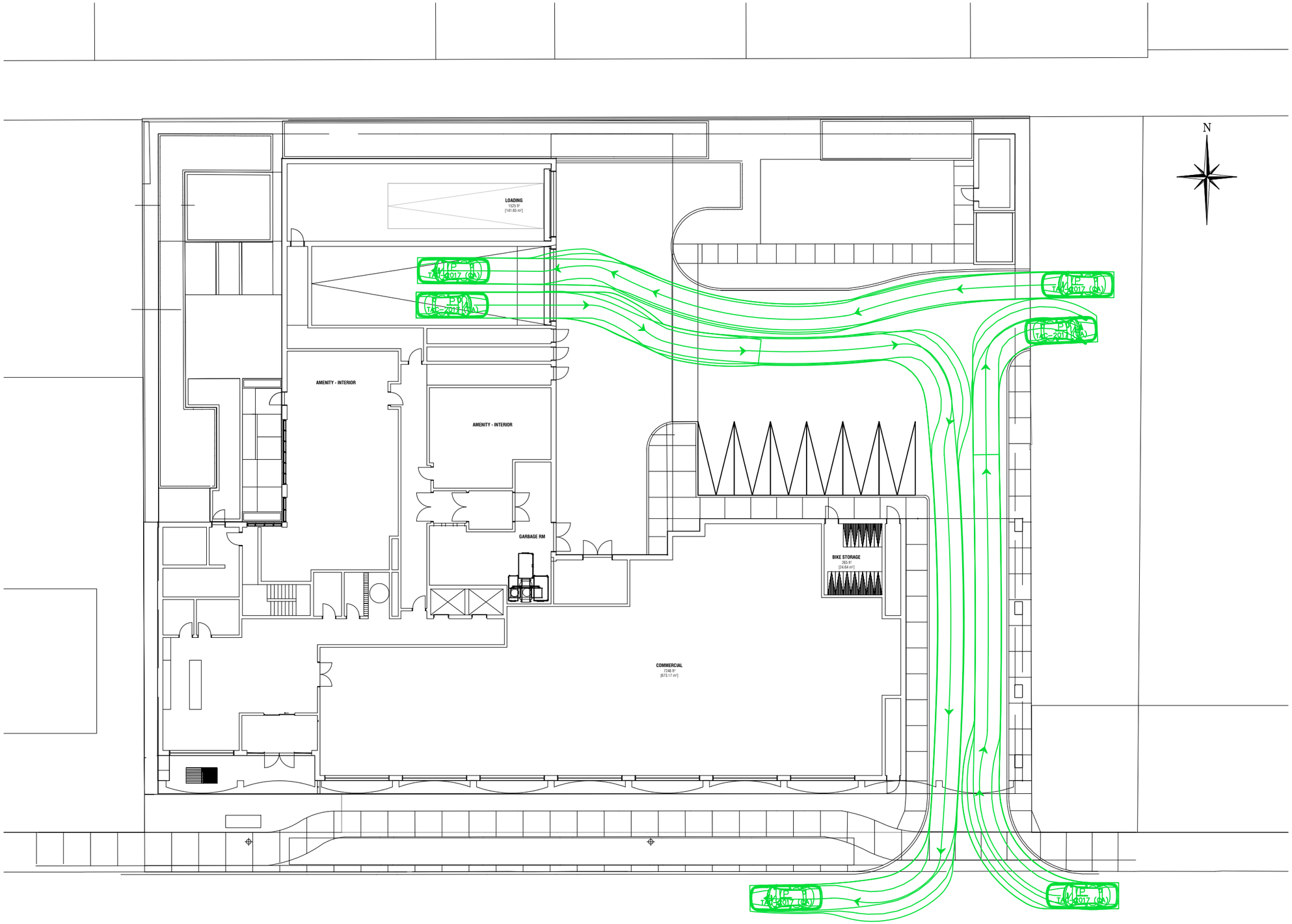
2365–2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

Drawing

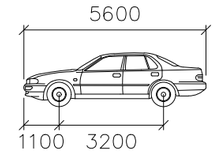
VEHICLE MANEUVERING DIAGRAM
LSU

CROZIER
CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
A.D.	A.D.		2239–6282
Check By	Check By	Scale	Drawing
B.B.	B.B.	1:150	SC05



VEHICLE PROFILE



P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

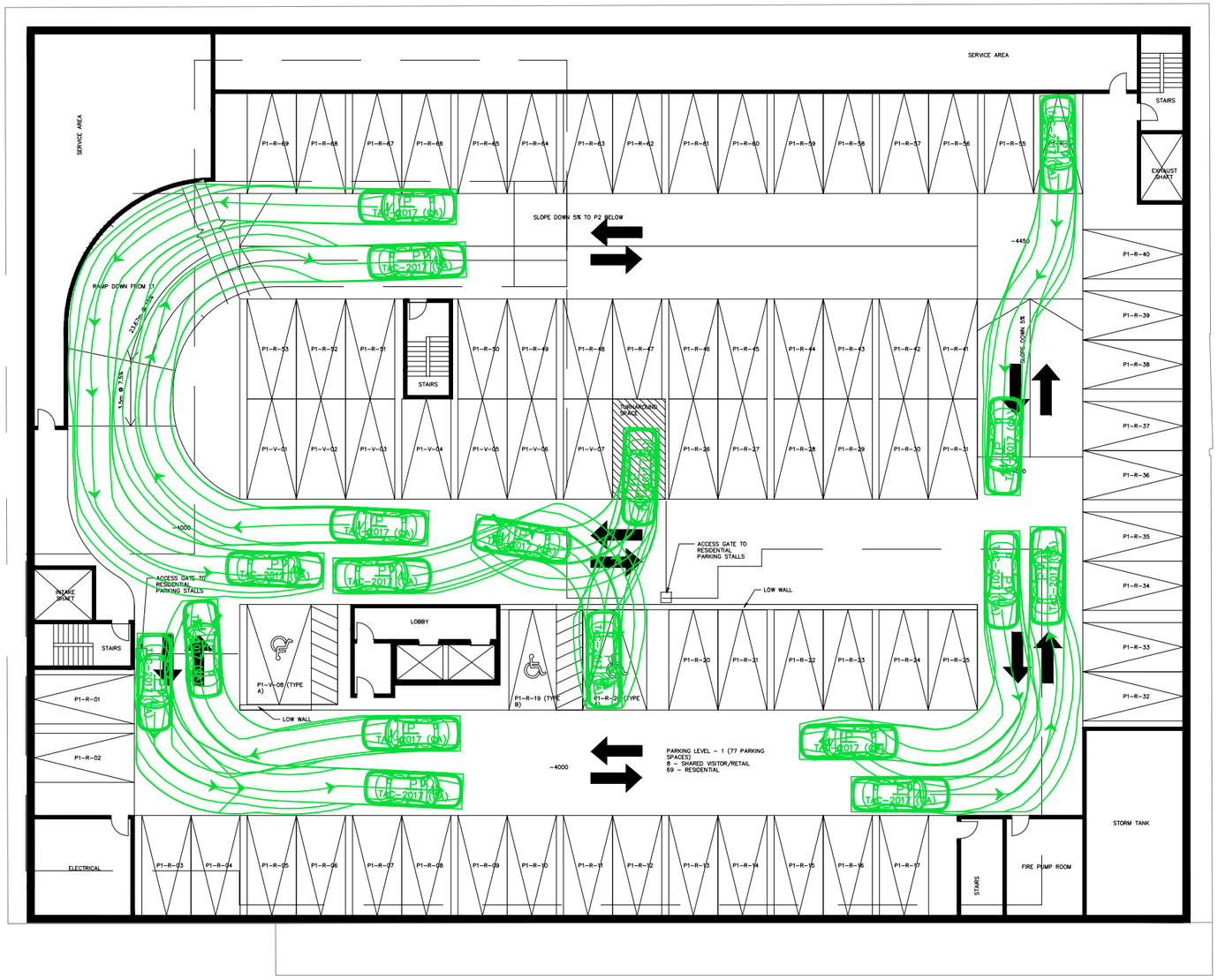
2365–2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

Drawing

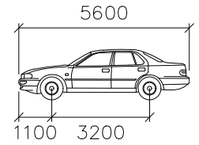
VEHICLE MANEUVERING DIAGRAM
PASSENGER CAR

CROZIER
CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
A.D.	A.D.		2239–6282
Check By	Check By	Scale	Drawing
B.B.	B.B.	1:150	SC06



VEHICLE PROFILE



P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

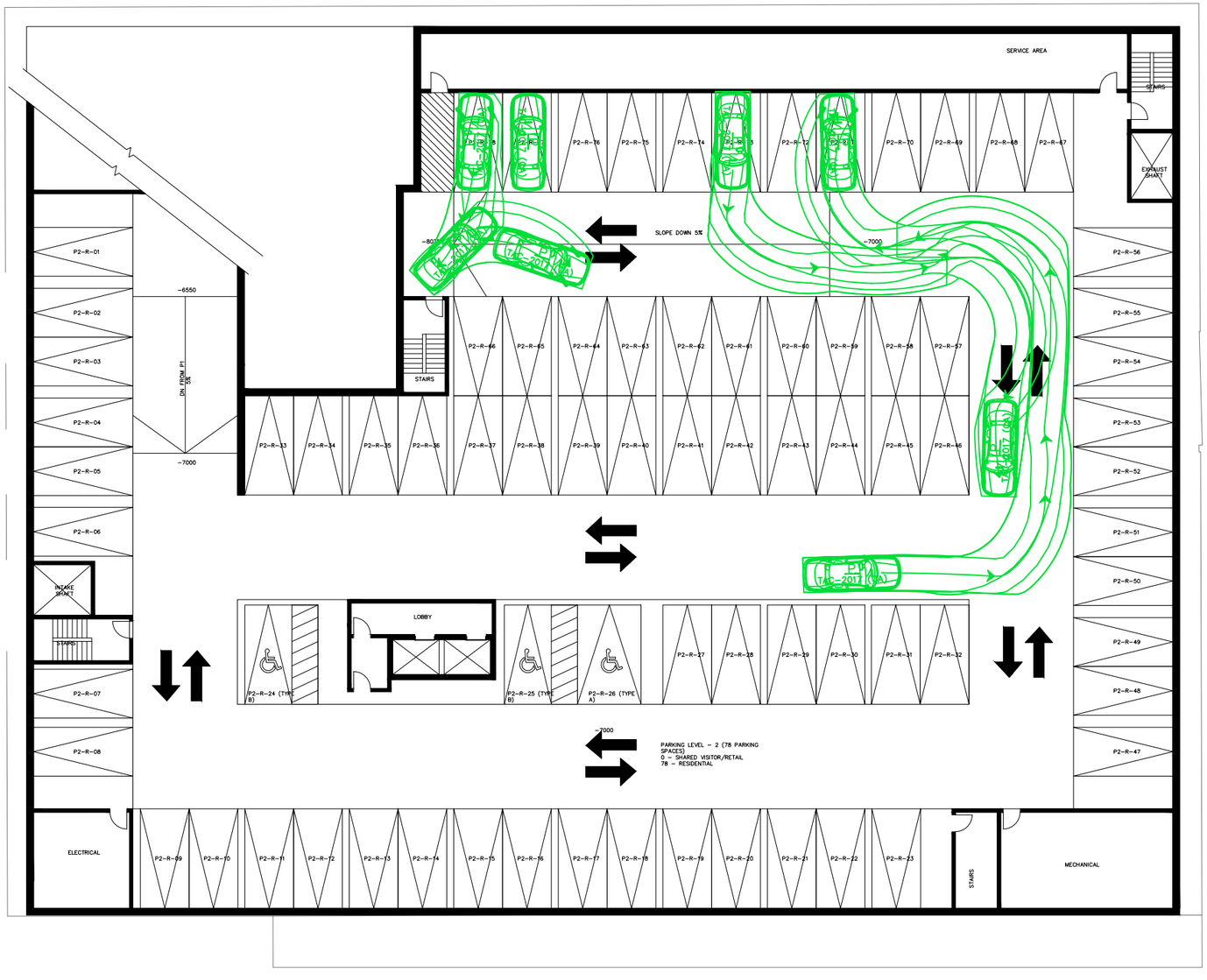
2365–2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

Drawing

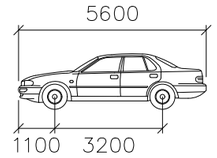
VEHICLE MANEUVERING DIAGRAM
PASSENGER CAR

CROZIER CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	A.D.	Design By	A.D.	Project	2239–6282
Check By	B.B.	Check By	B.B.	Scale 1:150	Drawing SC07



VEHICLE PROFILE



P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

No.	ISSUE	DATE: MMM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	MMM/DD/YYYY

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project

2365–2377 LAKESHORE ROAD WEST
TOWN OF OAKVILLE

Drawing

VEHICLE MANEUVERING DIAGRAM
PASSENGER CAR

CROZIER
CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
A.D.	A.D.		2239–6282
Check By	Check By	Scale	Drawing
B.B.	B.B.	1:150	SC08

9.0 Transportation Demand Management (TDM)

Transportation Demand Management (TDM) measures are recommended to promote alternative modes of transportation, such as transit, cycling or walking, and reduce single-occupant vehicle (SOV) trips entering and exiting the proposed development.

9.1 Existing TDM Opportunities

9.1.1 Modal Split

2016 Transportation Tomorrow Survey (TTS) data was reviewed to determine the modal split of household trips in subject GTA Zones 4005, as well as neighboring residential and mixed zones 4006, 4001, and 4004 during the A.M. and P.M. peaks. The results of the TTS query are summarized in Table 15 below, and detailed in Appendix Q.

Table 15: Peak Hour TTS Modal Split

Mode of Trip	Modal Split
Auto	87%
Transit	9%
Walk	3%
Cycling	1%

Per the results summarized above, while vehicles are the dominant form of travel mode in the area, there is a sizeable portion of the community using transit to reach their destinations, with some walking and cycling. However, the number of walking and cycling trips is expected to generally increase as Bronte Village continues to develop and due to the active transportation improvements proposed as part of the Lakeshore Road EA.

9.1.2 Transit

As outlined previously in Section 4.4, there are two transit routes operated by Oakville Transit available in the vicinity of the subject site that are within a 5-minute walk. As indicated by the TTS results, approximately 9% of peak hour trips use transit in the study area and this could generally be expected for the proposed site as well.

However, it is noted that headways are generally quite long during the peak hours (30 minutes) and no transit shelters are present currently.

9.1.3 Active Transportation

The study area provides ample opportunities for pedestrians to make trips, as sidewalks are available on at least one side of the road on the surrounding roadways, with wide sidewalks provided on both sides of Lakeshore Road West.

Cyclists have north/south connectivity along the signed route available along Bronte Road but there is no physical infrastructure present to provide separation between vehicles and cyclists currently. For east/west connectivity cyclists can make use of the bike lanes along Lakeshore Road West or by using the Waterfront/Trans-Canada Trail located approximately 300 meters south of the site.

9.2 TDM Opportunities and Recommendations

9.2.1 Pedestrian Facilities

The design of the development facilitates mobility for pedestrians between the site and the surrounding roadways; this is achieved by providing sidewalks connecting the primary site entrance to the existing sidewalk on Lakeshore Road West, as well as along the west side of the proposed internal driveway.

Additionally, pedestrian-friendly design measures such as proper lighting, benches, and landscaping are expected to be implemented to define the public spaces and provide a welcoming and safe walking environment. The ground-floor retail will also provide an attractive storefront to attract foot traffic, provide weather refuge, and other beautification measures (landscaping, greenery, amenities) to contribute to the pedestrian realm along the site frontage.

9.2.2 Transit Facilities

The use of transit is generally supported by providing sufficient pedestrian connectivity from the site to the existing sidewalk on Lakeshore Road West as mentioned above, which provides a convenient means of accessing the existing local transit stops located within a short walking distance of the site.

The existing transit stops for Route 14/14A adjacent to the site along Lakeshore Road West do not currently have a transit shelter with the exception eastbound stop at Jones Street. The Applicant may consider working with Oakville Transit to provide support for a transit shelter on the north side of Lakeshore at Jones Street.

Oakville Transit could also consider reducing headway times from 30 minutes to 15 minutes as Bronte Village continues to develop, particularly along Route 3 which provides a direct connection to Bronte GO Station.

9.2.3 Parking

The following TDM measures are related to parking at the site and generally would serve to reduce the frequency of single occupant auto trips taken to and from the site, as well as reduce vehicle ownership rates overall at the site.

The most recent Site Plan provides a parking space supply below the By-Law required rates for visitor and retail uses. Given the site's proximity to transit, the reduced parking rate is encouraged since visitors have convenient access to local transit and the GO Train network (via Oakville Transit). It also encourages the use of active transportation modes for retail customers who live within a short distance from the site.

Additionally, parking is expected to be unbundled from the purchase of a residential unit so that future residents have a clearer picture of the costs of automobile ownership by paying for the space itself. Reduced auto ownership is also supported by the significant active transportation infrastructure and amenities in the area that will allow residents to get essentials without the need for car. Furthermore, the local transit routes and connections to Bronte GO Station will support residents who choose to commute to work via transit instead of by personal vehicle.

9.2.4 Education and Incentives

Various educational measures and incentives may be promoted at the new residential site to overall build a robust TDM brand and promote use of alternative modes of transportation available to residents.

The residential units being sold at the subject site should be promoted with a strong TDM brand, where marketing should highlight the convenience of proximity to nearby bus stops and amenities, as well as the accessibility to bike storage and the Trans-Canada Waterfront Trail.

Education on available transit in the vicinity of the subject site would also be highly effective in promoting transit to new residents, who may not be aware of the variety of options available in the area. Handouts on local transit offerings and stop/schedule information, as well as nearby cyclist and pedestrian routes, may be provided to residents as part of a welcome package, and extra copies should be made available in the lobby for reference.

It is also recommended to provide PRESTO cards to all new residents to encourage the use of GO and local transit services. It is noted that Metrolinx has recently announced that local transit rides are also free for all GO Rail passengers, so residents using Bronte Go Station would not have to pay to transfer to a local Oakville transit route.

10.0 Parking Review

10.1 Auto Parking Requirements

The Town of Oakville Zoning By-Law 2014-014 for properties south of Dundas Street and north of Highway 407 was reviewed to determine the auto parking requirements at the proposed site.

In consideration that the subject site is situated in the "Bronte Growth Area" and is classified as a Mixed-Use Zone, Table 5.2.2 of the Zoning By-Law was reviewed, and the auto parking requirements for the proposed residential development is summarized in Table 16 below.

Table 16: Town of Oakville Zoning-By Law Auto Parking Requirements

Type of Parking	Units/ GFA (m^2)	Parking Rate	Required Parking	Proposed Parking
Residential (Unit less than 75 m^2 net floor area)	172	0.80 spaces per unit	138	147
Residential (All other units)	8	1.05 spaces per unit	9	
Visitor	180	0.20 spaces per unit	36	14
Retail	673 m^2	1.0 space per 40 m^2	17	
Total			**200**	**161**

Per the auto parking review summarized above, the development meets the By-Law parking rates required for residents, however, the proposed supply deficient of visitor and retail parking requirement by 39 spaces.

10.2 Bicycle Parking Requirements

Per the Town of Oakville Zoning By-Law 2014-014, the bicycle parking requirements applicable to the site were also reviewed and summarized in Table 17. Per clause 5.4.1 b) of Zoning By-law 2014-014 the minimum number of bicycle parking spaces for a lot is capped at 30, regardless of unit count.

Table 17: Town of Oakville Zoning-By Law Bicycle Parking Requirements

Type of Parking	Units/ GFA (m^2)	Parking Rate	Required Parking	Proposed Parking
Residential	180	0.75 spaces per dwelling unit	135	24
Visitor	180	0.25 spaces per dwelling unit	45	7
Retail	673 m^2	Greater of 2 spaces or 1 space per 1000 m^2 net floor area	2	2
Total[1]			**30[1]**	**33 (+3)**

[1] It is noted that the Section 5.4.1 b) of Zoning By-law 2014-014 states that "In no circumstance shall the minimum number of bicycle parking spaces required on a lot be greater than 30".

Per the review contained above, the number provided bicycle parking spaces at the development, is in a surplus of 3 spaces based on the City's By-Law requirements.

11.0 Visitor and Retail Parking Justification

It is noted that the retail and visitor parking supply proposed for the site does not meet the Town of Oakville Zoning By-Law parking requirements. As such, the following Parking Justification has been prepared to support shared use of parking for short-term visitors and retail use at the site at a rate of 0.08 shared visitor and retail spaces per unit.

11.1 Bronte Village Context and Existing Modal Split

The site is located in the Bronte Village Growth Area, a Mixed-Use zone containing a wide variety of land uses along the Lakeshore Road corridor, ranging from low to mid-rise residential buildings, restaurants, pharmacies, medical offices, supermarkets, banks, religious facilities, schools, as well as other employment and commercial facilities. A map showing the location of some key essential services, as well as their associated walking times from the proposed site is shown in Figure 11.

As previously outlined in Section 10.1.1, the existing modal split in the study area (based on 2016 TTS data) consists of 9% transit, 3% walking, and 1% cycling, with the remainder 87% auto dominated. While the non-auto modal split in the area is currently a minority in the peak hours, it is expected that active transportation and transit trips will generally grow as Bronte Village continues to develop into a mixed-use neighborhood with necessary amenities within walking distance.

This existing wide variety of amenities offered in close proximity to the site within 400 meters east or west of the site (5-minute walk) enables residents to access both essential and non-essential services without the need of a vehicle, and to walk or cycle for errands instead. As the Village continues to develop and densify, it is expected that more and more amenities will become available, further supporting these shorter, local trips to occur via non-auto modes of transportation, which is expected to reduce retail parking demand within the Village.

The site supports this shift by reducing the parking supply for retail within the site and instead providing some paid lay-by parking along the site frontage to encourage short retail shop visits.

11.2 Municipal Shared Parking Provisions

It is noted that the Oakville Zoning By-Law does not include a shared parking provision for spaces that are intended to accommodate multiple uses on a site. However, these shared-use provisions are common in other municipalities to allow for a reduction in the total parking supply since the shared-use arrangement allows for flexibility in the parking supply to accommodate the variation in demand for the individual uses. In this case, visitor parking demand is generally expected to peak in the evening while retail parking demand is generally expected to peak in the afternoon.

As a result, the use of shared-use arrangements is generally acknowledged to allow for a reduction in total parking supply. According to the Ministry of Transportation Ontario (MTO) Transit Supportive Guidelines 2.5.1 Parking Management Strategies, "shared parking and access between (land) uses can help to balance parking fluctuations and the overall need for parking spaces within a development or neighborhood context" and similarly the City of Mississauga allows for mixed-use sites with shared parking to reduce their overall required supply.


Rexall Pharmacy
2
Farm Boy Grocery
1
Shoppers Drug Mart
3
SITE
3
Bronte Restaurants
1
Denninger's Grocery
minutes
6
Waterfront Park & Yacht Club

Per the Draft Red-Line City of Mississauga Zoning By-Law Section 3.1.2.1.3 for shared arrangements between residential visitor and non-residential parking, the City will allow for a shared parking arrangement calculation between visitor and other non-residential parking. The shared parking supply requirement for both uses is to simply provide the greater of either the residential visitor requirement or the sum of the parking required for the non-residential land uses.

Therefore, it is recommended that a similar provisions to the City of Mississauga By-Law for the proposed parking supply at the site be considered since similar time-of-day variations would be expected for the visitor and retail parking demand in the shared spaces proposed at the site.

In this case it is expected that visitor parking demand will govern between the visitor and retail uses based on the Oakville By-Law requirement outlined in Table 16.

11.3 Visitor Parking Demand Estimate

In order to estimate peak demand for visitor parking at the site, parking utilization data collected for a residential proxy site located approximately 4 kilometres to the west at 5340 Lakeshore Road in the City of Burlington was reviewed. It is noted that while the site is not in Oakville, the visitor parking demand at the site is considered reasonable given that the proxy site is also located along Lakeshore Road and is served by local transit routes with commercial uses located a short distance from the site. The proxy survey can be found Appendix R.

The survey was conducted by Ontario Traffic Inc. on Wednesday March 29, 2017 and observed a visitor peak parking demand at the site of 0.10 spaces per unit. Therefore, the Town's visitor parking rate of 0.20 spaces per unit would likely result in an oversupply of visitor parking at the site and the proposed shared visitor/retail supply of 0.08 spaces per unit would be expected to meet visitor parking demand at the site in combination with some public available parking in the surrounding area.

11.4 Paid On-Street Parking

It is noted that existing on-street paid parking opportunities are available along Lakeshore Road West and lay-by parking is envisioned along Lakeshore Road West on both sides of the road following the completion of the Lakeshore EA, which will provide short-term parking for both retail and visitor uses along the immediate site frontage. The proposed pedestrian crossing as part of the Lakeshore Road EA will also encourage parking on both sides of Lakeshore Road West for retail uses. Similarly, paid parking is available on both sides of the street along Jones Street south of Lakeshore Road West, which is located a short walk from the site.

Additionally, there is free three-hour parking along Nelson Street, which will also support short-medium length trips to the site for both the retail and visitor uses and is located a short walk from the site.

11.5 Transportation Demand Management

As outlined previously in Section 9, various Transportation Demand Management (TDM) measures have been recommended at the site the form of infrastructure and initiatives to promote the use of transit, active transportation and higher occupancy passenger vehicles to access the proposed site.

Through the implementation of the TDM measures, it is expected that single-occupancy vehicle trips would be further discouraged at the development and within Bronte Village, therefore reducing overall parking demand at the development below both the Oakville By-Law requirements and existing observed rates.

It is also noted that many municipalities in Ontario offer significant reductions in their By-Law parking requirements when certain TDM measures are provided.

For example, the City of Hamilton Transportation Demand Management (TDM) Guide for Development mentions that the City may offer reduced parking requirements when developments are in proximity to transit corridors, as well as considering cash-in-lieu of parking programs, and other site-specific conditions. Relevant excerpts from the Hamilton Guide are provided in Appendix S.

Based on Table 3.D of the City of Hamilton TDM Guide outlining low- and high-priority TDM measures for mixed-use developments, a majority of the TDM measures are proposed to be included at the subject development, especially in relation to parking and active transportation facilities. As such, it would be expected that the subject development would qualify for parking reductions based on the TDM measures provided.

11.6 Conclusion

This section has reviewed and prepared a justification for the proposed visitor and retail parking supply at the site only since the resident parking proposed at the site meets the Oakville By-Law requirements.

A shared-use arrangement has been proposed for the visitor and retail parking supply that will provide flexibility to the supply to meet variation in the demand for of both uses throughout the day. As a result, a reduced shared rate of 0.08 visitor/retail spaces per unit is proposed at the site. This supply is generally expected to be adequate to meet the peak visitor demands at the site based on proxy survey data collected in combination with significant TDM measures proposed for the site that support the use of alternative modes of transportation to access the site.

Furthermore, any short-term peaks in visitor and retail demand above the proposed supply could easily be accommodated by paid vehicle parking along Lakeshore Road West and Jones Street, as well as free three-hour parking located on Nelson Street all located within less than a 5-minute walk from the site.

Therefore, it is not recommended to increase the proposed parking supply at the site for visitor and retail uses since the additional parking supply would be expected to be unused for the vast majority of their service life.

12.0 Conclusion

The findings and recommendations of our analysis are summarized as the following:

- Under 2022 existing conditions, the study road network operates with a Level of Service "D" or better, however capacity issues were identified for the eastbound through movements (during the A.M. peak) and westbound through movements (during the P.M. peak) at the intersections of Lakeshore Road West at Nelson Street and Lakeshore Road West at Jones Street, respectively.

- No major geometric roadway changes (lane configurations, widening) are proposed as part of the Lakeshore EA in the study area, with most design measures targeted at improving geometry at intersections and active transportation infrastructure. A conceptual drawing integrating the proposed site design into the envisioned Lakeshore EA elements has been provided in the report to demonstrate that the proposed site will not conflict with the EA but does require shifting the locations of the proposed on-street parking and pedestrian crosswalk along the site frontage.

- Under 2025 and 2030 future background traffic conditions, the intersection of Lakeshore Road West and Bronte Road operates similarly to existing conditions with acceptable operations. However, the capacity concerns at Lakeshore Road West at Jones Street and Lakeshore Road West and Nelson Street are expected to deteriorate, with the eastbound and westbound through movements exceeding capacity (during the A.M. and P.M. peaks, respectively), and causing delays to increase to a LOS "E".

- The proposed development is expected to generate 74 two-way (19 inbound and 54 outbound) trips during the weekday A.M. peak hour, and 95 (55 inbound and 40 outbound) trips during the weekday P.M. peak hour.

- Under 2025 and 2030 future total conditions, the intersection of Lakeshore Road West and Bronte Road is expected to continue operating with a Level of Service "B" or better. The capacity concerns for the eastbound and westbound through movements at Lakeshore Road West at Jones Street and Nelson Street are expected to continue though the future total scenario, with the two intersections operating with critical delays in one or both peak periods.

- Signal optimization measures can be implemented at the intersections of Lakeshore Road West at Jones Street and Lakeshore Road West at Nelson Street to improve capacity concerns.

- The proposed site access is expected to operate with minimal delays and well under capacity for the 2025 and 2030 horizon. Furthermore, the sight lines and access spacing of the proposed access are expected to be sufficient per the TAC GDGCR.

- Maneuvering assessments conducted at the site concluded that the expected design vehicles (LSU, waste truck, paratransit vehicle, and passenger vehicles) are expected to circulate the site without any expected encroachments or conflicts.

- Transportation Demand Management (TDM) measures, including "hard" measures such as adequate pedestrian facilities, avoiding parking oversupply, and "soft" measures such as wayfinding and educational measures and incentives were recommended at the site to reduce single-occupant vehicle trips and to promote non-motorized modes of travel and transit.

- The Parking Justification included in this report found that the proposed parking supply of 161 spaces is below the Town's By-Law requirements by 39 spaces for visitor and retail uses only. However, based on a review of proxy data, the site context, existing on-street parking and the continued development of Bronte Village into a mixed-use neighbourhood, the Town's By-Law requirements would be an overestimation of the required parking supply at the development and the proposed parking supply is expected to be adequate.

In consideration that the surrounding road network is expected to operate sufficiently with the recommendations contained herein, the proposed site access is also expected to operate with no operational concerns and with sufficient visibility and spacing. Furthermore, no issues with maneuverability were identified at the site access or internally and the site is expected to function with no issues. Additionally, given the land uses in the surrounding area, the proposed TDM measures at the site, as well as the proxy and ITE parking data presented in this report, the parking supply proposed at the development may also be supported. Therefore, the proposed development can be supported from a transportation perspective.

We trust that this report satisfies any transportation related concerns associated with the proposed development. Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.

Brandon Bradt, M. Eng., CEM, P.Eng.
Project Manager, Transportation

C.F. CROZIER & ASSOCIATES INC.

Alexander Fleming, MBA, P.Eng.
Associate

BB/cj

N:\2200\2239- Graywood\6282- 2365-2377 Lakeshore Rd\Reports\Traffic\2022.03.30 _(2239-6282) Lakeshore TIS_Final.docx

APPENDIX A

Town Correspondence

Farah Choudhury

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: Sunday, January 30, 2022 11:21 PM
To: Farah Choudhury
Subject: RE: Terms of Reference (2365-2377 Lakeshore Road West)

Follow Up Flag: Follow up
Flag Status: Completed

Hi Farah,

Thanks for providing TOR for staff review, please see comments in red against each section of the attached email.

Feel free to contact for any questions or assistance.

Thanks,
Syed

Syed Rizvi, M.Sc., P. Eng
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext.3981 | www.oakville.ca

From: Farah Choudhury <fchoudhury@cfcrozier.ca>
Sent: January 26, 2022 9:02 AM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Brandon Bradt <bbradt@cfcrozier.ca>
Subject: Terms of Reference (2365-2377 Lakeshore Road West)

Hello Syed,

I hope you have been well and staying safe. C.F. Crozier & Associates Inc. (Crozier) has been retained to prepare a Transportation Impact Study (TIS) for a 9-storey mixed-use condominium with approximately 179 residential units and 776 m^2 GFA of commercial space located at 2365-2377 Lakeshore Road West, in the Town of Oakville, Ontario. The Conceptual Site Plan for the proposed development is attached in this email for your review. - The minimum width of driveway at the property line should be 7.5 metres.

We are kindly requesting that you review the following Terms of Reference (ToR) and provide feedback regarding our scope of work and request for data. Furthermore, should you not be the appropriate person for correspondence, it would be very much appreciated to be directed to the appropriate contact.

Study Methodology for the Transportation Impact Study

The following intersections will be analyzed as part of the scope of study: Agreed

- Lakeshore Road West and Nelson Street
- Lakeshore Road West and Jones Street
- Lakeshore Road West and Bronte Road
- Lakeshore Road West and Site Access

We kindly request that the most recent traffic counts and signal timing plans available to the Town or Region at the above noted intersections be provided for this study. Additionally, please confirm the above noted intersections are sufficient for the study. The above noted intersections are sufficient within study area. Traffic data section is requested to provide latest TMC of the study intersections, response from traffic section is expected later this week.

Alternatively, we may consult specialty traffic counting firms we typically work with if recent counts are not available. Due to the impact of the ongoing global COVID-19 pandemic, travel patterns may not be reflective of typical commuter patterns. As such, please advise with regards to further steps should there be no applicable traffic data at the study intersections.

Analysis Periods and Scenarios

The weekday A.M. and P.M. peak hours for the 2022 existing conditions, as well as the build-out year of 2025 and 5-year horizon beyond build-out (2030) will be considered for future background and total traffic conditions. Please advise whether these horizon years are acceptable. Agreed

Background Developments

Please provide any background developments in the vicinity of the proposed development, as well as the associated transportation impact studies that should be included in our analysis, as available. We are aware of a couple projects in the area including at the southeast corner of Lakeshore and Bronte, which we expect to include as a background development. Please check town website for background developments in the study area, in case there are any issues feel free to send a separate email.

Future Background Growth Rate

An industry standard growth rate of 2% will be applied to the through movements along Lakeshore. Please advise whether the assumed growth rate is acceptable. Agreed

Trip Generation and Distribution

Trip Generation for the proposed development will be based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition for Multifamily Housing Mid-Rise (Land Use Code 221) and Shopping Center (40k – 150k) (Land Use Code 821). Agreed

The site generated trips will be distributed to the boundary road network using 2016 Transportation Tomorrow Survey (TTS) data. Agreed

Roadway and Transit Improvements

The analysis will also consider that Lakeshore Road West is currently undergoing an Environmental Assessment within the study area to make improvements to the existing Right-Of-Way. It is expected that these improvements will include infrastructure for cyclists and pedestrians with no additional vehicle lanes of travel based on the March 2018 report prepared by Amec Foster Wheeler. Please confirm the appropriate Right-of-Way assumptions to be used for the study as part of the future traffic conditions assessment. Regarding ROW and property requirement for road widening, please refer to the Lakeshore Road West preliminary drawings available at town website and previous correspondence between Vince Blosser – Supervisor Survey Section and developer representative.

Also kindly provide details of any more planned roadway/transit improvement in the study area beyond the above noted EA Study if applicable.

Analysis Procedures
Traffic analysis will be conducted per Halton Region TIS guidelines.
Weekday A.M. and P.M. peak hours will be analyzed using Synchro 11.0 analysis software, using Highway Capacity Manual (HCM) 2000 and 2010 procedures.
A peak hour factor of 0.92 will be used for the analysis. Agreed

Parking Justification Study
The development proposes a total of 181 parking space, which is below the Town of Oakville's Zoning By-law 2014-014. As such, the TIS will include a Parking Justification Study to support the parking proposed at the site. Not agreed, as per the town policy the site developer is encouraged to provide required on-site parking spaces based on Town's Zoning By-Law due to limited on-street parking spaces available on adjacent roadway.
The study will be as part of the submission along with the TIS and will require a review of proxy surveys at similar existing developments in the area. If available, kindly provide any previously collected data on parking utilization that is relevant to the site. Please also confirm that 2 proxy surveys would be sufficient to determine the current vehicle parking demand.
Parking demand for the proposed development will also be evaluated based on the Institute of Transportation Engineers (ITE) Parking Generation Manual, 5th Edition.

Transportation Demand Management (TDM) Opportunities
Per the Town of Oakville TIS guidelines, analysis of existing and future Transportation Demand Management (TDM) opportunities will be conducted to reduce single-occupant vehicle (SOV) trips and promote alternative modes of transportation including transit and active transportation as applicable. This section will also support any parking reduction proposed by the site from the existing Oakville By-law. Agreed

Summary
We request the following information for inclusion in the study, along with any comments that arise with regards to the above Terms of Reference.

- Please provide the most recent traffic counts available for the intersections of study. Already responded
- Please provide relevant growth rate(s) applicable to the roadways of study. Already responded
- Please provide any relevant background developments and the associated traffic impact studies that are to be included our analysis. Please check town website for background developments in the study area
- Please provide details of any planned roadway or transit improvements in the surrounding study area within the horizon years. Within study area, Lakeshore Road West widening is expected although timing of the construction is unknown since this section is not included in the capital budget program.

I hope the contents outlined in this email are acceptable. Should you have any questions or require any further information, please feel free to contact us.

Kind regards,

Farah Choudhury

Farah Choudhury | Engineering Intern
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

Farah Choudhury

Subject: FW: STP Data for Lakeshore Road
Attachments: Lakeshore @ Nelson (3-2-2022).pdf; Lakeshore Rd @ Jones St (3-2-2022).pdf; Bronte @ Lakeshore (3-2-2022).pdf

---

From: Andrew Cuvaj <andrew.cuvaj@oakville.ca>
Sent: Wednesday, March 2, 2022 4:43 PM
To: Farah Choudhury <fchoudhury@cfcrozier.ca>
Cc: Bill McManus <bill.mcmanus@oakville.ca>; Brandon Bradt <bbradt@cfcrozier.ca>
Subject: RE: STP Data for Lakeshore Road

Hi Farah,

Can I ask what is this study for? While we are running coordination at Bronte & Lakeshore, its only to have better controller over the intersection as opposed to it running free. In the Town we do not coordinate our intersections through BIA districts as random stopping allows local businesses to attempt to attract customers. There is currently no intersections running in coordination with Lakeshore Rd & Bronte Rd and local zero override is enabled, we do not clear through amber or red.

Your assumption for phase direction was correct, whoever did the last upload from the controller, didn't bother to check the phase labels from default. The side streets have detection which can extend the phases to the max time is needed, the Main Street (LSRD) is always Max

Attached are the updated timings that are currently out in the field

Thanks

From: Farah Choudhury <fchoudhury@cfcrozier.ca>
Sent: Wednesday, March 2, 2022 2:48 PM
To: Andrew Cuvaj <andrew.cuvaj@oakville.ca>
Cc: Bill McManus <bill.mcmanus@oakville.ca>; Brandon Bradt <bbradt@cfcrozier.ca>
Subject: RE: STP Data for Lakeshore Road

Good afternoon Andrew,

I hope your week has been going well! I was looking to follow up regarding the status of our inquiry into the signal timing plan data provided for the intersections along Lakeshore Road.

Please feel free to give me a call or email me if I can provide any additional information.

Kind regards,

Farah

Farah Choudhury, EIT | Engineering Intern
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

From: Brandon Bradt <bbradt@cfcrozier.ca>
Sent: Thursday, February 24, 2022 5:11 PM
To: Andrew Cuvaj <andrew.cuvaj@oakville.ca>
Cc: Bill McManus <bill.mcmanus@oakville.ca>; Farah Choudhury <fchoudhury@cfcrozier.ca>
Subject: RE: STP Data for Lakeshore Road

Hey Andrew,

For some additional info, please see the PDFs of the timing plans as received for the three intersections.

Thanks for your help with this,

Brandon

Brandon Bradt, M.Eng. CEM, P.Eng. | Project Manager
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

From: Andrew Cuvaj <andrew.cuvaj@oakville.ca>
Sent: Thursday, February 24, 2022 12:46 PM
To: Farah Choudhury <fchoudhury@cfcrozier.ca>
Cc: Brandon Bradt <bbradt@cfcrozier.ca>; Bill McManus <bill.mcmanus@oakville.ca>
Subject: RE: STP Data for Lakeshore Road

Hi Farah,

I will look into your inquiries, when did you recieve these timing plans and from who? These should have been updated when the request was made.

Thanks

-------- Original message --------
From: Farah Choudhury <fchoudhury@cfcrozier.ca>
Date: 2/23/22 4:53 PM (GMT-05:00)
To: Andrew Cuvaj <andrew.cuvaj@oakville.ca>
Cc: Brandon Bradt <bbradt@cfcrozier.ca>
Subject: FW: STP Data for Lakeshore Road

Hello Andrew,

I hope your week has been going well. I was looking to email you regarding the signal timing plans previously sent to us for the intersections of Lakeshore Road/Bronte, Lakeshore/Jones and Lakeshore/Nelson. The STP data was previously sent to us by Syed Rizvi, who directed us to contact you regarding our questions. I have attached the signal timing plans we received to this email, and I was looking to clarify some unclear parameters in the signal timing plans as the following:

Bronte Road/Lakeshore Rd W

- I believe the provided signal timing plan for the A.M. peak (Coordination Pattern #1) is incorrect, as there was inadequate maximum split time for the northbound and southbound (Bronte Road) phases to serve the walk, flashing don't walk, amber and all-red times.
    - To provide adequate phase time when a pedestrian call is made, I have moved 3 seconds of time from the eastbound through and eastbound left phases and given it to the north/south phases :

PHASING SETTINGS	1-EBL	2-WBTL	4-NBTL	6-EBTL	8-SBTL
Minimum Initial (s)	7.0	26.0	10.0	26.0	10.0
Minimum Split (s)	11.5	32.0	32.0	32.0	32.0
Maximum Split (s)	21.0	47.0	32.0	68.0	32.0
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.7	2.3	2.7	2.3
Lagging Phase?	☐	☑	—	—	—
Allow Lead/Lag Optimize?	☑	☑	—	—	—
Optimize Phs Weights - Delays	1.0	1.0	1.0	1.0	1.0
Vehicle Extension (s)	3.0	4.5	4.0	4.5	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	C-Max	None
Pedestrian Phase	☐	☑	☑	☑	☑
Walk Time (s)	—	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	—	15.0	16.0	15.0	16.0
Pedestrian Calls (#/hr)	—	0	0	0	0

- Please confirm that the above adjustment is acceptable since we typically don't assume that the pedestrian flash don't walk is being shown during the amber phase.
- We have assumed that northbound (in STP) = eastbound (in actuality) and vice versa is correct, as:

    - There is a northbound left-turn phase coded into the signal timing plan, however only the eastbound approach on Lakeshore Road has an advanced left-turn signal.
    - Traffic volumes are much higher along the east/west direction on Lakeshore as opposed to Bronte Road, though the signal timing plan provides more time to the north/south through movements.
- Please confirm the directions of the roadways in the STP.

Lakeshore Road/Jones Street and Lakeshore/Nelson Street

- The provided STPs only have one timing plan for all times of day and days of the week for these intersections, which show maximum splits of 35 seconds for all phases. We would expect the Lakeshore phases to be longer than the minor street phases and that the cycle length would be the same as Lakeshore and Bronte to allow for signal coordination.
- Additionally, the minimum splits for the Lakeshore phases exceed the maximum splits when considering pedestrian walk times.
- Please clarify the maximum splits for the movements at these intersections during the peak hours.
- Similar to above, I believe that the directions in the signal timing plan are flipped, and north = east (and vice versa) as the higher phasing time is provided to the "north/south" movement in the STP (whereas volumes are higher in the actual east/west direction along Lakeshore Road). Please confirm the directional assumption, as previously noted.

I hope my explanation above makes sense, however please feel free to give me a call or email if I can clarify anything else.

Kind regards,

Farah

Farah Choudhury, EIT | Engineering Intern
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

From: Brandon Bradt <bbradt@cfcrozier.ca>
Sent: Wednesday, February 23, 2022 1:51 PM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Farah Choudhury <fchoudhury@cfcrozier.ca>
Subject: RE: STP Data for Lakeshore Road

Thanks Syed.

We'll reach out to Andrew directly to hopefully get everything cleared up.

Cheers,
Brandon

Brandon Bradt, M.Eng. CEM, P.Eng. | Project Manager
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: February 23, 2022 1:35 PM
To: Brandon Bradt <bbradt@cfcrozier.ca>
Cc: Farah Choudhury <fchoudhury@cfcrozier.ca>
Subject: RE: STP Data for Lakeshore Road

Hi Brandon,

I can forward your request to the Traffic Operations section, and get back to you once I will hear from them. The other option which may be faster is to get in touch with Andrew Cuvaj from Traffic Operations, Andrew.cuvaj@oakville.ca to seek clarification regarding the STP.

Thanks,
Syed

From: Brandon Bradt <bbradt@cfcrozier.ca>
Sent: February 23, 2022 12:24 PM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Farah Choudhury <fchoudhury@cfcrozier.ca>
Subject: RE: STP Data for Lakeshore Road

Hey Syed,

Our main concern is the inadequate maximum phases to serve the pedestrian walk and don't walk times. We would like the City to clarify these issues, if possible. We're happy to discuss directly with the signal timing staff if that would solve things.

If this is not an option, we will make reasonable assumptions in our study for the existing conditions such that all the traffic volume in the counts can be served while also still providing for max splits that accommodate the pedestrian phases.

Kind Regards,
Brandon

Brandon Bradt, M.Eng. CEM, P.Eng. | Project Manager
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: Wednesday, February 23, 2022 1:12 PM
To: Farah Choudhury <fchoudhury@cfcrozier.ca>
Subject: RE: STP Data for Lakeshore Road

Hi Farah,

I under there could be some issues with the direction and layout of roads crossing Lakeshore Road. In such case I would advice you to have a site visit to observe the signal phasing and road orientation accordingly. I am sure it will give you fair idea about the STP.

Let me know if you have any further questions.

Thanks,
Syed

From: Farah Choudhury <fchoudhury@cfcrozier.ca>
Sent: February 23, 2022 11:17 AM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Brandon Bradt <bbradt@cfcrozier.ca>
Subject: RE: STP Data for Lakeshore Road

SECURITY CAUTION: This email originated from outside of The Town of Oakville. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Syed,

I hope that you had a great long weekend. I was looking to follow up regarding my previous email concerning the STP data/parameters previously sent for the intersections along Lakeshore Road (Lakeshore Road/Bronte, Lakeshore/Jones and Lakeshore/Nelson). If you could address the concerns I outlined in the email at your earliest convenience, it would be greatly appreciated.

Please feel free to email or give me a call if I can provide any additional clarification.

Kind regards,

Farah

Farah Choudhury, EIT | Engineering Intern
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

From: Farah Choudhury
Sent: Wednesday, February 16, 2022 2:43 PM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Brandon Bradt <bbradt@cfcrozier.ca>
Subject: STP Data for Lakeshore Road

Hello Syed,

I hope your week has been going well. I was looking to email you regarding the signal timing plans you previously sent for the intersections of Lakeshore Road/Bronte, Lakeshore/Jones and Lakeshore/Nelson. I wanted to clarify some unclear parameters in the signal timing plans as the following:

Bronte Road/Lakeshore Rd W

- I believe the directions on the signal timing plan is incorrect, considering that:
  - There is a northbound left-turn phase coded into the signal timing plan, however only the eastbound approach on Lakeshore Road has an advanced left-turn signal.
  - Traffic volumes are much higher along the east/west direction on Lakeshore as opposed to Bronte Road, though the signal timing plan provides more time to the north/south through movements.

- Although Lakeshore is geographically oriented north at the intersection with Bronte, it is generally understood that Lakeshore is oriented east-west, which may have caused the issue in the signal timing plan.
- Nonetheless, please confirm if the assumption to switch the directions in the signal timing plan as the following is correct:
    - Northbound (in STP) = Eastbound (in actuality)
    - Southbound (in STP) = Westbound (in actuality), and vice-versa
- Additionally, I also believe the provided signal timing plan for the A.M. peak (Coordination Pattern #1) is incorrect, as there was inadequate maximum split time for the northbound and southbound (Bronte Road) phases to serve the walk, flashing don't walk, amber and all-red times.
    - To provide adequate phase time when a pedestrian call is made, I have moved 3 seconds of time from the eastbound through and eastbound left phases and given it to the north/south phases :

PHASING SETTINGS	1-EBL	2-WBTL	4-NBTL	6-EBTL	8-SBTL
Minimum Initial (s)	7.0	26.0	10.0	26.0	10.0
Minimum Split (s)	11.5	32.0	32.0	32.0	32.0
Maximum Split (s)	21.0	47.0	32.0	68.0	32.0
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.7	2.3	2.7	2.3
Lagging Phase?	☐	☑	—	—	—
Allow Lead/Lag Optimize?	☑	☑	—	—	—
Optimize Phs Weights - Delays	1.0	1.0	1.0	1.0	1.0
Vehicle Extension (s)	3.0	4.5	4.0	4.5	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	C-Max	None
Pedestrian Phase	☐	☑	☑	☑	☑
Walk Time (s)	—	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	—	15.0	16.0	15.0	16.0
Pedestrian Calls (#/hr)	—	0	0	0	0

- Please confirm that the above adjustment is acceptable since we typically don't assume that the pedestrian flash don't walk is being shown during the amber phase.

Lakeshore Road/Jones Street and Lakeshore/Nelson Street

- Similar to the intersection with Bronte, I also believe that the directions in the signal timing plan are flipped, and north = east / south = west (and vice versa) as the higher phasing time is provided to the "north/south" movement in the STP whereas volumes are higher in the actual east/west direction along Lakeshore Road.
- The provided STPs only have one timing plan for all times of day and days of the week for these intersections, which show maximum splits of 35 seconds for all phases. We would expect the Lakeshore phases to be longer than the minor street phases and that the cycle length would be the same as Lakeshore and Bronte to allow for signal coordination.
- Additionally, the minimum splits for the Lakeshore phases exceed the maximum splits when considering pedestrian walk times.
- Please provide the maximum splits for the movements at these intersections during the peak hours.

I hope my explanation above makes sense, however please feel free to give me a call or email if I can clarify anything else.

Kind regards,

Farah

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: Saturday, February 12, 2022 9:41 PM
To: Farah Choudhury <fchoudhury@cfcrozier.ca>
Cc: Brandon Bradt <bbradt@cfcrozier.ca>
Subject: RE: TMC Data

Hi Farah,

See attached as requested.

Regards,
Syed

Syed Rizvi, M.Sc., P. Eng
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext.3981 | www.oakville.ca

From: Farah Choudhury <fchoudhury@cfcrozier.ca>
Sent: February 7, 2022 1:39 PM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Brandon Bradt <bbradt@cfcrozier.ca>
Subject: RE: TMC Data

Good afternoon Syed,

Thank you for your quick response. The TMC data provided is sufficient, and we will use a 2% growth rate on these volumes to reflect 2022 existing conditions.

I was looking to ask whether you could also provide the signal timing plans for the three intersections (Lakeshore/Bronte, Lakeshore/Jones and Lakeshore/Nelson) for our analysis?

Kind regards,

Farah

Farah Choudhury | Engineering Intern
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: Monday, February 7, 2022 1:15 PM
To: Farah Choudhury <fchoudhury@cfcrozier.ca>
Subject: FW: TMC Data

Hello Farah,

Attached are the 2019 TMCs for the three intersections for all peak periods and complete study reports. For the intersection of Bronte Rd & L S Rd, we do not have off-peak study in TES (I have attached the AM, PM & Full study reports). We have 2020 count only for the intersection of Bronte Rd & L S Rd.

I haven't provided you the reports because the traffic may have pandemic impact. Please advise if you need this 2020 count as well.

Thanks,
Syed

Andrew Cuvaj, C.E.T.
Traffic Operations Technologist
Roads & Works Operations
Town of Oakville | 905-845-6601, ext.3280 | f: 905-338-4227 | www.oakville.ca

APPENDIX B

Site Plan

2365-2377 Lakeshore Rd W

MARCH 14, 2022
ISSUED FOR ZBA COORDINATION - DRAFT SET

SURVEY

ARCHITECTURAL

A005	Coloured Renderings
A011	Context Plan, Statistics, Aerial and Templates
A012	Concept Plan
A013	Site Plan
A099	Level P2
A100	Level P1
A101	Level 1
A102	Level 2
A103	Level 3
A104	Level 4
A105	Level 5
A106	Level 6
A107	Level 7
A108	Level 8
A109	Level 9
A110	Level MPH
A111	Level Roof
A301	South Elevation
A302	East Elevation
A303	North Elevation
A304	West Elevation
A401	Building Sections
A402	Building Sections
A403	Building Sections

Architect

Diamond Schmitt Architects
384 Adelaide Street West, Suite 100
Toronto, ON M5V 1R7
T: (416)-862-8800

Client

Graywood Group
200 King Street West, Suite 1602, Box 42
Toronto, ON M5H 3T4
T: (416)-599-2431

Civil

Trafalagar Engineering
#1 - 481 Morden Road
Oakville, ON L6K 3W6
T: (905)-338-3366

Landscape

Adesso Design Inc
218 Locke Street South
Hamilton, ON L8P 4B4
T: (905)-526-8876

Planning

MHBC
442 Brant Street, Suite 204
Burlington, ON L7R 2G4
T: (905)-639-8686

Urban Design

Bousfields
3 Church Street, Suite 200
Toronto, ON M5E 1M2
T: (416)-947-9744

Traffic

Crozier Consulting Engineers
221 Yonge Street, Suite 301
Toronto, ON M5B 1M4
T: (416)-477-3392

Geotechnical/Environmental

Hemmera
1016B Sutton Drive, Suite 100
Burlington, ON L7L 6B8
T: (905)-825-4936

Archaeological

ASI Heritage
Address
Toronto, ON M5V 1R7
T: (XXX)-XXX-XXXX

Waste Management

R.J. Burnside & Associates Limited
Address
Toronto, ON M5V 1R7
T: (XXX)-XXX-XXXX

GRAYWOOD
AN INTELLIGENT MOVE

diamond schmitt

NOTE: ALL HEIGHTS (HT) RELATIVE TO ESTABLISHED GRADE: +82.43

66845
9600
21200
36045

PROPERTY LINE

JULIETTES AT LVL 3
2-STOREYS
HT 8.10
90.53

TERRACES AT LVL 4
3-STOREYS
HT 11.10
93.53

TERRACES AT LVL 5
4-STOREYS
HT 14.10
96.53

TERRACES AT LVL6
5-STOREYS
HT 17.10
99.53

TERRACES AT LVL 7
6-STOREYS
HT 20.10
102.53

TERRACES AT LVL 8
7-STOREYS
HT 23.10
105.53

TERRACES AT LVL 9
8-STOREYS
HT 26.10
108.53

9-STOREYS
HT 29.75
112.18

ACCESS TO LOADING

ACCESS TO UNDERGROUND PARKING STRUCTURE

EXIT STAIR FROM PARKING

BALCONY BELOW AT LVL 5

BALCONY BELOW AT LVL 7

BALCONY BELOW AT LVL 8

BALCONY BELOW AT LVL 9

EXIT STAIRS

OPEN TO BELOW
9-STOREYS
HT 29.75
112.18

VISITOR BICYCLE PARKING (7) + RETAIL BICYCLE PARKING (2)

RETAIL PARKING STALLS (6)

EXIT STAIR

ROOF OF MECHANICAL PENTHOUSE
HT 33.35
115.78

ELEVATOR OVERRUN

PRIVATE ROOFTOP TERRACES

DRIVE AISLE BELOW AT GRADE

TERRACES AT LEVEL 9
8-STOREYS

TERRACES AT LEVEL 7
6-STOREYS

TERRACE AT LVL 6
5-STOREY

TERRACE AT LVL 5
4-STOREY

RESIDENTIAL ENTRANCE

RETAIL ACCESS

ROAD ALLOWANCE

PROPERTY LINE

2351 LAKESHORE RD W
(EXISTING 4-STOREY)

2361 LAKESHORE RD W
(EXISTING 1-STOREY)

2359 LAKESHORE RD W
(EXISTING 2-STOREY)

2353 LAKESHORE RD W
(EXISTING 3-STOREY)

2381 LAKESHORE RD W
(EXISTING 1-1/2 STOREY)

2385-2387 LAKESHORE RD W
(EXISTING 2-STOREY)

LAKESHORE ROAD WEST

2390 LAKESHORE ROAD W
(EXISTING 1-STOREY)

SURFACE PARKING LOT
AT 2390 LAKESHORE ROAD W

SURFACE PARKING LOT
AT 2368 LAKESHORE ROAD W

2368 LAKESHORE ROAD W
(EXISTING 2-STOREY)

2342-2364 LAKESHORE ROAD W
(EXISTING 3-STOREY)

NOT FOR CONSTRUCTION

2365-2377 Lakeshore Rd W

221001

Concept Plan
1 : 150

A012

ISSUED

No.	Date	Description

diamond schmitt

2365-2377 Lakeshore Rd W

10-Mar-22

Site Area (sm) = 3,742.2
FSI*= 3.41

SUBMISSION	GCA (m2)	GCA (ft2)	Res Floor Area(m2)	Res Floor Area(ft2)	Interior Amenity Net (m2)	Interior Amenity Net (ft2)	Exterior Amenity FA (m2)	Exterior Amenity FA (ft2)	Non-Res Floor Area (m2)	Non-Res Floor Area (ft2)	Total Floor Area (m2) ***	Total Floor Area (ft2) ***	Total Net Floor Area (m2) ***	Total Net Floor Area (ft2) ***	Long Term Parking Stalls	Short Term Parking Stalls	Long Term Bicycle Racks (RESI)	Short Term Bicycle Racks (RESI.)	Bicycle Racks (Non-Res)	Bicycle Racks Net Area (m2)	Bicycle Rack Net Area (ft2)
LEVEL P2	3378	36,358		-						-		-			86						
LEVEL P1	3378	36,358		-						-		-			78		24	7	2	0	0
LEVEL 1	1,732	18,647	944	10,165	220	2,367	334	3,599	673	7,246	1,617	17,411	1,137	12,241		6				25	266
LEVEL 2	1,825	19,640	1,825	19,640		-		-		-	1,825	19,640	1,625	17,495							
LEVEL 3	1,934	20,821	1,934	20,821		-		-	-	-	1,934	20,821	1,740	18,724							
LEVEL 4	1,871	20,136	1,871	20,136		-		-	-	-	1,871	20,136	1,679	18,068							
LEVEL 5	1,758	18,923	1,758	18,923		-		-	-	-	1,758	18,923	1,563	16,829							
LEVEL 6	1,624	17,486	1,624	17,486		-		-	-	-	1,624	17,486	1,448	15,589							
LEVEL 7	1,440	15,506	1,440	15,506		-		-	-	-	1,440	15,506	1,283	13,815							
LEVEL 8	1,377	14,825	1,377	14,825		-		-	-	-	1,377	14,825	1,223	13,163							
LEVEL 9	1,180	12,705	1,180	12,705		-		-	-	-	1,180	12,705	1,029	11,076							
MPH	490	5,272	45	481		-		-		-	45	481	32	345							
	21,987	236,672	13,999	150,682	220	2,367	334	3,599	673	7,246	14,672	157,928	12,759	137,342	**164**	**6**	**24**	**7**	**2**	**25**	**266**
															TOTAL =	**170**	**TOTAL =**	**31**	**2**		
															0.91	0.03					

SUITE MIX

1BED	1BED+D	2 BED	2 BED+D	3 BED	Total	
0	0	0	0	0	0	**LEVEL 1**
10	9	2	5	0	26	**LEVEL 2**
10	10	3	4	1	28	**LEVEL 3**
12	7	2	6	0	27	**LEVEL 4**
11	7	3	5	0	26	**LEVEL 5**
2	12	2	4	2	22	**LEVEL 6**
3	5	5	4	2	19	**LEVEL 7**
2	3	5	4	3	17	**LEVEL 8**
4	2	4	4	1	15	**LEVEL 9**
30%	31%	14%	20%	5%		%
54	55	26	36	9	180	**TOTAL**
30	30	25	10	5		

1BED/1BED+D	2BED/2BED+D	3BED		
61%	34%	5%		%
109	62	9	180	**TOTAL**

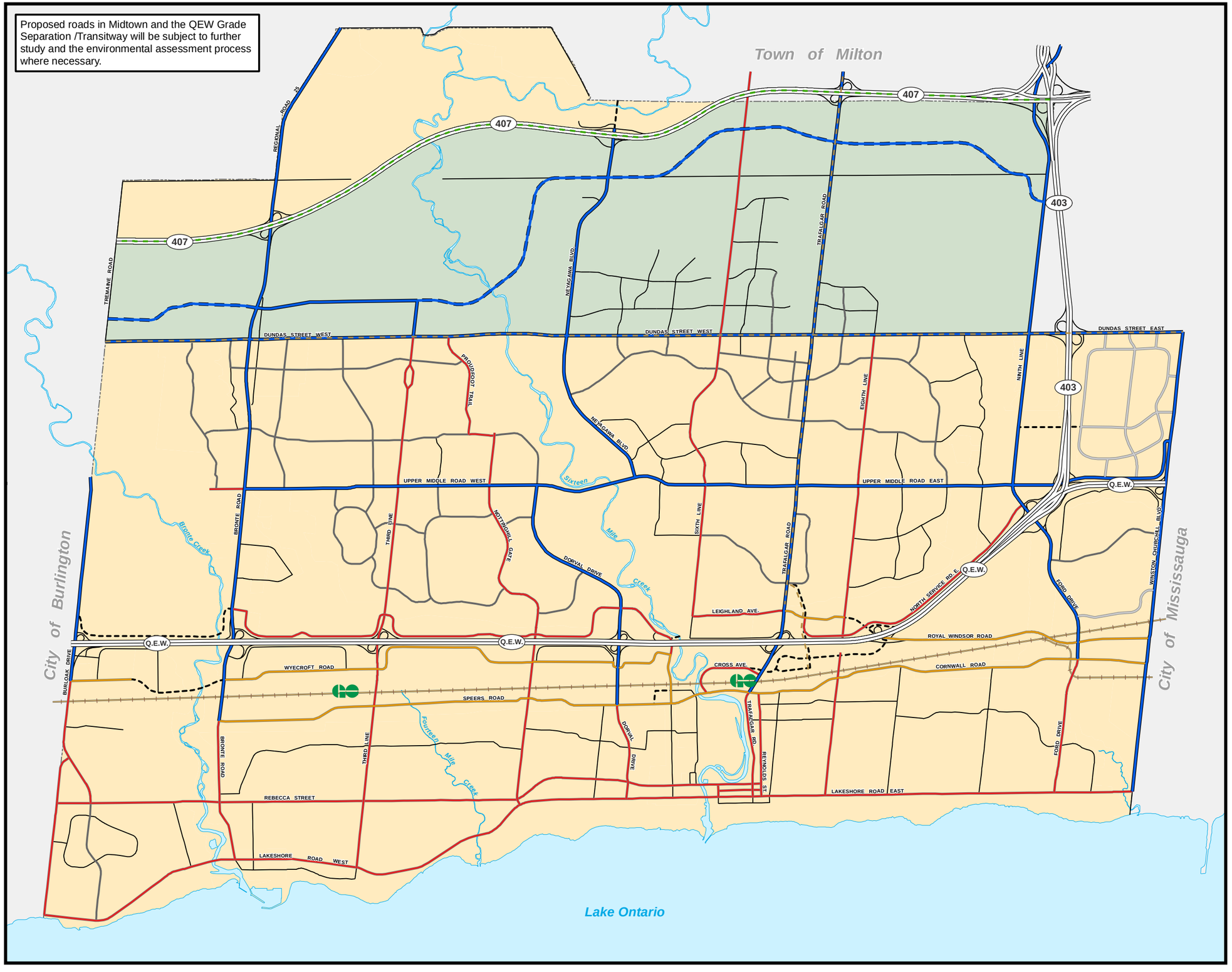
UNITS BELOW 75sm	UNITS ABOVE 75sm		
172	8	180	**TOTAL**

Notes:
* As defined by by-law 2014-014
*** Floor Area exemption as per by-law 2014-014
**** Saleable area for residential suites

APPENDIX C

Official Plan Excerpts

Proposed roads in Midtown and the QEW Grade Separation /Transitway will be subject to further study and the environmental assessment process where necessary.



SCHEDULE C
TRANSPORTATION PLAN

- PROVINCIAL HIGHWAY
- MAJOR ARTERIAL
- MULTI-PURPOSE ARTERIAL
- MINOR ARTERIAL
- INDUSTRIAL ARTERIAL
- MAJOR COLLECTOR
- MINOR COLLECTOR
- FUTURE ROADS
- TRANSITWAY
- BUSWAY CORRIDOR
- RAILWAY LINE
- MAJOR TRANSIT STATION
- LANDS NOT SUBJECT TO THE POLICIES OF THIS PLAN

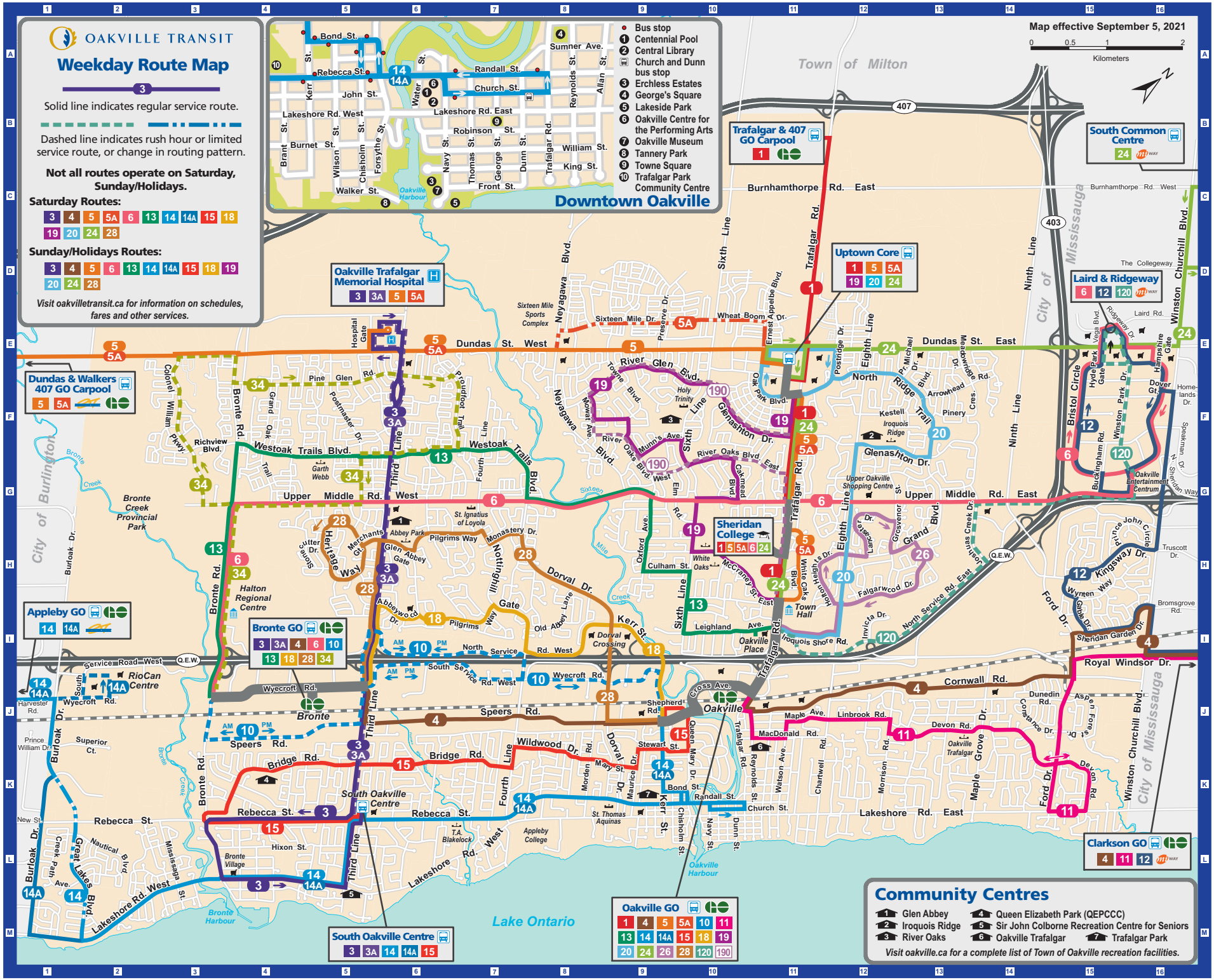
1:50,000

August 31, 2021

S:\DEPARTME\PLANNING\GIS DATA DEVELOPMENT\OFFICIAL PLAN\OP2008\LIVABLE OAKVILLE MXD...SCHEDULE C.mxd

APPENDIX D

Transit Schedules and Maps


OAKVILLE TRANSIT
Weekday Route Map
3
Solid line indicates regular service route.
Dashed line indicates rush hour or limited service route, or change in routing pattern.
Not all routes operate on Saturday, Sunday/Holidays.
Saturday Routes:
3 4 5 5A 6 13 14 14A 15 18 19 20 24 28
Sunday/Holidays Routes:
3 4 5 6 13 14 14A 15 18 19 20 24 28
Visit oakvilletransit.ca for information on schedules, fares and other services.
Downtown Oakville
Bus stop
1 Centennial Pool
2 Central Library
Church and Dunn bus stop
3 Erchless Estates
4 George's Square
5 Lakeside Park
6 Oakville Centre for the Performing Arts
7 Oakville Museum
8 Tannery Park
9 Towne Square
10 Trafalgar Park Community Centre
Map effective September 5, 2021
Kilometers
Town of Milton
City of Mississauga
Lake Ontario
Trafalgar & 407 GO Carpool
Uptown Core
South Common Centre
Laird & Ridgeway
Oakville Trafalgar Memorial Hospital
Dundas & Walkers 407 GO Carpool
Sheridan College
Appleby GO
Bronte GO
Oakville GO
South Oakville Centre
Clarkson GO
Community Centres
1 Glen Abbey
2 Iroquois Ridge
3 River Oaks
4 Queen Elizabeth Park (QEPCCC)
5 Sir John Colborne Recreation Centre for Seniors
6 Oakville Trafalgar
7 Trafalgar Park
Visit oakville.ca for a complete list of Town of Oakville recreation facilities.

Oakville Transit service schedules

Effective September 5, 2021 until further notice

For latest information, visit our website at oakvilletransit.ca
or follow us on social media @oakvilletransit

School specials will operate. Visit our website for maps and schedules.

Senior specials, charters and Late Night Service will not operate.

1 Trafalgar

	Timepoint	Oakville GO (Depart)	Sheridan College	Trafalgar & Upper Middle	Uptown Core	Trafalgar / 407 GO Carpool (Arr.)	Trafalgar / 407 GO Carpool (Dep.)	Uptown Core	Trafalgar & Upper Middle	Sheridan College	Oakville GO (Arrive)
Monday to Friday											
		To Highway 407 GO Carpool					**To Oakville GO**				
a.m.		--	--	--	--	--	5:57	6:03	6:09	6:12	6:21
		5:58	6:07	6:10	6:18	6:26	6:27	6:33	6:39	6:42	6:51
		6:58	7:07	7:10	7:18	7:26	7:27	7:33	7:39	7:42	7:51
		7:58	8:07	8:10	8:18	8:26	8:27	8:33	8:39	8:42	8:51
		8:58	9:07	9:10	9:18	9:26	9:27	9:33	9:39	9:42	9:51
		and every 60 minutes until									
p.m.		6:58	7:07	7:10	7:18	7:26	7:27	7:33	7:39	7:42	7:51
		7:58	8:07	8:10	8:18	8:26	8:27	8:33	8:39	8:42	8:51
		8:58	9:07	9:10	9:18	9:26	9:27	9:33	9:39	9:42	9:51
		9:58	10:07	10:10	10:18	10:26	10:27	10:33	10:39	10:42	10:51
		10:58	11:07	11:10	11:18	11:26	11:27	11:33	11:39	11:42	11:51

3 Third Line

	Timepoint	South Oakville Centre (Depart)	Bronte GO (Northbound)	Third Line & Upper Middle	Hospital (Arrive)	Hospital (Depart)	Third Line & Upper Middle	Bronte GO (Southbound)	Third Line & Rebecca	Lakeshore & Bronte	South Oakville Centre (Arrive)
Monday to Friday											
		To Hospital				**To South Oakville Centre**					
a.m.		--	--	--	--	5:51	5:59	6:06	6:11	6:15	6:25
		5:58	6:06	6:13	6:21	6:21	6:29	6:36	6:41	6:45	6:55
		6:28	6:36	6:43	6:51	6:51	6:59	7:06	7:11	7:15	7:25
		6:58	7:06	7:13	7:21	7:21	7:29	7:36	7:41	7:45	7:55
		7:28	7:36	7:43	7:51	7:51	7:59	8:06	8:11	8:15	8:25
		7:58	8:06	8:13	8:21	8:21	8:29	8:36	8:41	8:45	8:55
		8:28	8:36	8:43	8:51	8:51	8:59	9:06	9:11	9:15	9:25
		8:58	9:06	9:13	9:21	9:21	9:29	9:36	9:41	9:45	9:55
		9:28	9:36	9:43	9:51	9:51	9:59	10:06	10:11	10:15	10:25
		and every 30 minutes until									
p.m.		2:58	3:06	3:13	3:21	3:21	3:29	3:36	3:41	3:45	3:55
		3:28	3:36	3:43	3:51	3:51	3:59	4:06	4:11	4:15	4:25
		3:58	4:06	4:13	4:21	4:21	4:29	4:36	4:41	4:45	4:55
		4:28	4:36	4:43	4:51	4:51	4:59	5:06	5:11	5:15	5:25
		4:58	5:06	5:13	5:21	5:21	5:29	5:36	5:41	5:45	5:55
		5:28	5:36	5:43	5:51	5:51	5:59	6:06	6:11	6:15	6:25
		5:58	6:06	6:13	6:21	6:21	6:29	6:36	6:41	6:45	6:55
		6:28	6:36	6:43	6:51	6:51	6:59	7:06	7:11	7:15	7:25
		6:58	7:06	7:13	7:21	7:21	7:29	7:36	7:41	7:45	7:55
		7:37	7:45	7:52	8:00	8:00	8:08	8:15	8:20	8:24	8:34
		8:37	8:45	8:52	9:00	9:00	9:08	9:15	9:20	9:24	9:34
		9:37	9:45	9:52	10:00	10:00	10:08	10:15	10:20	10:24	10:34
		10:37	10:45	10:52	11:00	11:10	11:18	11:24	11:29	11:33	11:40
		11:40	11:47	11:52	12:00	--	--	--	--	--	--

3 Third Line

	Timepoint	South Oakville Centre (Depart)	Bronte GO (Northbound)	Third Line & Upper Middle	Hospital (Arrive)	Hospital (Depart)	Third Line & Upper Middle	Bronte GO (Southbound)	Third Line & Rebecca	Lakeshore & Bronte	South Oakville Centre (Arrive)
Saturday											
		To Hospital				**To South Oakville Centre**					
a.m.		--	--	--	--	7:00	7:08	7:15	7:20	7:24	7:34
		7:37	7:45	7:52	8:00	8:00	8:08	8:15	8:20	8:24	8:34
		8:37	8:45	8:52	9:00	9:00	9:08	9:15	9:20	9:24	9:34
		9:37	9:45	9:52	10:00	10:00	10:08	10:15	10:20	10:24	10:34
		and every 60 minutes until									
p.m.		8:37	8:45	8:52	9:00	9:00	9:08	9:15	9:20	9:24	9:34
		9:37	9:45	9:52	10:00	10:00	10:08	10:15	10:20	10:24	10:34
		10:37	10:45	10:52	11:00	11:10	11:18	11:24	11:29	11:33	11:40
		11:40	11:47	11:52	12:00	--	--	--	--	--	--
Sunday / Holidays											
a.m.		--	--	--	--	8:00	8:08	8:15	8:20	8:24	8:34
		8:37	8:45	8:52	9:00	9:00	9:08	9:15	9:20	9:24	9:34
		9:37	9:45	9:52	10:00	10:00	10:08	10:15	10:20	10:24	10:34
		10:37	10:45	10:52	11:00	11:00	11:08	11:15	11:20	11:24	11:34
		and every 60 minutes until									
p.m.		4:37	4:45	4:52	5:00	5:00	5:08	5:15	5:20	5:24	5:34
		5:37	5:45	5:52	6:00	6:00	6:08	6:15	6:20	6:24	6:34
		6:37	6:45	6:52	7:00	7:00	7:08	7:15	7:20	7:24	7:34
		7:37	7:45	7:52	8:00	--	--	--	--	--	--

For latest information, visit our website at oakvilletransit.ca
or follow us on social media @oakvilletransit

Info Line 905-815-2020 care-A-van 905-337-9222

While every effort will be made to operate our service to these timetables, all schedules including bus stop times and transfer times are based on normal traffic and weather conditions and as such are subject to change. Oakville Transit will not be responsible for any loss, damage or inconvenience that may result from any errors, omissions or service delays.

OAKVILLE TRANSIT

Oakville Transit service schedules

Effective September 5, 2021 until further notice

14 14A Lakeshore West

Timepoint	Route	Oakville GO (Depart)	Speers & Kerr	Church & Dunn	Rebecca & Kerr	South Oakville Centre (Ar.)	South Oakville Centre (Dp.)	Lakeshore & Bronte	Lakeshore & Great Lakes	Great Lakes & Rebecca	Burloak & Rebecca	RioCan Centre	Harvester & Burloak	Appleby GO (Arrive)
Monday to Friday														
	To Appleby GO – 14 via Great Lakes Blvd., 14A via Burloak Dr.													
a.m.	14A	6:05	6:08	6:17	6:20	6:28	6:34	6:41	6:44	--	6:48	--	6:52	7:01
	14	**6:37**	**6:41**	**6:50**	**6:53**	**7:01**	**7:04**	**7:11**	**7:14**	**7:17**	**--**	**--**	**7:21**	**7:30**
	14A	6:52	6:56	7:05	7:08	7:16	7:19	7:26	7:29	--	7:33	--	7:37	7:46
	14	**7:07**	**7:11**	**7:20**	**7:23**	**7:31**	**7:34**	**7:41**	**7:44**	**7:47**	**--**	**--**	**7:51**	**8:00**
	14A	7:22	7:26	7:35	7:38	7:46	7:49	7:56	7:59	--	8:03	8:08	8:10	8:19
	14	**7:37**	**7:41**	**7:50**	**7:53**	**8:01**	**8:04**	**8:11**	**8:14**	**8:17**	**--**	**--**	**8:21**	**8:30**
	14A	7:52	7:56	8:05	8:08	8:16	8:19	8:26	8:29	--	8:33	8:38	8:40	8:49
	14	**8:07**	**8:11**	**8:20**	**8:23**	**8:31**	**8:34**	**8:41**	**8:44**	**8:47**	**--**	**--**	**8:51**	**9:00**
	14A	8:22	8:26	8:35	8:38	8:46	8:49	8:56	8:59	--	9:03	9:08	9:10	9:19
	14	**8:37**	**8:41**	**8:50**	**8:53**	**9:01**	**9:04**	**9:11**	**9:14**	**9:17**	**--**	**--**	**9:21**	**9:30**
	14A	8:52	8:56	9:05	9:08	9:16	9:19	9:26	9:29	--	9:33	9:38	9:40	9:49
	14	**9:22**	**9:26**	**9:35**	**9:38**	**9:46**	**9:49**	**9:56**	**9:59**	**10:02**	**--**	**--**	**10:06**	**10:15**
	14A	9:52	9:56	10:05	10:08	10:16	10:19	10:26	10:29	--	10:33	10:38	10:40	10:49
	14	**10:22**	**10:26**	**10:35**	**10:38**	**10:46**	**10:49**	**10:56**	**10:59**	**11:02**	**--**	**--**	**11:06**	**11:15**
				and alternating – every 30 minutes						***every 60 minutes***			***every 26/34 min.***	
p.m.	**14**	**3:22**	**3:26**	**3:35**	**3:38**	**3:46**	**3:49**	**3:56**	**3:59**	**4:02**	**--**	**--**	**4:06**	**4:15**
	14A	3:52	3:56	4:05	4:08	4:16	4:19	4:26	4:29	--	4:33	4:38	4:40	4:49
	14	**4:22**	**4:26**	**4:35**	**4:38**	**4:46**	**4:49**	**4:56**	**4:59**	**5:02**	**--**	**--**	**5:06**	**5:15**
	14A	4:37	4:41	4:50	4:53	5:01	5:04	5:11	5:14	--	5:18	5:23	5:25	5:34
	14	**4:52**	**4:56**	**5:05**	**5:08**	**5:16**	**5:19**	**5:26**	**5:29**	**5:32**	**--**	**--**	**5:36**	**5:45**
	14A	5:07	5:11	5:20	5:23	5:31	5:34	5:41	5:44	--	5:48	5:53	5:55	6:04
	14	**5:22**	**5:26**	**5:35**	**5:38**	**5:46**	**5:49**	**5:56**	**5:59**	**6:02**	**--**	**--**	**6:06**	**6:15**
	14A	5:37	5:41	5:50	5:53	6:01	6:04	6:11	6:14	--	6:18	6:23	6:25	6:34
	14	**5:52**	**5:56**	**6:05**	**6:08**	**6:16**	**6:19**	**6:26**	**6:29**	**6:32**	**--**	**--**	**6:36**	**6:45**
	14A	6:07	6:11	6:20	6:23	6:31	6:34	6:41	6:44	--	6:48	6:53	6:55	7:04
	14	**6:22**	**6:26**	**6:35**	**6:38**	**6:46**	**6:49**	**6:56**	**6:59**	**7:02**	**--**	**--**	**7:06**	**7:15**
	14A	6:37	6:41	6:50	6:53	7:01	7:04	7:11	7:14	--	7:18	7:23	7:25	7:34
	14	**6:52**	**6:56**	**7:05**	**7:08**	**7:16**	**7:19**	**7:26**	**7:29**	**7:32**	**--**	**--**	**7:36**	**7:45**
	14A	7:07	7:11	7:20	7:23	7:31	7:34	7:41	7:44	--	7:48	7:53	7:55	8:04
	14	**7:37**	**7:41**	**7:50**	**7:53**	**8:01**	**8:04**	**8:11**	**8:14**	**8:17**	**--**	**--**	**8:21**	**8:30**
	14A	8:07	8:11	8:20	8:23	8:31	8:34	8:41	8:44	--	8:48	8:53	8:55	9:04
	14A	9:07	9:11	9:20	9:23	9:31	9:34	9:41	9:44	--	9:48	9:53	9:55	10:04
	14A	10:07	10:11	10:20	10:23	10:31	10:34	10:41	10:44	--	10:48	10:53	10:55	11:04
	14A	11:40	11:44	11:53	11:56	12:04	12:04	12:11	12:14	--	12:18	*Ends at Burloak/Rebecca*		
Saturday														
a.m.	14A	7:10	7:14	7:23	7:26	7:34	7:37	7:44	7:47	--	7:51	7:56	7:58	8:07
	14	**7:40**	**7:44**	**7:53**	**7:56**	**8:04**	**8:07**	**8:14**	**8:17**	**8:20**	**--**	**--**	**8:24**	**8:33**
	14A	8:10	8:14	8:23	8:26	8:34	8:37	8:44	8:47	--	8:51	8:56	8:58	9:07
	14	**8:40**	**8:44**	**8:53**	**8:56**	**9:04**	**9:07**	**9:14**	**9:17**	**9:20**	**--**	**--**	**9:24**	**9:33**
				and alternating – every 30 minutes						***every 60 minutes***			***every 26/34 min.***	
p.m.	14A	6:10	6:14	6:23	6:26	6:34	6:37	6:44	6:47	--	6:51	6:56	6:58	7:07
	14	**6:40**	**6:44**	**6:53**	**6:56**	**7:04**	**7:07**	**7:14**	**7:17**	**7:20**	**--**	**--**	**7:24**	**7:33**
	14A	7:10	7:14	7:23	7:26	7:34	7:37	7:44	7:47	--	7:51	7:56	7:58	8:07
	14	**7:40**	**7:44**	**7:53**	**7:56**	**8:04**	**8:07**	**8:14**	**8:17**	**8:20**	**--**	**--**	**8:24**	**8:33**
	14A	8:10	8:14	8:23	8:26	8:34	8:37	8:44	8:47	--	8:51	8:56	8:58	9:07
	14A	9:10	9:14	9:23	9:26	9:34	9:37	9:44	9:47	--	9:51	9:56	9:58	10:07
	14A	10:10	10:14	10:23	10:26	10:34	10:37	10:44	10:47	--	10:51	10:56	10:58	11:07
	14A	11:40	11:44	11:53	11:56	12:04	12:04	12:11	12:14	--	12:18	*Ends at Burloak/Rebecca*		
Sunday / Holidays														
a.m.	14A	8:10	8:14	8:23	8:26	8:34	8:37	8:44	8:47	--	8:51	8:56	8:58	9:07
	14	**8:40**	**8:44**	**8:53**	**8:56**	**9:04**	**9:07**	**9:14**	**9:17**	**9:20**	**--**	**--**	**9:24**	**9:33**
	14A	9:10	9:14	9:23	9:26	9:34	9:37	9:44	9:47	--	9:51	9:56	9:58	10:07
	14	**9:40**	**9:44**	**9:53**	**9:56**	**10:04**	**10:07**	**10:14**	**10:17**	**10:20**	**--**	**--**	**10:24**	**10:33**
				and alternating – every 30 minutes						***every 60 minutes***			***every 26/34 min.***	
p.m.	**14**	**5:40**	**5:44**	**5:53**	**5:56**	**6:04**	**6:07**	**6:14**	**6:17**	**6:20**	**--**	**--**	**6:24**	**6:33**
	14A	6:10	6:14	6:23	6:26	6:34	6:37	6:44	6:47	--	6:51	6:56	6:58	7:07
	14	**6:40**	**6:44**	**6:53**	**6:56**	**7:04**	**7:07**	**7:14**	**7:17**	**7:20**	**--**	**--**	**7:24**	**7:33**
	14A	7:10	7:14	7:23	7:26	7:34	7:37	7:44	7:47	--	7:51	7:56	7:58	8:07

For latest information, visit our website at oakvilletransit.ca or follow us on social media @oakvilletransit

Info Line 905-815-2020 care-A-van 905-337-9222

While every effort will be made to operate our service to these timetables, all schedules including bus stop times and transfer times are based on normal traffic and weather conditions and as such are subject to change. Oakville Transit will not be responsible for any loss, damage or inconvenience that may result from any errors, omissions or service delays.

OAKVILLE TRANSIT

Oakville Transit service schedules

Effective September 5, 2021 until further notice

14 14A Oakville GO

Timepoint	Route	Appleby GO (Depart)	Harvester & Appleby	Harvester & Burloak	RioCan Centre	Burloak & New	Great Lakes & Rebecca	Lakeshore & Great Lakes	Lakeshore & Bronte	South Oakville Centre (Ar.)	South Oakville Centre (Dp.)	Rebecca & Kerr	Church & Dunn	Bond & Kerr	Oakville GO (Arrive)
Monday to Friday															
	To Oakville GO – 14 via Great Lakes Blvd., 14A via Burloak Dr.														
a.m.	14A	--	--	--	--	--	--	--	--	--	--	--	5:52	5:56	6:05
	14	--	--	--	--	--	--	--	--	--	**6:09**	**6:16**	**6:22**	**6:26**	**6:35**
	14A	*Begins at Burloak & Prince William at 6:03.*				6:05	--	6:09	6:12	6:19	6:24	6:31	6:37	6:41	6:50
	14	**6:05**	**6:09**	**6:12**	--	--	**6:15**	**6:18**	**6:21**	**6:28**	**6:39**	**6:46**	**6:52**	**6:56**	**7:05**
	14A	6:25	6:29	6:32	--	6:35	--	6:39	6:42	6:49	6:54	7:01	7:07	7:11	7:20
	14	**6:40**	**6:44**	**6:47**	--	--	**6:51**	**6:54**	**6:57**	**7:04**	**7:09**	**7:16**	**7:22**	**7:26**	**7:35**
	14A	6:55	6:59	7:02	--	7:05	--	7:09	7:12	7:19	7:24	7:31	7:37	7:41	7:50
	14	**7:10**	**7:14**	**7:17**	--	--	**7:21**	**7:24**	**7:27**	**7:34**	**7:39**	**7:46**	**7:52**	**7:56**	**8:05**
	14A	7:25	7:29	7:32	--	7:35	--	7:39	7:42	7:49	7:54	8:01	8:07	8:11	8:20
	14	**7:40**	**7:44**	**7:47**	--	--	**7:51**	**7:54**	**7:57**	**8:04**	**8:09**	**8:16**	**8:22**	**8:26**	**8:35**
	14A	7:55	7:59	8:02	--	8:05	--	8:09	8:12	8:19	8:24	8:31	8:37	8:41	8:50
	14	**8:10**	**8:14**	**8:17**	--	--	**8:21**	**8:24**	**8:27**	**8:34**	**8:39**	**8:46**	**8:52**	**8:56**	**9:05**
	14A	8:19	8:23	8:26	8:29	8:35	--	8:39	8:42	8:49	8:54	9:01	9:07	9:11	9:20
	14	**8:55**	**8:59**	**9:02**	--	--	**9:06**	**9:09**	**9:12**	**9:19**	**9:24**	**9:31**	**9:37**	**9:41**	**9:50**
	14A	9:19	9:23	9:26	9:29	9:35	--	9:39	9:42	9:49	9:54	10:01	10:07	10:11	10:20
	14	**9:55**	**9:59**	**10:02**	--	--	**10:06**	**10:09**	**10:12**	**10:19**	**10:24**	**10:31**	**10:37**	**10:41**	**10:50**
		and alternating – every 24/36 minutes			***every 60 minutes***			***every 30 minutes***							
p.m.	14A	3:19	3:23	3:26	3:29	3:35	--	3:39	3:42	3:49	3:54	4:01	4:07	4:11	4:20
	14	**3:55**	**3:59**	**4:02**	--	--	**4:06**	**4:09**	**4:12**	**4:19**	**4:24**	**4:31**	**4:37**	**4:41**	**4:50**
	14A	4:19	4:23	4:26	4:29	4:35	--	4:39	4:42	4:49	4:54	5:01	5:07	5:11	5:20
	14	**4:40**	**4:44**	**4:47**	--	--	**4:51**	**4:54**	**4:57**	**5:04**	**5:09**	**5:16**	**5:22**	**5:26**	**5:35**
	14A	4:49	4:53	4:56	4:59	5:05	--	5:09	5:12	5:19	5:24	5:31	5:37	5:41	5:50
	14	**5:10**	**5:14**	**5:17**	--	--	**5:21**	**5:24**	**5:27**	**5:34**	**5:39**	**5:46**	**5:52**	**5:56**	**6:05**
	14A	5:19	5:23	5:26	5:29	5:35	--	5:39	5:42	5:49	5:54	6:01	6:07	6:11	6:20
	14	**5:40**	**5:44**	**5:47**	--	--	**5:51**	**5:54**	**5:57**	**6:04**	**6:09**	**6:16**	**6:22**	**6:26**	**6:35**
	14A	5:49	5:53	5:56	5:59	6:05	--	6:09	6:12	6:19	6:24	6:31	6:37	6:41	6:50
	14	**6:10**	**6:14**	**6:17**	--	--	**6:21**	**6:24**	**6:27**	**6:34**	**6:39**	**6:46**	**6:52**	**6:56**	**7:05**
	14A	6:19	6:23	6:26	6:29	6:35	--	6:39	6:42	6:49	6:54	7:01	7:07	7:11	7:20
	14	**6:40**	**6:44**	**6:47**	--	--	**6:51**	**6:54**	**6:57**	**7:04**	**7:09**	**7:16**	**7:22**	**7:26**	**7:35**
	14A	6:49	6:53	6:56	6:59	7:05	--	7:09	7:12	7:19	7:24	7:31	7:37	7:41	7:50
	14	**7:25**	**7:29**	**7:32**	--	--	**7:36**	**7:39**	**7:42**	**7:49**	**7:54**	**8:01**	**8:07**	**8:11**	**8:20**
	14A	8:07	8:11	8:14	8:17	8:23	--	8:27	8:30	8:37	8:39	8:46	8:52	8:56	9:05
	14A	9:07	9:11	9:14	9:17	9:23	--	9:27	9:30	9:37	9:39	9:46	9:52	9:56	10:05
	14A	10:07	10:11	10:14	10:17	10:23	--	10:27	10:30	10:37	10:39	10:46	10:52	10:56	11:05
	14A	11:07	11:11	11:14	11:17	11:23	--	11:27	11:30	11:37	11:40	11:46	11:50	11:54	12:00
Saturday															
a.m.	14A	--	--	--	--	--	--	--	--	--	--	--	6:55	6:59	7:08
	14	*This trip begins at Burloak & Prince William at 6:52 a.m.*					**6:54**	**6:57**	**7:00**	**7:07**	**7:12**	**7:19**	**7:25**	**7:29**	**7:38**
	14A	7:07	7:11	7:14	7:17	7:23	--	7:27	7:30	7:37	7:42	7:49	7:55	7:59	8:08
	14	**7:43**	**7:47**	**7:50**	--	--	**7:54**	**7:57**	**8:00**	**8:07**	**8:12**	**8:19**	**8:25**	**8:29**	**8:38**
	14A	8:07	8:11	8:14	8:17	8:23	--	8:27	8:30	8:37	8:42	8:49	8:55	8:59	9:08
	14	**8:43**	**8:47**	**8:50**	--	--	**8:54**	**8:57**	**9:00**	**9:07**	**9:12**	**9:19**	**9:25**	**9:29**	**9:38**
		and alternating – every 24/36 minutes			***every 60 minutes***			***every 30 minutes***							
p.m.	14A	6:07	6:11	6:14	6:17	6:23	--	6:27	6:30	6:37	6:42	6:49	6:55	6:59	7:08
	14	**6:43**	**6:47**	**6:50**	--	--	**6:54**	**6:57**	**7:00**	**7:07**	**7:12**	**7:19**	**7:25**	**7:29**	**7:38**
	14A	7:07	7:11	7:14	7:17	7:23	--	7:27	7:30	7:37	7:42	7:49	7:55	7:59	8:08
	14	**7:43**	**7:47**	**7:50**	--	--	**7:54**	**7:57**	**8:00**	**8:07**	**8:12**	**8:19**	**8:25**	**8:29**	**8:38**
	14A	8:07	8:11	8:14	8:17	8:23	--	8:27	8:30	8:37	8:42	8:49	8:55	8:59	9:08
	14A	9:07	9:11	9:14	9:17	9:23	--	9:27	9:30	9:37	9:42	9:49	9:55	9:59	10:08
	14A	10:07	10:11	10:14	10:17	10:23	--	10:27	10:30	10:37	10:42	10:49	10:55	10:59	11:08
	14A	11:07	11:11	11:14	11:17	11:23	--	11:27	11:30	11:37	11:40	11:46	11:50	11:54	12:00
Sunday / Holidays															
a.m.	14A	--	--	--	--	--	--	--	--	--	--	--	7:55	7:59	8:08
	14	*This trip begins at Burloak & Prince William at 7:52 a.m.*					**7:54**	**7:57**	**8:00**	**8:07**	**8:12**	**8:19**	**8:25**	**8:29**	**8:38**
	14A	8:07	8:11	8:14	8:17	8:23	--	8:27	8:30	8:37	8:42	8:49	8:55	8:59	9:08
	14	**8:43**	**8:47**	**8:50**	--	--	**8:54**	**8:57**	**9:00**	**9:07**	**9:12**	**9:19**	**9:25**	**9:29**	**9:38**
	14A	9:07	9:11	9:14	9:17	9:23	--	9:27	9:30	9:37	9:42	9:49	9:55	9:59	10:08
	14	**9:43**	**9:47**	**9:50**	--	--	**9:54**	**9:57**	**10:00**	**10:07**	**10:12**	**10:19**	**10:25**	**10:29**	**10:38**
		and alternating – every 24/36 minutes			***every 60 minutes***			***every 30 minutes***							
p.m.	**14**	**5:43**	**5:47**	**5:50**	--	--	**5:54**	**5:57**	**6:00**	**6:07**	**6:12**	**6:19**	**6:25**	**6:29**	**6:38**
	14A	6:07	6:11	6:14	6:17	6:23	--	6:27	6:30	6:37	6:42	6:49	6:55	6:59	7:08
	14	**6:43**	**6:47**	**6:50**	--	--	**6:54**	**6:57**	**7:00**	**7:07**	**7:12**	**7:19**	**7:25**	**7:29**	**7:38**
	14A	7:07	7:11	7:14	7:17	7:23	--	7:27	7:30	7:37	7:42	7:49	7:55	7:59	8:08

For latest information, visit our website at oakvilletransit.ca or follow us on social media @oakvilletransit

Info Line 905-815-2020 care-A-van 905-337-9222

While every effort will be made to operate our service to these timetables, all schedules including bus stop times and transfer times are based on normal traffic and weather conditions and as such are subject to change. Oakville Transit will not be responsible for any loss, damage or inconvenience that may result from any errors, omissions or service delays.

OAKVILLE TRANSIT

APPENDIX E

Traffic Data

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0606 - Bronte Rd @ Lakeshore Rd - Econolite Type - Cobalt

Configuration Controller Sequence

Phase Ring Sequence and Assignment (MM) 1-1-1

Hardware Alternate Sequence Enable: No

Phase Ring Sequence.....(Note: Sequences identical to the prior one are not printed)

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	B		B		B		B		B							
Sequence 1																
Ring 1	1	2	3	4	9	10	13	14	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	15	16	.	.	.	.	.	.	.	.
Sequence 2																
Ring 1	2	1	3	4	10	9	13	14	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	15	16	.	.	.	.	.	.	.	.
Sequence 3																
Ring 1	1	2	4	3	9	10	14	13	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	15	16	.	.	.	.	.	.	.	.
Sequence 4																
Ring 1	2	1	4	3	10	9	14	13	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	15	16	.	.	.	.	.	.	.	.
Sequence 5																
Ring 1	1	2	3	4	9	10	13	14	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	15	16	.	.	.	.	.	.	.	.
Sequence 6																
Ring 1	2	1	3	4	10	9	13	14	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	15	16	.	.	.	.	.	.	.	.
Sequence 7																
Ring 1	1	2	4	3	9	10	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	15	16	.	.	.	.	.	.	.	.
Sequence 8																
Ring 1	2	1	4	3	10	9	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	15	16	.	.	.	.	.	.	.	.
Sequence 9																
Ring 1	1	2	3	4	9	10	13	14	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	16	15	.	.	.	.	.	.	.	.
Sequence 10																
Ring 1	2	1	3	4	10	9	13	14	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	16	15	.	.	.	.	.	.	.	.
Sequence 11																

Ring 1	1	2	4	3	9	10	14	13	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	16	15	.	.	.	.	.	.	.	.
Sequence 12																
Ring 1	2	1	4	3	10	9	14	13	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	16	15	.	.	.	.	.	.	.	.
Sequence 13																
Ring 1	1	2	3	4	9	10	13	14	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.
Sequence 14																
Ring 1	2	1	3	4	10	9	13	14	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.
Sequence 15																
Ring 1	1	2	4	3	9	10	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.
Sequence 16																
Ring 1	2	1	4	3	10	9	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.

Phases In Use/Exclusive Ped (MM) 1-2

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phases In Use	X	X		X		X		X								
Exclusive Ped																

Phase Compatibility (MM) 1-1-2

Phase	
n/a	Barrier Mode

Phase and Overlap Descriptions

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Approach	E	W	S	N	W	E	N	S	N	N	N	N	N	N	N	N
Movement	L	T		T		T		T								
Associated PED																
Overlap	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
Approach	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Movement																

Administration (MM) 1-7-1

Enable Controller/Cabinet Interlock CRC	No
CRC (16 bit)	BA73

Enable Automatic Backup to Datakey	Yes

Backup Prevent (MM) 1-1-3

Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Timing 1		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Phases 2	X		.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.
4	.	.	X		.	.	.	.	.	.	.	.	.	.	.	.
5	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.
6	.	.	.	.	X		.	.	.	.	.	.	.	.	.	.
7	.	.	.	.	.	.		.	.	.	.	.	.	.	.	.
8	.	.	.	.	.	.	X		.	.	.	.	.	.	.	.
9	.	.	.	.	.	.	.	.		.	.	.	.	.	.	.
10	.	.	.	.	.	.	.	.	.		.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.	.		.	.	.	.	.
12	.	.	.	.	.	.	.	.	.	.	.		.	.	.	.
13	.	.	.	.	.	.	.	.	.	.	.	.		.	.	.
14	.	.	.	.	.	.	.	.	.	.	.	.	.		.	.
15	.	.	.	.	.	.	.	.	.	.	.	.	.	.		.
16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

Simultaneous Gap (MM) 1-1-4

Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.
4	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.
5	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.
Phase 6	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.
Must 7	.	.	.	.	.	.		.	.	.	.	.	.	.	.	.
Gap 8	.	.	.	.	.	.	.		.	.	.	.	.	.	.	.
With 9	.	.	.	.	.	.	.	.		.	.	.	.	.	.	.
Phase 10	.	.	.	.	.	.	.	.	.		.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.	.		.	.	.	.	.
12	.	.	.	.	.	.	.	.	.	.	.		.	.	.	.
13	.	.	.	.	.	.	.	.	.	.	.	.		.	.	.
14	.	.	.	.	.	.	.	.	.	.	.	.	.		.	.
15	.	.	.	.	.	.	.	.	.	.	.	.	.	.		.
16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Disable	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Load Switch Assignments (MM) 1-3

	Phase / Overlap	Type	Dimming				Power Up	Auto		Flash Together
			Red	Yellow	Green	Dark		Red	Yellow	
1	1	V				-	Auto	X		
2	2	V				-	Auto	X		X
3	3	V				-	Auto	X		
4	4	V				-	Auto	X		X

5	6	V				+	Auto	X		
6	6	V				+	Auto	X		X
7	7	V				+	Auto	X		
8	8	V				+	Auto	X		X
9	2	P				-	Auto			
10	4	P				-	Auto			
11	6	P				+	Auto			
12	8	P				+	Auto			
13	1	O				-	Auto	X		
14	2	O				+	Auto	X		X
15	3	O				-	Auto	X		
16	4	O				+	Auto	X		X

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0606 - Bronte Rd @ Lakeshore Rd - Econolite Type - Cobalt

Controller Timing Plan (MM) 2-1

Plan 1 - ""

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	E-L	W-T	S	N-T	W	E-T	N	S-T	N	N	N	N	N	N	N	N
Min Green	7	26	0	10	0	26	0	10	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	15	0	16	0	15	0	16	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	3.0	4.5	0.0	4.0	3.0	4.5	0.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	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
Max1	20	60	0	24	25	60	0	24	35	35	35	35	35	35	35	35
Max2	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	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
Yellow	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	2.7	1.0	2.3	1.0	2.7	1.0	2.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	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
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	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
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	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
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	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

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0606 - Bronte Rd @ Lakeshore Rd - Econolite Type - Cobalt

Controller Options

Controller Options (MM) 2-6-1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Flashing Grn Ph	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Guar Passage																
Non-Act I		X				X										
Non-Act II				X				X								
Dual Entry		X		X		X		X								
Cond Service																
Cond Reservice																
Ped Re-Service		X				X										
Rest In Walk																
Flashing Walk																
Ped Clr-Yel																
Ped Clr-Red																
IGRN + Veh Ext																

Ped Clear Protect: Off Unit Red Revert: 2.0 MUTCD 3 Seconds Don't Walk: No

Pre-Timed Mode (MM) 2-7

Enable Pre-Timed Mode: No Free Input Disables Pre-Timed: No

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Pre-Timed																

Phase Recall Options (MM) 2-8

Plan # 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Lock Detector																
Vehicle Recall		X				X										
Ped Recall																
Max Recall																
Soft Recall																
No Rest																
AI Calc																

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0606 - Bronte Rd @ Lakeshore Rd - Econolite Type - Cobalt

Coordination Options

Options (MM) 3-1

Manual Pattern	Auto	ECPI Coord	Yes
System Source	TBC	System Format	STD
Splits In	Percent	Offsets In	Percent
Transition	Smooth	Max Select	MAXINH
Dwell / Add Time	0		
Delay Coord Wk-LZ	No	Force Off	Float
Offset Reference	Lead	Use Ped Time	Yes
Ped Recall	Yes	Ped Reservice	No
Local Zero Override	Yes	FO Added Ini Green	No
Re-sync Count	0	Multisync	No

Auto Perm Minimum Green (Seconds) (MM) 3-4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Split Demand (MM) 3-5

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Demand 1																
Demand 2																

Demand	1	2
Detector	0	0
Call Time (Sec)	0	0
Cycle Count	0	0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0606 - Bronte Rd @ Lakeshore Rd - Econolite Type - Cobalt

Coordination Pattern Data
Coordinator Pattern Data (MM) 3-2

Coordinator Pattern # 1

Split Pattern	1	TS2 (Pat-Off)	0-1	Splits In	Percent
Cycle	100	Std (COS)	9	Offsets In	Percent
Offset Value	30%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	Yes	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	E-L	W-T	S	N-T	W	E-T	N	S-T	N	N	N	N	N	N	N	N
Splits (Split Pat 1)	25	46	0	29	0	71	0	29	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

Veh Perm 1	0	Veh Perm 2	0	Veh Perm 2 Disp	0
Split Demand Pat 1	0	Split Demand Pat 2	0	Crossing Arterial Pat	0

Split Pattern

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X
Special Funciton Outputs																

Coordinator Pattern # 2

Split Pattern	2	TS2 (Pat-Off)	0-2	Splits In	Percent
Cycle	90	Std (COS)	17	Offsets In	Percent
Offset Value	20%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	Yes	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	E-L	W-T	S	N-T	W	E-T	N	S-T	N	N	N	N	N	N	N	N
Splits (Split Pat 2)	28	40	0	32	0	68	0	32	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

Veh Perm 1	0	Veh Perm 2	0	Veh Perm 2 Disp	0
Split Demand Pat 1	0	Split Demand Pat 2	0	Crossing Arterial Pat	0

Split Pattern

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X
Special Funciton Outputs																

Coordinator Pattern # 3

Split Pattern	3	TS2 (Pat-Off)	0-3	Splits In	Percent
Cycle	120	Std (COS)	25	Offsets In	Percent
Offset Value	31%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	Yes	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	E-L	W-T	S	N-T	W	E-T	N	S-T	N	N	N	N	N	N	N	N
Splits (Split Pat 3)	18	43	0	39	0	61	0	39	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

Veh Perm 1	0	Veh Perm 2	0	Veh Perm 2 Disp	0
Split Demand Pat 1	0	Split Demand Pat 2	0	Crossing Arterial Pat	0

Split Pattern

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X
Special Funciton Outputs																

Coordinator Pattern # 4

Split Pattern	4	TS2 (Pat-Off)	1-1	Splits In	Percent
Cycle	90	Std (COS)	33	Offsets In	Percent
Offset Value	37%	Dwell/Add Time	0		
Actuated Coord	Yes	Timing Plan	0		
Actuated Walk Rest	Yes	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	E-L	W-T	S	N-T	W	E-T	N	S-T	N	N	N	N	N	N	N	N
Splits (Split Pat 4)	15	55	0	30	0	70	0	30	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	100%	100%	0%	0%

Misc. Data

Veh Perm 1	0	Veh Perm 2	0	Veh Perm 2 Disp	0
Split Demand Pat 1	0	Split Demand Pat 2	0	Crossing Arterial Pat	0

Split Pattern

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X
Special Funciton Outputs																

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0606 - Bronte Rd @ Lakeshore Rd - Econolite Type - Cobalt

Coordination Split Pattern
Split Pattern Data (MM) 3-3

Split Pattern # 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	E-L	W-T	S	N-T	W	E-T	N	S-T	N	N	N	N	N	N	N	N
Split (percent)	25	46	0	29	0	71	0	29	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 2

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	E-L	W-T	S	N-T	W	E-T	N	S-T	N	N	N	N	N	N	N	N
Split (percent)	28	40	0	32	0	68	0	32	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 3

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	E-L	W-T	S	N-T	W	E-T	N	S-T	N	N	N	N	N	N	N	N
Split (percent)	18	43	0	39	0	61	0	39	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																

Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Split Pattern # 4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	E-L	W-T	S	N-T	W	E-T	N	S-T	N	N	N	N	N	N	N	N
Split (percent)	15	55	0	30	0	70	0	30	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall																
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	100%	100%	0%	0%

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0606 - Bronte Rd @ Lakeshore Rd - Econolite Type - Cobalt

Time Base Clock/Calendar

Clock/Calendar Data (MM) 5-1

Manual Action Plan:	0
SYNC Reference Time:	03:15
SYNC Reference:	Reference Time
Day Light Savings:	No
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0606 - Bronte Rd @ Lakeshore Rd - Econolite Type - Cobalt

Time Base Action Plan
Action Plan (MM) 5-2

Action Plan - 1 - "1"

Pattern	1	Override Sys	No
Timing Plan	0	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 2 - "2"

Pattern	2	Override Sys	No
Timing Plan	0	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

Spec Func (1-8)								

Aux Func (1-3)			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 3 - "3"

Pattern	3	Override Sys	No
Timing Plan	0	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
	No	Pmt Queue Delay	No

Pmt Ped Priority Ret

Pmt Cond Delay No

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

	1	2	3	4	5	6	7	8
Spec Func (1-8)								

	1	2	3
Aux Func (1-3)			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 4 - "4"

Pattern	4	Override Sys	No
Timing Plan	0	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

Spec Func (1-8)								

Aux Func (1-3)			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0606 - Bronte Rd @ Lakeshore Rd - Econolite Type - Cobalt

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Day Plan #1 - "1"

Event	Action Plan	Start Time
1	1	06:30
2	2	09:30
3	3	15:00
4	4	19:00
5	5	22:00

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	X	X	X	X	X	X	X	X	X	X	X	X

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT
	X	X	X	X	X	X	X

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	13	14	15	16	17	18	19	20	21	22
	X	X	X	X	X	X	X	X	X	X	X
	23	24	25	26	27	28	29	30	31		
	X	X	X	X	X	X	X	X	X		

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0604 - Lakeshore Rd @ Nelson St - Econolite Type - Cobalt

Controller Timing Plan (MM) 2-1

Plan 1 - ""

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	N	W-T	N	S-T	N	E-T	N	N-T	N	N	N	N	N	N	N	N
Min Green	5	22	5	10	5	22	5	10	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	12	0	13	0	12	0	13	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	3.0	5.0	3.0	5.0	3.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	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
Max1	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
Max2	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	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
Yellow	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	0.0	2.1	0.0	2.1	0.0	2.1	0.0	2.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	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
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	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
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	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
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	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

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0604 - Lakeshore Rd @ Nelson St - Econolite Type - Cobalt

Coordination Options

Options (MM) 3-1

Manual Pattern	Auto	ECPI Coord	Yes
System Source	TBC	System Format	STD
Splits In	Seconds	Offsets In	Seconds
Transition	Smooth	Max Select	MAXINH
Dwell / Add Time	0		
Delay Coord Wk-LZ	No	Force Off	Float
Offset Reference	Lag	Use Ped Time	Yes
Ped Recall	No	Ped Reservice	No
Local Zero Override	No	FO Added Ini Green	No
Re-sync Count	0	Multisync	No

Auto Perm Minimum Green (Seconds) (MM) 3-4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Split Demand (MM) 3-5

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Demand 1																
Demand 2																

Demand	1	2
Detector	0	0
Call Time (Sec)	0	0
Cycle Count	0	0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0604 - Lakeshore Rd @ Nelson St - Econolite Type - Cobalt

Coordination Pattern Data
Coordinator Pattern Data (MM) 3-2

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0604 - Lakeshore Rd @ Nelson St - Econolite Type - Cobalt

Coordination Split Pattern
Split Pattern Data (MM) 3-3

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0604 - Lakeshore Rd @ Nelson St - Econolite Type - Cobalt

Time Base Clock/Calendar

Clock/Calendar Data (MM) 5-1

Manual Action Plan:	0
SYNC Reference Time:	03:15
SYNC Reference:	Reference Time
Day Light Savings:	USDLS
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	-5

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0604 - Lakeshore Rd @ Nelson St - Econolite Type - Cobalt

Time Base Action Plan
Action Plan (MM) 5-2

Action Plan - 1 - "1"

Pattern	1	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

	1	2	3	4	5	6	7	8
Spec Func (1-8)								

	1	2	3
Aux Func (1-3)			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 2 - "2"

Pattern	2	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 3 - "3"

Pattern	3	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0

Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0604 - Lakeshore Rd @ Nelson St - Econolite Type - Cobalt

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Day Plan #2 - "2"

Event	Action Plan	Start Time
1	99	00:00
2	2	09:00
3	3	15:00
4	99	19:00

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	12	13	14	15	16	17	18	19	20	21	22
	23	24	25	26	27	28	29	30	31		

Schedule Number - 2

Day Plan No.: 2

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	12	13	14	15	16	17	18	19	20	21	22
	23	24	25	26	27	28	29	30	31		

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0605 - Lakeshore Rd @ Jones St - Econolite Type - Cobalt

Controller Timing Plan (MM) 2-1

Plan 1 - ""

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	E	W-T	N	S-T	W	E-T	S	N-T	N	N	N	N	N	N	N	N
Min Green	5	32	5	15	5	32	5	15	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	12	0	14	0	12	0	14	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	5.0	4.0	5.0	3.5	5.0	4.0	5.0	3.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	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
Max1	0	35	0	35	0	35	0	35	35	35	35	35	35	35	35	35
Max2	0	40	0	40	0	40	0	40	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	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
Yellow	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	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
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	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
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	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
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	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

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0605 - Lakeshore Rd @ Jones St - Econolite Type - Cobalt

Coordination Options

Options (MM) 3-1

Manual Pattern	Auto	ECPI Coord	Yes
System Source	TBC	System Format	STD
Splits In	Seconds	Offsets In	Seconds
Transition	Smooth	Max Select	MAXINH
Dwell / Add Time	0		
Delay Coord Wk-LZ	No	Force Off	Float
Offset Reference	Lead	Use Ped Time	Yes
Ped Recall	No	Ped Reservice	No
Local Zero Override	No	FO Added Ini Green	No
Re-sync Count	0	Multisync	No

Auto Perm Minimum Green (Seconds) (MM) 3-4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Split Demand (MM) 3-5

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Demand 1																
Demand 2																

Demand	1	2
Detector	0	0
Call Time (Sec)	0	0
Cycle Count	0	0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0605 - Lakeshore Rd @ Jones St - Econolite Type - Cobalt

Coordination Pattern Data
Coordinator Pattern Data (MM) 3-2

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0605 - Lakeshore Rd @ Jones St - Econolite Type - Cobalt

Coordination Split Pattern
Split Pattern Data (MM) 3-3

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0605 - Lakeshore Rd @ Jones St - Econolite Type - Cobalt

Time Base Clock/Calendar

Clock/Calendar Data (MM) 5-1

Manual Action Plan:	0
SYNC Reference Time:	03:15
SYNC Reference:	Reference Time
Day Light Savings:	No
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	0

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

OAK0605 - Lakeshore Rd @ Jones St - Econolite Type - Cobalt

Time Base Action Plan
Action Plan (MM) 5-2

Action Plan - 1 - "1"

Pattern	Auto	Override Sys	No
Timing Plan	0	Sequence	0
Veh Detector Plan	1	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall																
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Town of Oakville, ON

ECONOLITE

MOVING TRAFFIC FORWARD

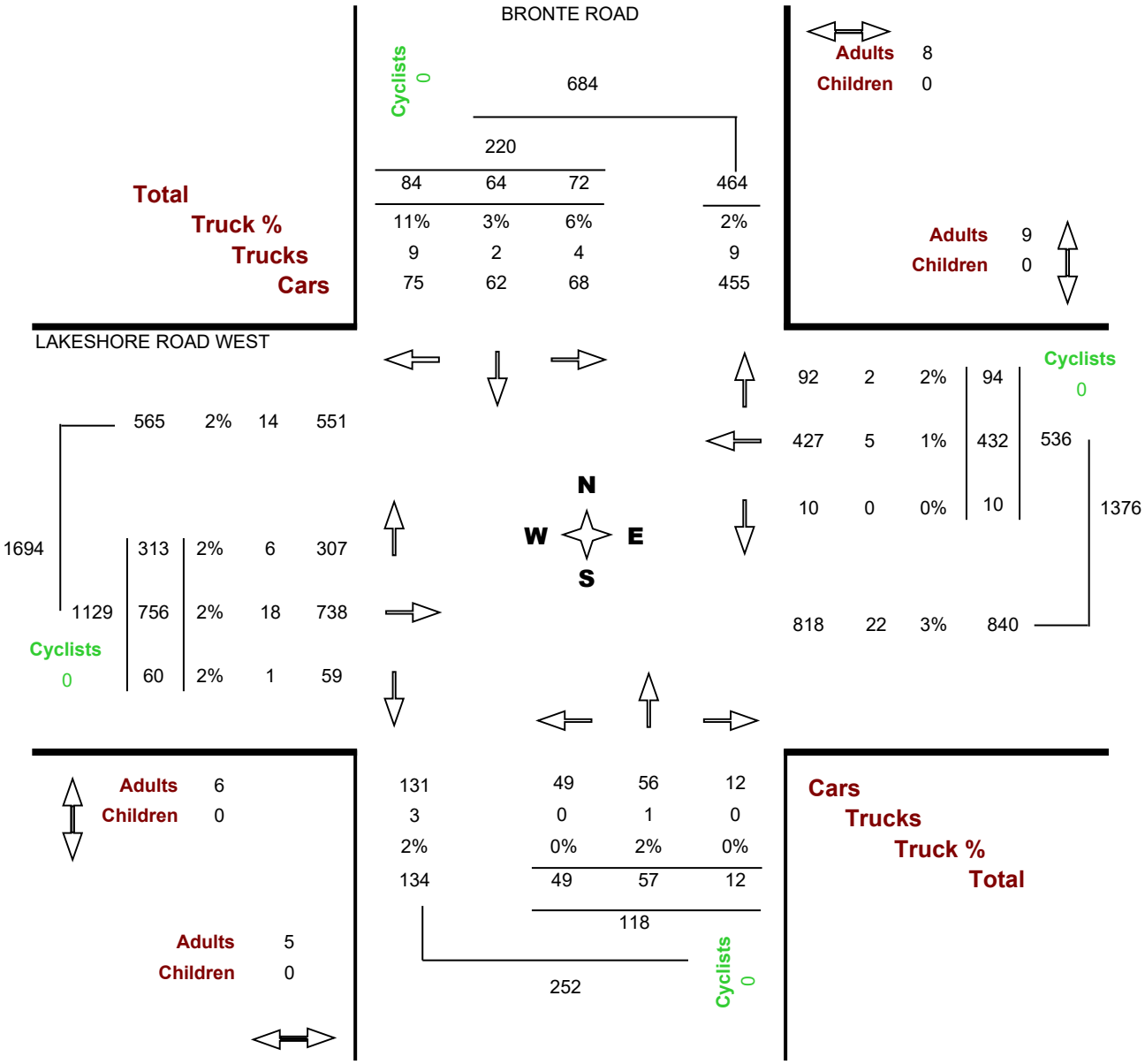
OAK0605 - Lakeshore Rd @ Jones St - Econolite Type - Cobalt

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Schedule (MM) 5-4

Turning Movements Report - AM Period

Location..... BRONTE ROAD @ LAKESHORE ROAD WEST
Municipality..... OAKVILLE
GeoID..... 30271101
Count Date..... Tuesday, 11 June, 2019 **Peak Hour.....** 07:45 AM — 08:45 AM

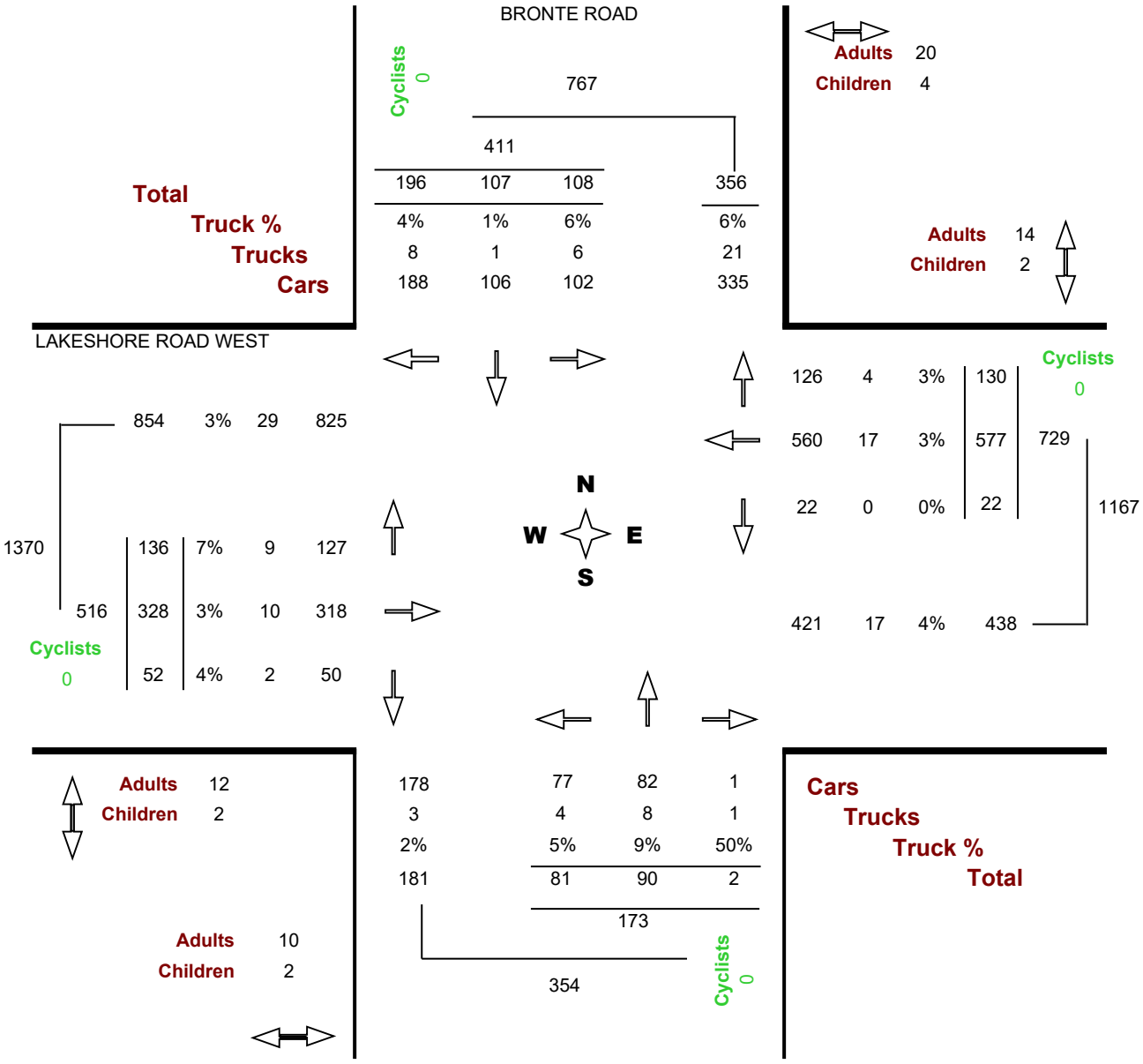


THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - PM Period

Location..... BRONTE ROAD @ LAKESHORE ROAD WEST
Municipality..... OAKVILLE
GeoID..... 30271101
Count Date..... Tuesday, 11 June, 2019 **Peak Hour.....** 03:00 PM — 04:00 PM

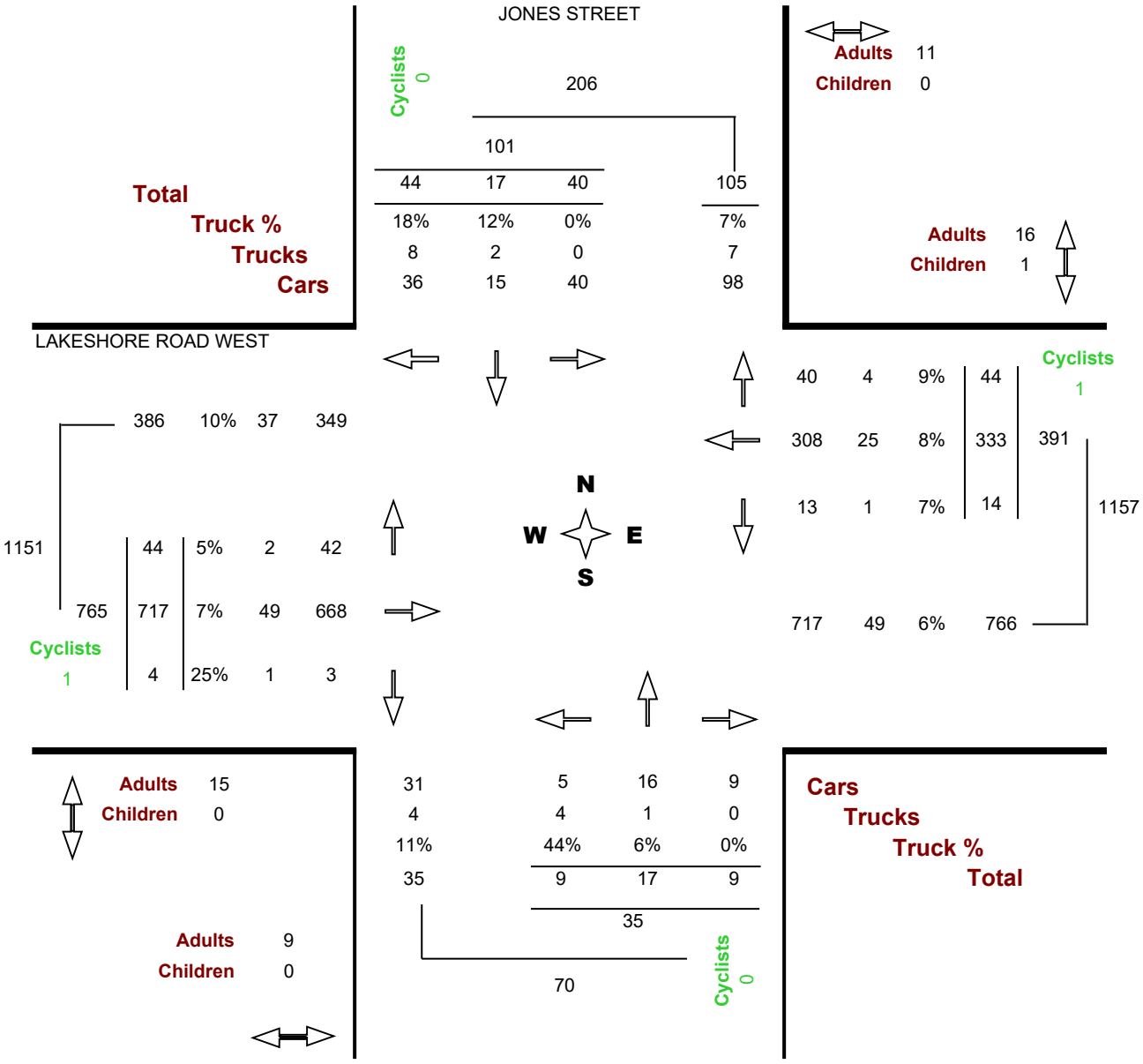


THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - AM Period

Location..... LAKESHORE ROAD WEST @ JONES STREET
Municipality..... OAKVILLE
GeoID..... 30078501
Count Date..... Tuesday, 23 April, 2019 **Peak Hour.....** 08:00 AM — 09:00 AM

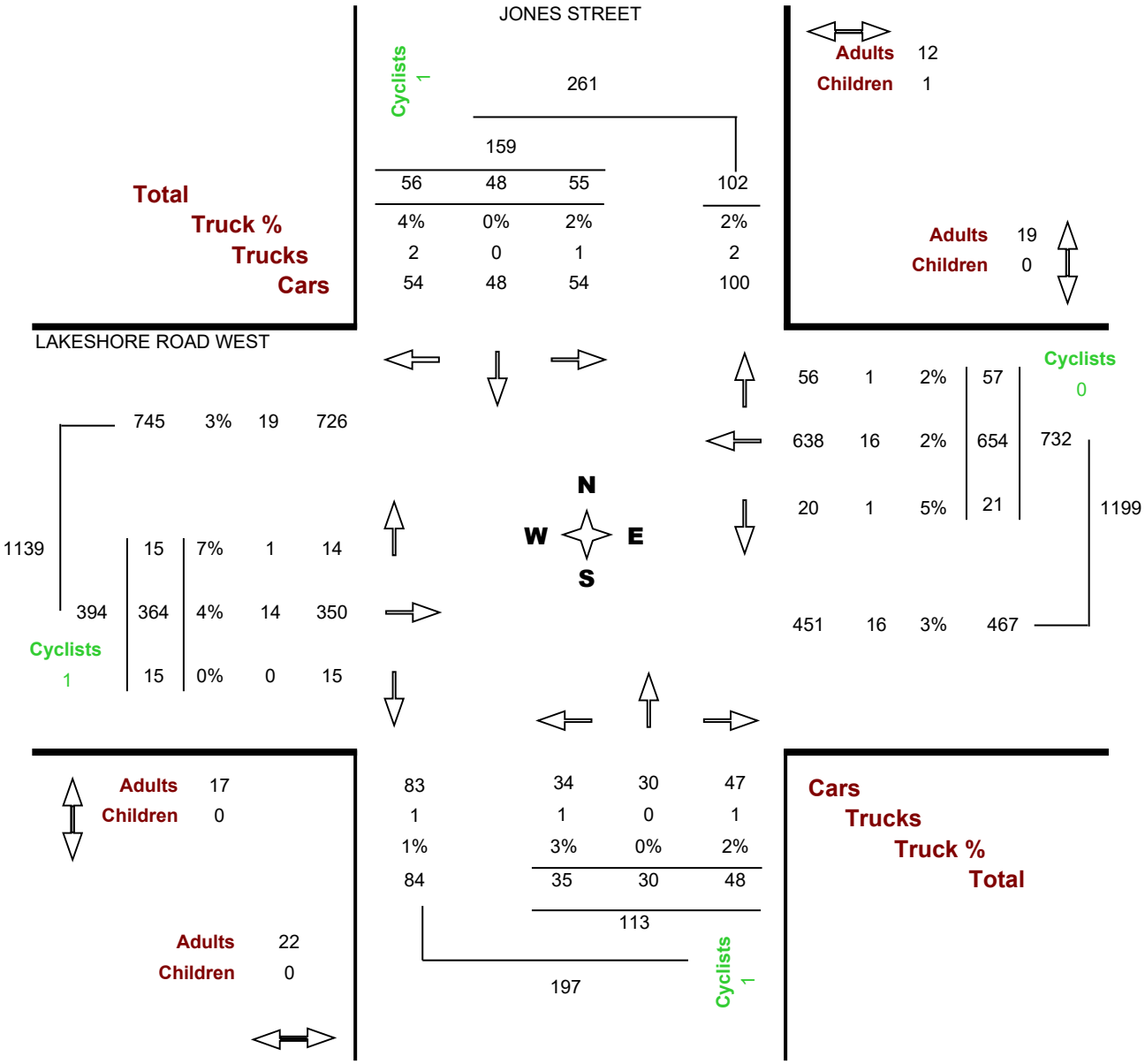


THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - PM Period

Location..... LAKESHORE ROAD WEST @ JONES STREET
Municipality..... OAKVILLE
GeoID..... 30078501
Count Date..... Tuesday, 23 April, 2019 **Peak Hour.....** 04:45 PM — 05:45 PM

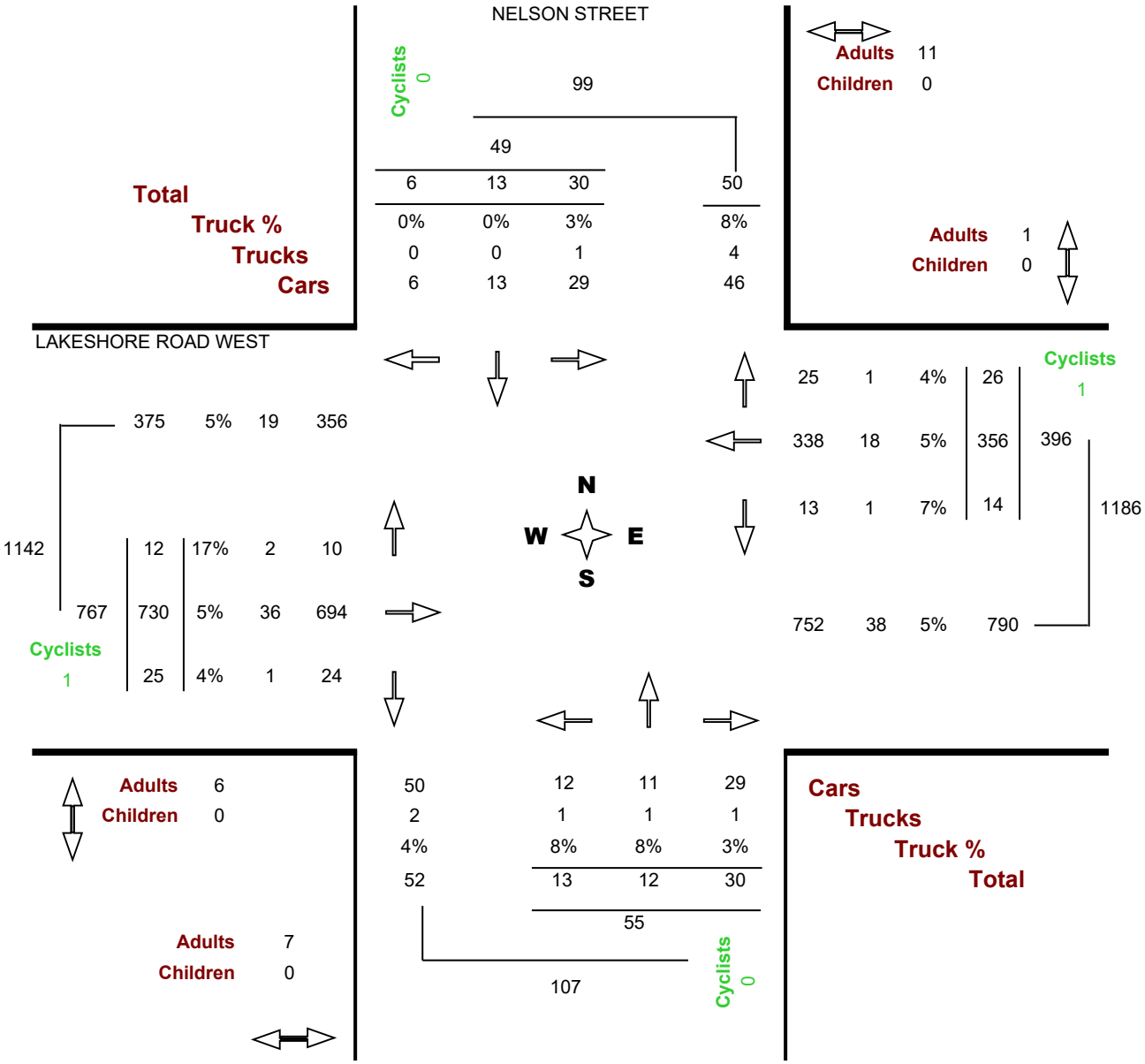


THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - AM Period

Location..... LAKESHORE ROAD WEST @ NELSON STREET
Municipality..... OAKVILLE
GeoID..... 30078601
Count Date..... Monday, 29 April, 2019 **Peak Hour.....** 08:00 AM — 09:00 AM



THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

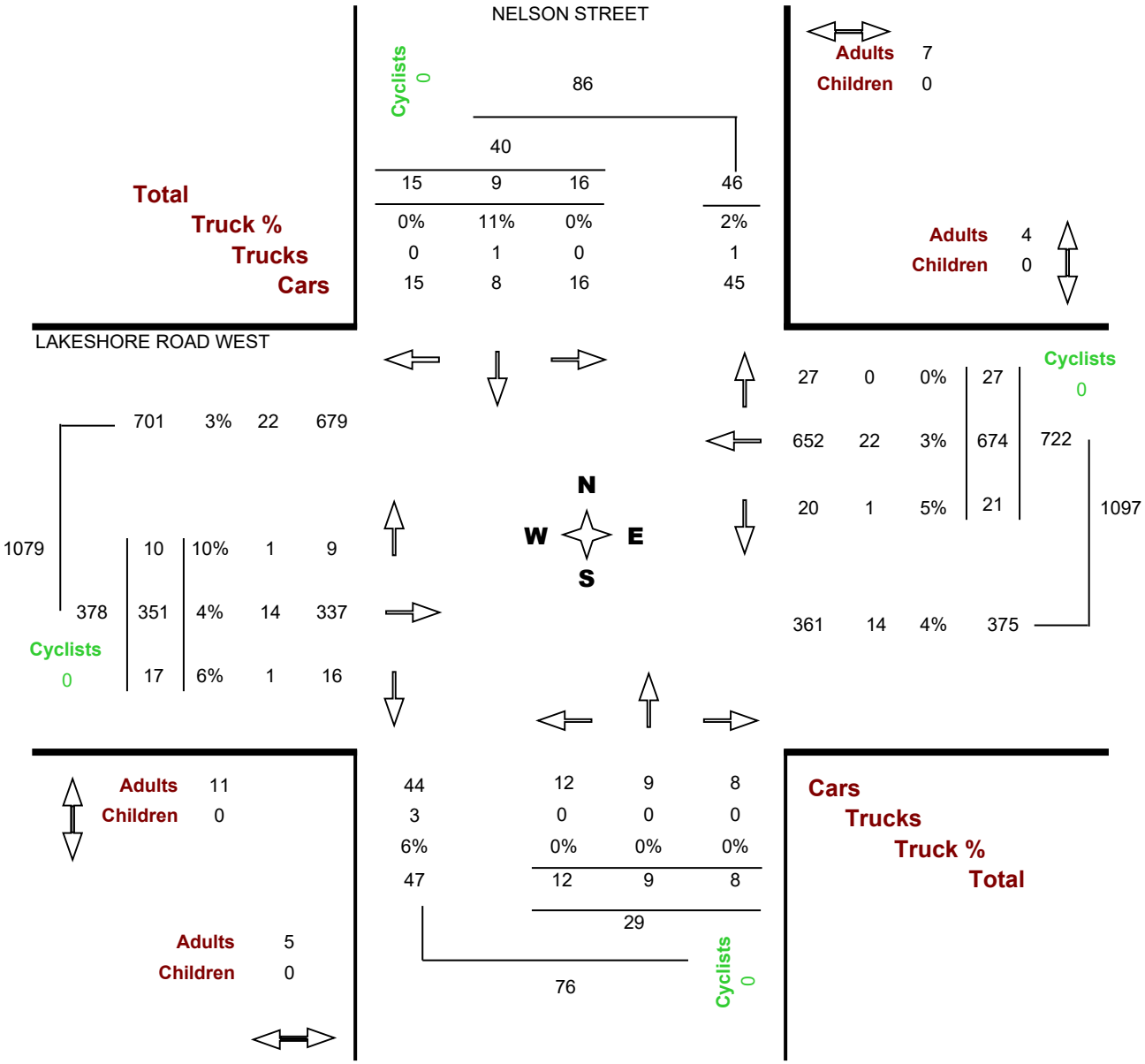
Turning Movements Report - PM Period

Location..... LAKESHORE ROAD WEST @ NELSON STREET

Municipality..... OAKVILLE

GeoID..... 30078601

Count Date..... Monday, 29 April, 2019 **Peak Hour.....** 04:30 PM — 05:30 PM



THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

APPENDIX F

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

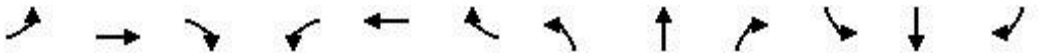
Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	> 10 and ≤ 20	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	> 20 and ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 55	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	> 55 and ≤ 80	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	> 80	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

APPENDIX G

2022 Existing Synchro Reports

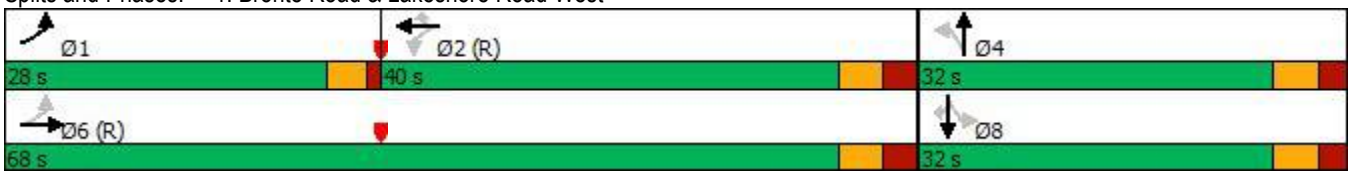


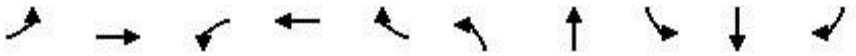
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	332	802	64	11	458	100	52	60	13	76	68	89
Future Volume (vph)	332	802	64	11	458	100	52	60	13	76	68	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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				0.850		0.973				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1863	0	1789	1883	1601	1789	1833	0	1789	1883	1601
Flt Permitted	0.369			0.300			0.709			0.706		
Satd. Flow (perm)	695	1863	0	565	1883	1601	1335	1833	0	1330	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				72		11				97
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	361	872	70	12	498	109	57	65	14	83	74	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	361	942	0	12	498	109	57	79	0	83	74	97
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.0	68.0		40.0	40.0	40.0	32.0	32.0		32.0	32.0	32.0
Total Split (%)	28.0%	68.0%		40.0%	40.0%	40.0%	32.0%	32.0%		32.0%	32.0%	32.0%
Maximum Green (s)	24.0	62.0		34.0	34.0	34.0	26.4	26.4		26.4	26.4	26.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	77.2	75.2		57.3	57.3	57.3	13.2	13.2		13.2	13.2	13.2
Actuated g/C Ratio	0.77	0.75		0.57	0.57	0.57	0.13	0.13		0.13	0.13	0.13
v/c Ratio	0.52	0.67		0.04	0.46	0.11	0.33	0.31		0.47	0.30	0.33
Control Delay	6.6	9.8		14.2	16.3	6.1	43.2	35.9		48.3	41.2	10.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	6.6	9.8		14.2	16.3	6.1	43.2	35.9		48.3	41.2	10.8
LOS	A	A		B	B	A	D	D		D	D	B
Approach Delay		8.9			14.4			39.0			31.9	
Approach LOS		A			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 93.3%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	361	942	12	498	109	57	79	83	74	97
v/c Ratio	0.52	0.67	0.04	0.46	0.11	0.33	0.31	0.47	0.30	0.33
Control Delay	6.6	9.8	14.2	16.3	6.1	43.2	35.9	48.3	41.2	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	9.8	14.2	16.3	6.1	43.2	35.9	48.3	41.2	10.8
Queue Length 50th (m)	15.4	72.1	0.9	49.9	2.8	10.3	12.2	15.2	13.3	0.0
Queue Length 95th (m)	31.9	142.3	4.8	105.9	13.9	20.8	24.0	28.2	24.7	13.1
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	799	1402	323	1079	948	352	492	351	497	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.67	0.04	0.46	0.11	0.16	0.16	0.24	0.15	0.20

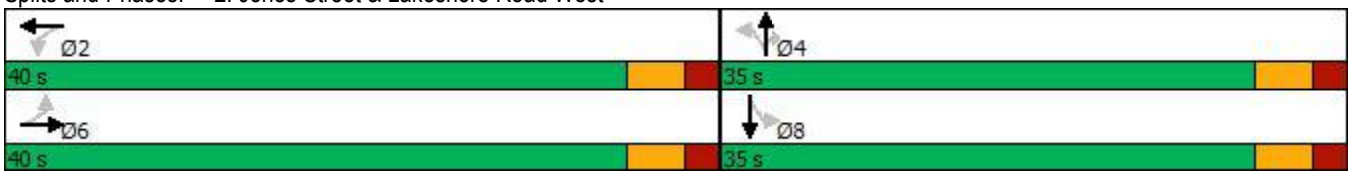
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	761	6	15	353	47	10	18	10	42	18	47
Future Volume (vph)	47	761	6	15	353	47	10	18	10	42	18	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.999			0.982				0.850		0.892	
Flt Protected	0.950			0.950				0.983		0.950		
Satd. Flow (prot)	1789	1882	0	1789	1850	0	0	1851	1601	1789	1680	0
Flt Permitted	0.399			0.115				0.932		0.737		
Satd. Flow (perm)	751	1882	0	217	1850	0	0	1755	1601	1388	1680	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			12				33		51	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			222.3			280.1			270.1	
Travel Time (s)		17.5			16.0			20.2			19.4	
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
Adj. Flow (vph)	51	827	7	16	384	51	11	20	11	46	20	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	834	0	16	435	0	0	31	11	46	71	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5	2.0	2.0	30.5	
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	1.8	2.0	2.0	1.8	
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			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3	29.3	29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%	46.7%	46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7	29.7	29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
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	0.0	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3	5.3	5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.5	3.5	3.5	3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		14.0	14.0	14.0	14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7	29.7	29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40	0.40	0.40	0.40	
v/c Ratio	0.15	0.96		0.16	0.50			0.04	0.02	0.08	0.10	
Control Delay	13.1	43.4		16.7	16.3			14.3	1.3	14.8	6.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	13.1	43.4		16.7	16.3			14.3	1.3	14.8	6.9	
LOS	B	D		B	B			B	A	B	A	
Approach Delay		41.7			16.3			10.9			10.0	
Approach LOS		D			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 30.7		Intersection LOS: C	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	51	834	16	435	31	11	46	71
v/c Ratio	0.15	0.96	0.16	0.50	0.04	0.02	0.08	0.10
Control Delay	13.1	43.4	16.7	16.3	14.3	1.3	14.8	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	43.4	16.7	16.3	14.3	1.3	14.8	6.9
Queue Length 50th (m)	4.0	108.5	1.3	39.9	2.6	0.0	4.0	1.7
Queue Length 95th (m)	10.3	#184.8	5.5	63.8	7.4	0.9	10.0	8.7
Internal Link Dist (m)		218.7		198.3	256.1			246.1
Turn Bay Length (m)	30.0		35.0			10.0	32.0	
Base Capacity (vph)	347	871	100	862	694	653	549	696
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.96	0.16	0.50	0.04	0.02	0.08	0.10

Intersection Summary

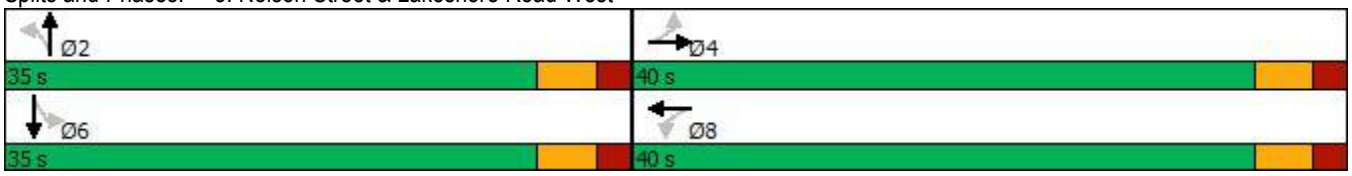
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	775	27	15	378	28	14	13	32	32	14	6
Future Volume (vph)	13	775	27	15	378	28	14	13	32	32	14	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.995			0.990			0.926			0.983	
Flt Protected	0.950			0.950				0.988			0.970	
Satd. Flow (prot)	1789	1874	0	1789	1865	0	0	1723	0	0	1796	0
Flt Permitted	0.393			0.115				0.949			0.846	
Satd. Flow (perm)	740	1874	0	217	1865	0	0	1655	0	0	1566	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			7			35			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.3			221.5			272.4			274.9	
Travel Time (s)		16.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	842	29	16	411	30	15	14	35	35	15	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	871	0	16	441	0	0	64	0	0	57	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.04	1.00		0.16	0.51			0.09			0.09	
Control Delay	11.6	53.9		16.7	16.5			8.5			13.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	11.6	53.9		16.7	16.5			8.5			13.4	
LOS	B	D		B	B			A			B	
Approach Delay		53.3			16.5			8.5			13.4	
Approach LOS		D			B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 38.3		Intersection LOS: D	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West

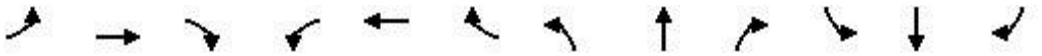


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	14	871	16	441	64	57
v/c Ratio	0.04	1.00	0.16	0.51	0.09	0.09
Control Delay	11.6	53.9	16.7	16.5	8.5	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	53.9	16.7	16.5	8.5	13.4
Queue Length 50th (m)	1.0	~118.3	1.3	41.1	2.5	4.3
Queue Length 95th (m)	4.0	#197.1	5.5	65.1	9.3	11.0
Internal Link Dist (m)		198.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	342	868	100	866	676	624
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	0.04	1.00	0.16	0.51	0.09	0.09

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

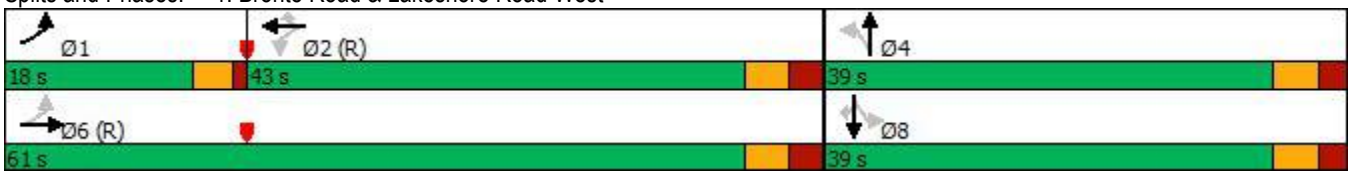


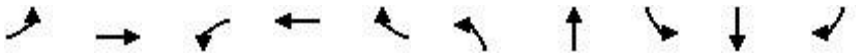
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	348	55	23	612	138	86	96	2	115	114	208
Future Volume (vph)	144	348	55	23	612	138	86	96	2	115	114	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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				0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1844	0	1789	1883	1601	1789	1878	0	1789	1883	1601
Flt Permitted	0.262			0.508			0.657			0.689		
Satd. Flow (perm)	493	1844	0	957	1883	1601	1237	1878	0	1298	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				72		1				226
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	378	60	25	665	150	93	104	2	125	124	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	438	0	25	665	150	93	106	0	125	124	226
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	18.0	61.0		43.0	43.0	43.0	39.0	39.0		39.0	39.0	39.0
Total Split (%)	18.0%	61.0%		43.0%	43.0%	43.0%	39.0%	39.0%		39.0%	39.0%	39.0%
Maximum Green (s)	14.0	55.0		37.0	37.0	37.0	33.4	33.4		33.4	33.4	33.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	73.2	71.2		58.0	58.0	58.0	17.2	17.2		17.2	17.2	17.2
Actuated g/C Ratio	0.73	0.71		0.58	0.58	0.58	0.17	0.17		0.17	0.17	0.17
v/c Ratio	0.33	0.33		0.05	0.61	0.16	0.44	0.33		0.56	0.38	0.49
Control Delay	6.7	6.9		12.7	18.9	7.3	41.8	36.8		46.3	38.4	8.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	6.7	6.9		12.7	18.9	7.3	41.8	36.8		46.3	38.4	8.1
LOS	A	A		B	B	A	D	D		D	D	A
Approach Delay		6.9			16.6			39.1			26.1	
Approach LOS		A			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

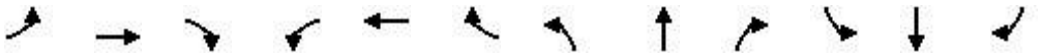
Splits and Phases: 1: Bronte Road & Lakeshore Road West





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	157	438	25	665	150	93	106	125	124	226
v/c Ratio	0.33	0.33	0.05	0.61	0.16	0.44	0.33	0.56	0.38	0.49
Control Delay	6.7	6.9	12.7	18.9	7.3	41.8	36.8	46.3	38.4	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	6.9	12.7	18.9	7.3	41.8	36.8	46.3	38.4	8.1
Queue Length 50th (m)	7.4	26.2	1.9	75.0	6.0	16.4	18.1	22.6	21.6	0.0
Queue Length 95th (m)	18.3	54.6	7.5	152.5	19.9	28.3	29.8	36.6	34.3	17.2
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	542	1316	555	1092	958	413	627	433	628	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.33	0.05	0.61	0.16	0.23	0.17	0.29	0.20	0.33

Intersection Summary

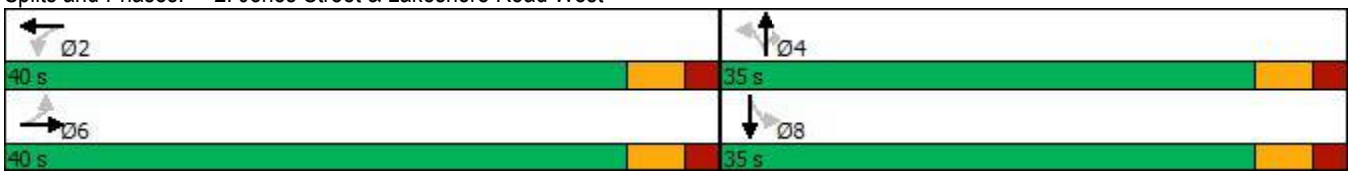


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	386	16	22	694	60	37	32	51	58	51	59
Future Volume (vph)	16	386	16	22	694	60	37	32	51	58	51	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.994			0.988				0.850		0.919	
Flt Protected	0.950			0.950				0.974		0.950		
Satd. Flow (prot)	1789	1872	0	1789	1861	0	0	1834	1601	1789	1731	0
Flt Permitted	0.115			0.397				0.836		0.708		
Satd. Flow (perm)	217	1872	0	748	1861	0	0	1575	1601	1333	1731	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			8				55		64	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			222.3			280.1			270.1	
Travel Time (s)		17.5			16.0			20.2			19.4	
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
Adj. Flow (vph)	17	420	17	24	754	65	40	35	55	63	55	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	437	0	24	819	0	0	75	55	63	119	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5	2.0	2.0	30.5	
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	1.8	2.0	2.0	1.8	
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			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3	29.3	29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%	46.7%	46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7	29.7	29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
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	0.0	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3	5.3	5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0	14.0	14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7	29.7	29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40	0.40	0.40	0.40	
v/c Ratio	0.17	0.50		0.07	0.95			0.12	0.08	0.12	0.16	
Control Delay	17.1	16.5		12.0	41.4			15.1	4.9	15.2	8.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	17.1	16.5		12.0	41.4			15.1	4.9	15.2	8.3	
LOS	B	B		B	D			B	A	B	A	
Approach Delay		16.5			40.5			10.8			10.7	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 28.0		Intersection LOS: C	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	17	437	24	819	75	55	63	119
v/c Ratio	0.17	0.50	0.07	0.95	0.12	0.08	0.12	0.16
Control Delay	17.1	16.5	12.0	41.4	15.1	4.9	15.2	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	16.5	12.0	41.4	15.1	4.9	15.2	8.3
Queue Length 50th (m)	1.4	40.9	1.8	104.9	6.5	0.0	5.5	4.7
Queue Length 95th (m)	5.7	64.7	5.8	#180.2	14.5	6.2	12.8	14.1
Internal Link Dist (m)		218.7		198.3	256.1			246.1
Turn Bay Length (m)	30.0		35.0			10.0	32.0	
Base Capacity (vph)	100	868	346	865	623	667	527	724
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.50	0.07	0.95	0.12	0.08	0.12	0.16

Intersection Summary

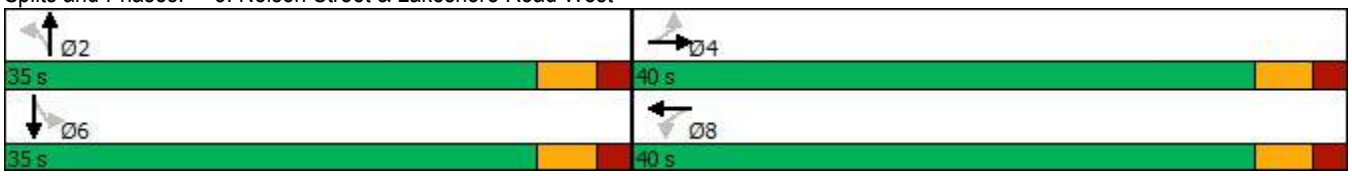
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	358	17	21	692	29	13	10	8	17	8	16
Future Volume (vph)	10	358	17	21	692	29	13	10	8	17	8	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.993			0.994			0.964			0.948	
Flt Protected	0.950			0.950				0.980			0.980	
Satd. Flow (prot)	1789	1870	0	1789	1872	0	0	1779	0	0	1750	0
Flt Permitted	0.119			0.423				0.923			0.919	
Satd. Flow (perm)	224	1870	0	797	1872	0	0	1676	0	0	1641	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			4			9			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.3			221.5			272.4			274.9	
Travel Time (s)		16.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	389	18	23	752	32	14	11	9	18	9	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	407	0	23	784	0	0	34	0	0	44	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	33.7	33.7		33.7	33.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.11	0.48		0.06	0.92			0.05			0.07	
Control Delay	14.7	16.1		11.9	36.8			11.6			10.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	14.7	16.1		11.9	36.8			11.6			10.3	
LOS	B	B		B	D			B			B	
Approach Delay		16.1			36.1			11.6			10.3	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 74			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 28.2		Intersection LOS: C	
Intersection Capacity Utilization 55.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West



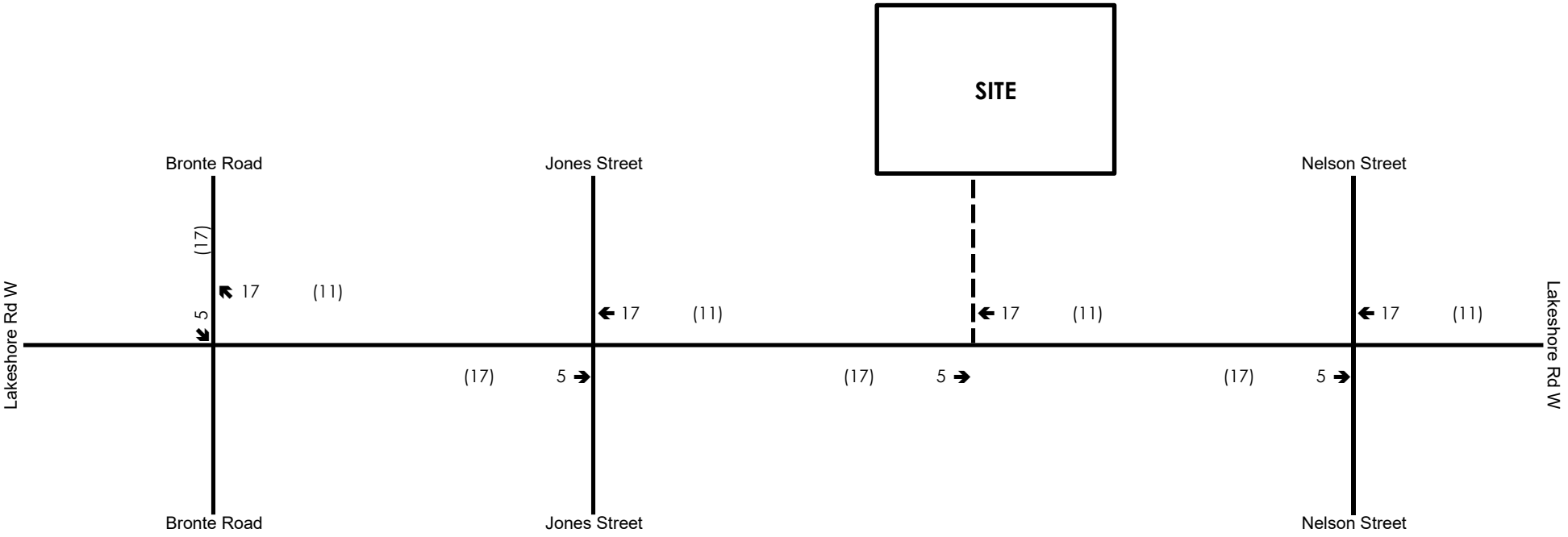
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	11	407	23	784	34	44
v/c Ratio	0.11	0.48	0.06	0.92	0.05	0.07
Control Delay	14.7	16.1	11.9	36.8	11.6	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	16.1	11.9	36.8	11.6	10.3
Queue Length 50th (m)	0.9	37.3	1.7	97.1	2.1	2.3
Queue Length 95th (m)	4.0	59.4	5.6	#168.4	7.1	8.0
Internal Link Dist (m)		198.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	104	879	373	880	678	669
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	0.11	0.46	0.06	0.89	0.05	0.07

Intersection Summary

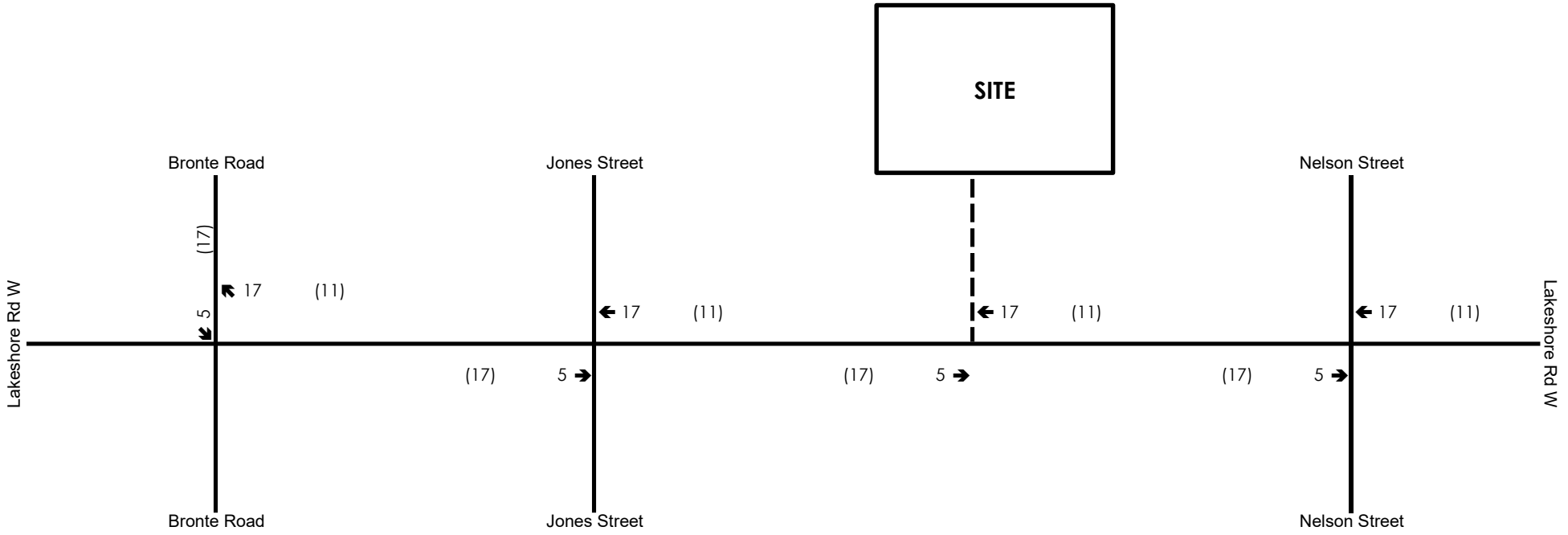
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX H

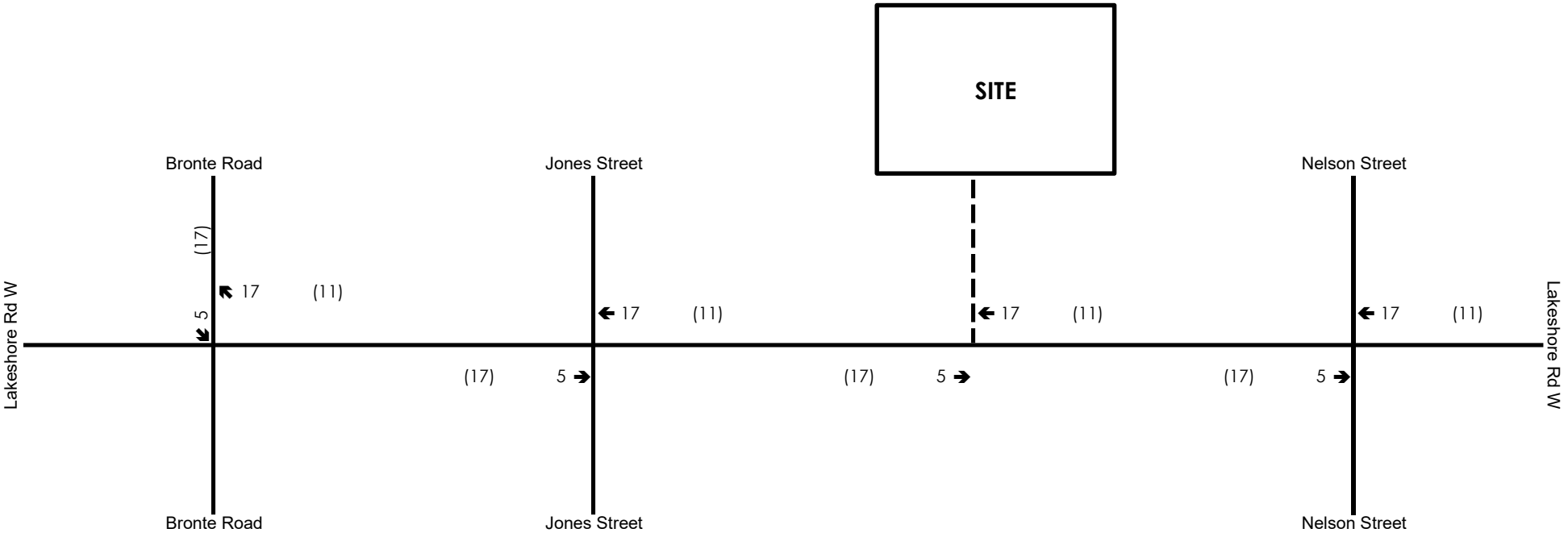
Background Development Trips



Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure H-1
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	77 East Street Background Development Volumes		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C



Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure H-2
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	Bronte Village Mall Background Development Volumes		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C



Legend	2365-2377 Lakeshore Road West	CROZIER CONSULTING ENGINEERS	Figure H-3
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	J.M. Lakeshore-Bronte Background Development Volumes		Project No. 2239-6282 Date. 2022.02.04 Analyst. Farah C

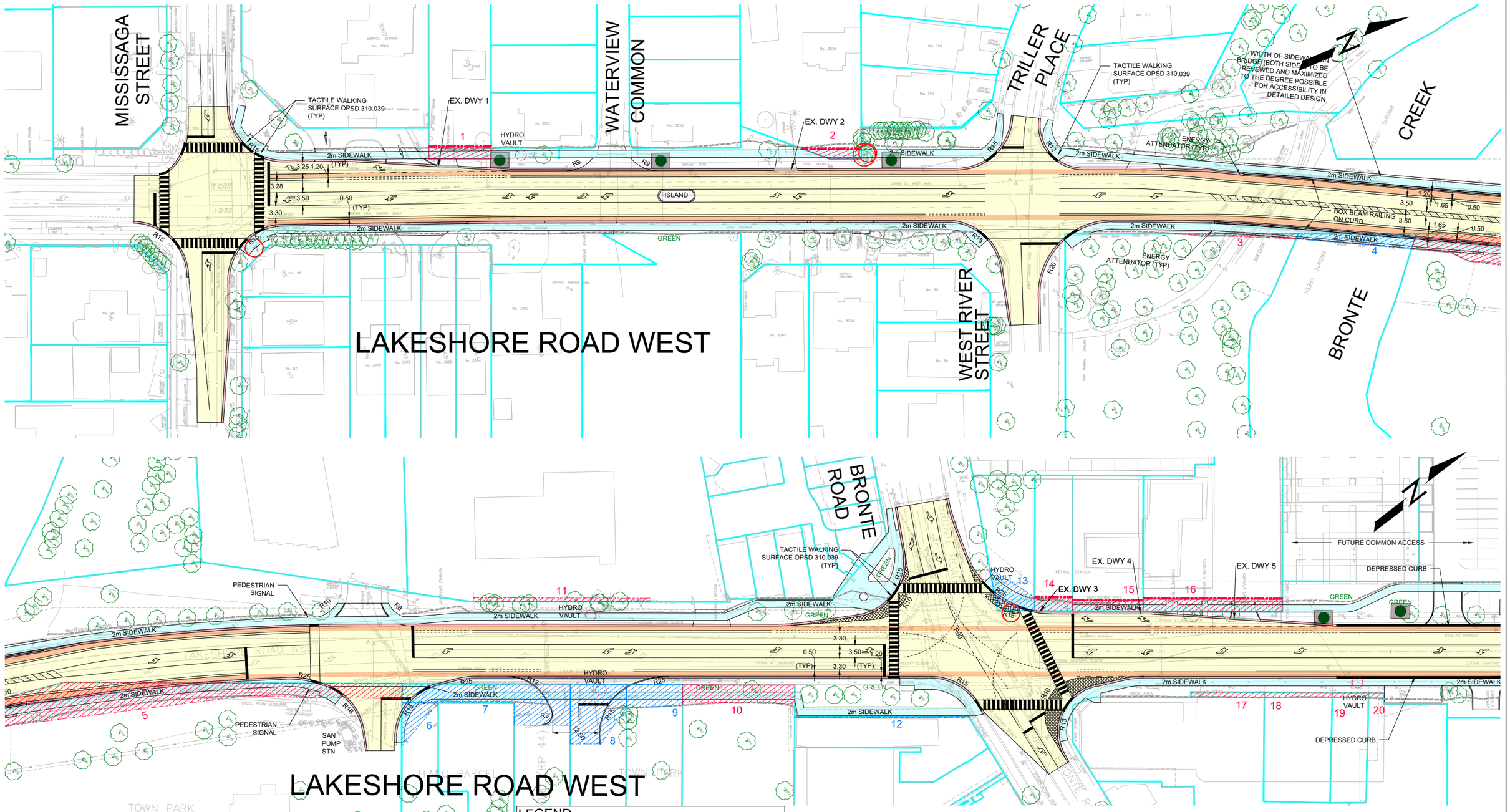
APPENDIX I

Lakeshore Road EA Excerpts

wood.

Drawing Attachment

Preferred Design Plans



NOTE: PERMEABLE PAVERS AND INFILTRATION TRENCHES TO BE UTILIZED THROUGHOUT WHERE FEASIBLE IN ACCORDANCE WITH SWM RECOMMENDATIONS.

LEGEND

- PRIVATE PROPERTY ACQUISITION
- PUBLIC PROPERTY ACQUISITION
- GRADING LIMIT
- EXIST. PROPERTY LIMIT
- EXIST. TREES
- TEXTURED /COLOURED CONCRETE SURFACE
- TREE REMOVAL

POTENTIAL LID FEATURES

- SILVA CELL
- BIO-RETENTION FACILITY
- ENHANCED GRASS SWALE
- GRADING LIMIT
- PROPOSED SIDEWALK/MUP

LAKESHORE RD WEST CLASS EA STUDY

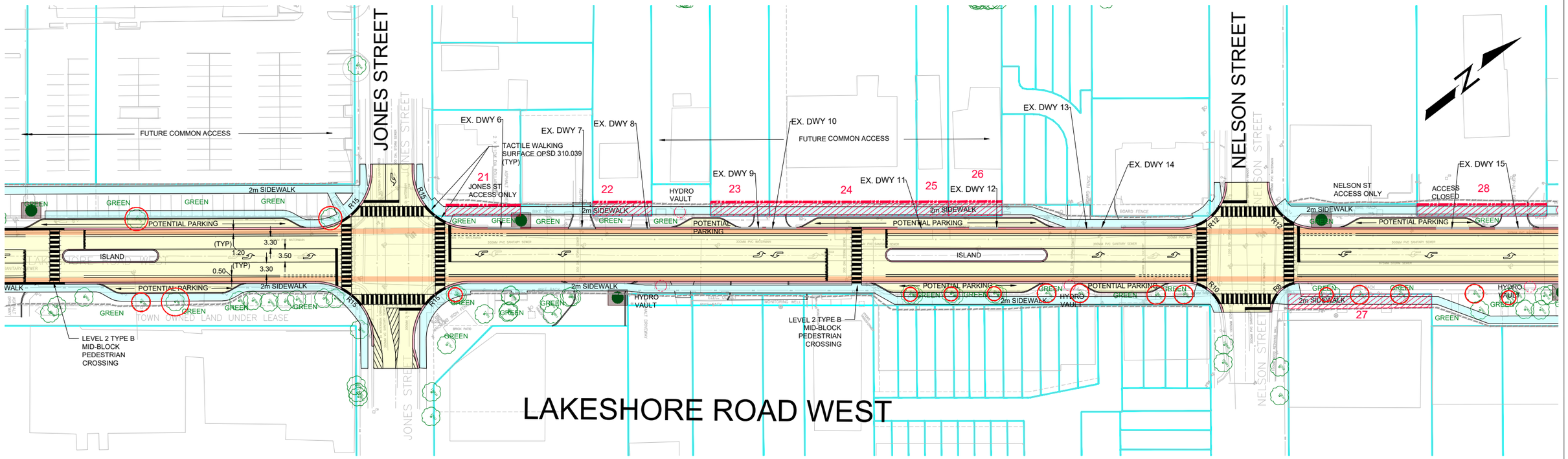
TOWN OF OAKVILLE

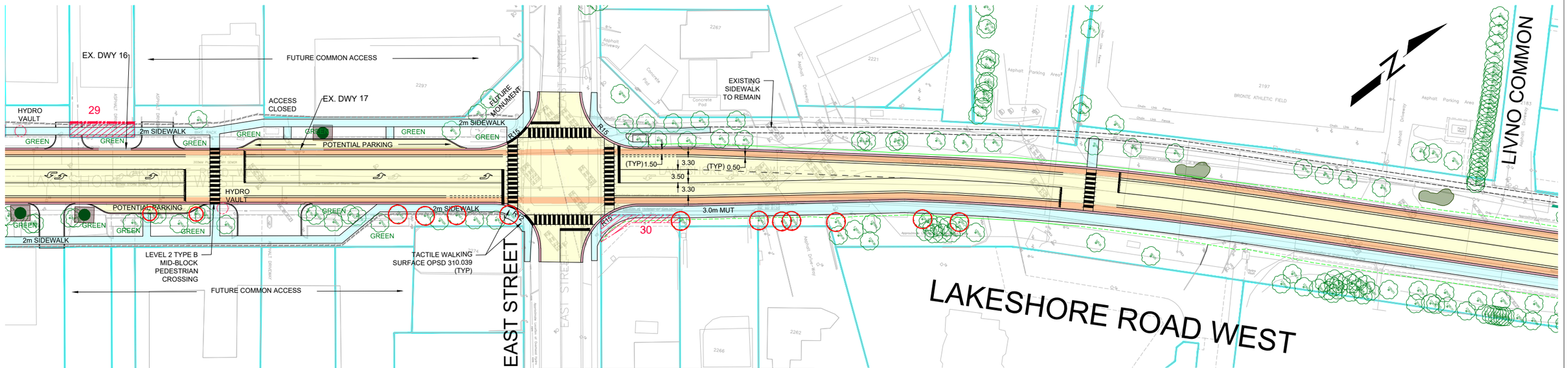
LAKESHORE ROAD WEST IMPROVEMENTS

wood.

Project No.	TPB166147
Date	MARCH 2021
Scale	1:500 (22x34)
Drawing No.	1 of 8

Plotted: 2021-03-29
Last Saved: 2021-03-29
Plotted By: nathan.heyink
Last Saved By: nathan.heyink
Path: P:\2016\Projects\TPB166147 - Oakville Lakeshore EA\06_DES-ENG\01_CAD\02_DWGS\04_TRANS\01_PROJ\2019 Roll Plans\Lakeshore Rd - EA Option 3





NOTE: PERMEABLE PAVERS AND INFILTRATION TRENCHES TO BE UTILIZED THROUGHOUT WHERE FEASIBLE IN ACCORDANCE WITH SWM RECOMMENDATIONS.

LEGEND

- PRIVATE PROPERTY ACQUISITION
- PUBLIC PROPERTY ACQUISITION
- GRADING LIMIT
- EXIST. PROPERTY LIMIT
- EXIST. TREES
- TEXTURED /COLOURED CONCRETE SURFACE
- TREE REMOVAL

POTENTIAL LID FEATURES

- SILVA CELL
- BIO-RETENTION FACILITY
- ENHANCED GRASS SWALE
- GRADING LIMIT
- PROPOSED SIDEWALK/MUP

LAKESHORE RD WEST CLASS EA STUDY

TOWN OF OAKVILLE

LAKESHORE ROAD WEST IMPROVEMENTS

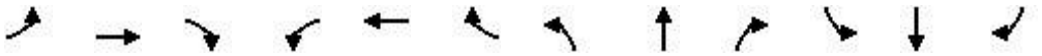
wood.

Project No.	TPB166147
Date	MARCH 2021
Scale	1:500 (22x34)
Drawing No.	2 of 8

Plotted: 2021-03-29
Last Saved: 2021-03-29
Plotted By: nathan.heyink
Last Saved By: nathan.heyink
Path: P:\2016\Projects\TPB166147 - Oakville Lakeshore EA\06_DES-ENG\01_CAD\02_DWGS\04_TRANS\01_PROJ\2019 Roll Plans\Lakeshore Rd - EA Option 3

APPENDIX J

2025 Future Background Synchro Reports

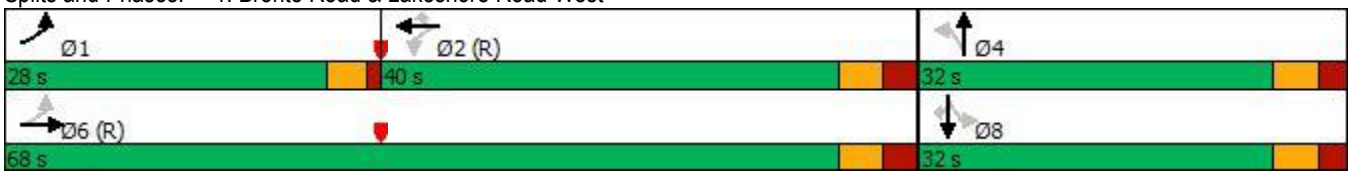


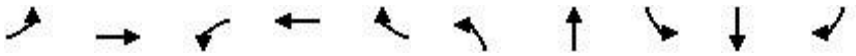
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	870	64	11	495	117	52	61	13	82	68	90
Future Volume (vph)	333	870	64	11	495	117	52	61	13	82	68	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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		0.990				0.850		0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1865	0	1789	1883	1601	1789	1834	0	1789	1883	1601
Flt Permitted	0.326			0.262			0.709			0.705		
Satd. Flow (perm)	614	1865	0	493	1883	1601	1335	1834	0	1328	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				72		10				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	362	946	70	12	538	127	57	66	14	89	74	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	1016	0	12	538	127	57	80	0	89	74	98
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.0	68.0		40.0	40.0	40.0	32.0	32.0		32.0	32.0	32.0
Total Split (%)	28.0%	68.0%		40.0%	40.0%	40.0%	32.0%	32.0%		32.0%	32.0%	32.0%
Maximum Green (s)	24.0	62.0		34.0	34.0	34.0	26.4	26.4		26.4	26.4	26.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	76.8	74.8		54.5	54.5	54.5	13.6	13.6		13.6	13.6	13.6
Actuated g/C Ratio	0.77	0.75		0.54	0.54	0.54	0.14	0.14		0.14	0.14	0.14
v/c Ratio	0.55	0.73		0.04	0.52	0.14	0.31	0.31		0.49	0.29	0.32
Control Delay	7.1	11.7		16.4	19.4	7.8	42.2	35.9		48.5	40.5	10.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	7.1	11.7		16.4	19.4	7.8	42.2	35.9		48.5	40.5	10.5
LOS	A	B		B	B	A	D	D		D	D	B
Approach Delay		10.5			17.2			38.6			31.9	
Approach LOS		B			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 97.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	362	1016	12	538	127	57	80	89	74	98
v/c Ratio	0.55	0.73	0.04	0.52	0.14	0.31	0.31	0.49	0.29	0.32
Control Delay	7.1	11.7	16.4	19.4	7.8	42.2	35.9	48.5	40.5	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	11.7	16.4	19.4	7.8	42.2	35.9	48.5	40.5	10.5
Queue Length 50th (m)	15.9	87.1	1.0	60.6	4.6	10.2	12.4	16.3	13.2	0.0
Queue Length 95th (m)	33.0	174.4	5.2	125.3	17.9	20.7	24.1	29.6	24.4	13.0
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	757	1395	268	1026	905	352	491	350	497	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.73	0.04	0.52	0.14	0.16	0.16	0.25	0.15	0.20

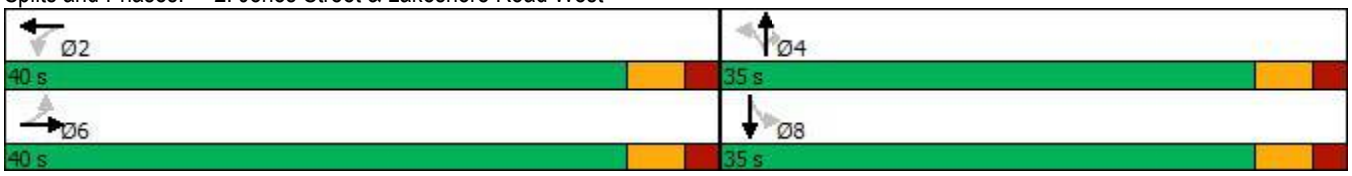
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	831	7	15	401	57	10	19	10	83	19	48
Future Volume (vph)	48	831	7	15	401	57	10	19	10	83	19	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.999			0.981				0.850		0.893	
Flt Protected	0.950			0.950				0.983		0.950		
Satd. Flow (prot)	1789	1882	0	1789	1848	0	0	1851	1601	1789	1682	0
Flt Permitted	0.341			0.115				0.933		0.736		
Satd. Flow (perm)	642	1882	0	217	1848	0	0	1757	1601	1386	1682	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			13				33		52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			222.3			280.1			270.1	
Travel Time (s)		17.5			16.0			20.2			19.4	
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
Adj. Flow (vph)	52	903	8	16	436	62	11	21	11	90	21	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	911	0	16	498	0	0	32	11	90	73	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5	2.0	2.0	30.5	
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	1.8	2.0	2.0	1.8	
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			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3	29.3	29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%	46.7%	46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7	29.7	29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
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	0.0	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3	5.3	5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.5	3.5	3.5	3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		14.0	14.0	14.0	14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7	29.7	29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40	0.40	0.40	0.40	
v/c Ratio	0.18	1.05		0.16	0.58			0.05	0.02	0.16	0.10	
Control Delay	13.8	65.9		16.7	17.7			14.3	1.3	15.7	6.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	13.8	65.9		16.7	17.7			14.3	1.3	15.7	6.9	
LOS	B	E		B	B			B	A	B	A	
Approach Delay		63.0			17.7			11.0			11.8	
Approach LOS		E			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 42.9		Intersection LOS: D	
Intersection Capacity Utilization 82.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	52	911	16	498	32	11	90	73
v/c Ratio	0.18	1.05	0.16	0.58	0.05	0.02	0.16	0.10
Control Delay	13.8	65.9	16.7	17.7	14.3	1.3	15.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	65.9	16.7	17.7	14.3	1.3	15.7	6.9
Queue Length 50th (m)	4.1	~142.9	1.3	47.9	2.7	0.0	8.0	1.8
Queue Length 95th (m)	10.8	#210.4	5.5	75.7	7.5	0.9	16.9	8.9
Internal Link Dist (m)		218.7		198.3	256.1			246.1
Turn Bay Length (m)	30.0		35.0			10.0	32.0	
Base Capacity (vph)	297	871	100	861	695	653	548	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	1.05	0.16	0.58	0.05	0.02	0.16	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

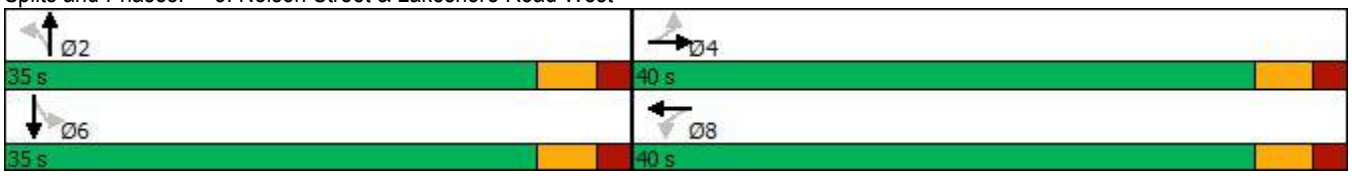
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	829	30	21	419	30	19	68	45	37	32	17
Future Volume (vph)	15	829	30	21	419	30	19	68	45	37	32	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.995			0.990			0.954			0.974	
Flt Protected	0.950			0.950				0.993			0.979	
Satd. Flow (prot)	1789	1874	0	1789	1865	0	0	1784	0	0	1796	0
Flt Permitted	0.350			0.115				0.959			0.853	
Satd. Flow (perm)	659	1874	0	217	1865	0	0	1723	0	0	1565	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			6			41			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.3			221.5			272.4			274.9	
Travel Time (s)		16.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	901	33	23	455	33	21	74	49	40	35	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	934	0	23	488	0	0	144	0	0	93	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.05	1.08		0.23	0.56			0.20			0.15	
Control Delay	11.9	75.8		19.4	17.6			11.5			12.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	11.9	75.8		19.4	17.6			11.5			12.8	
LOS	B	E		B	B			B			B	
Approach Delay		74.7			17.7			11.5			12.8	
Approach LOS		E			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 48.8		Intersection LOS: D	
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West

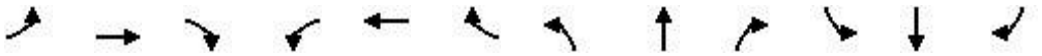


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	16	934	23	488	144	93
v/c Ratio	0.05	1.08	0.23	0.56	0.20	0.15
Control Delay	11.9	75.8	19.4	17.6	11.5	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	75.8	19.4	17.6	11.5	12.8
Queue Length 50th (m)	1.2	~150.2	1.9	47.3	9.1	6.6
Queue Length 95th (m)	4.4	#218.0	7.5	74.2	20.1	15.3
Internal Link Dist (m)		198.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	304	868	100	866	707	630
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	0.05	1.08	0.23	0.56	0.20	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

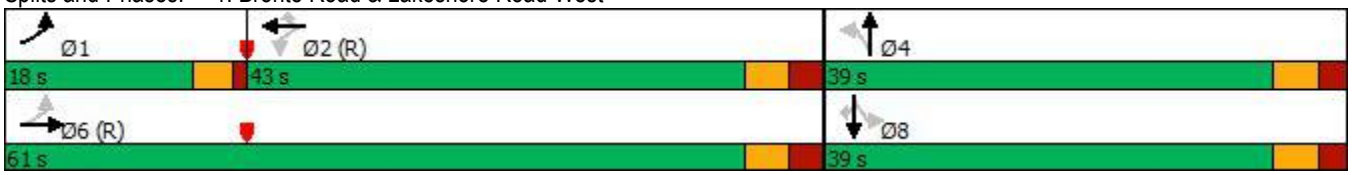


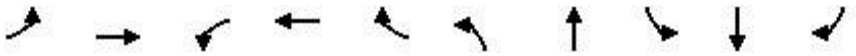
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	388	56	24	678	149	86	96	3	132	114	208
Future Volume (vph)	145	388	56	24	678	149	86	96	3	132	114	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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				0.850		0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1848	0	1789	1883	1601	1789	1876	0	1789	1883	1601
Flt Permitted	0.207			0.488			0.661			0.688		
Satd. Flow (perm)	390	1848	0	919	1883	1601	1245	1876	0	1296	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				72		2				226
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	422	61	26	737	162	93	104	3	143	124	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	483	0	26	737	162	93	107	0	143	124	226
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	18.0	61.0		43.0	43.0	43.0	39.0	39.0		39.0	39.0	39.0
Total Split (%)	18.0%	61.0%		43.0%	43.0%	43.0%	39.0%	39.0%		39.0%	39.0%	39.0%
Maximum Green (s)	14.0	55.0		37.0	37.0	37.0	33.4	33.4		33.4	33.4	33.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	72.0	70.0		56.7	56.7	56.7	18.4	18.4		18.4	18.4	18.4
Actuated g/C Ratio	0.72	0.70		0.57	0.57	0.57	0.18	0.18		0.18	0.18	0.18
v/c Ratio	0.39	0.37		0.05	0.69	0.17	0.41	0.31		0.60	0.36	0.47
Control Delay	8.2	7.9		13.8	22.5	8.2	39.3	34.9		46.6	36.6	7.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	8.2	7.9		13.8	22.5	8.2	39.3	34.9		46.6	36.6	7.6
LOS	A	A		B	C	A	D	C		D	D	A
Approach Delay		8.0			19.8			36.9			26.2	
Approach LOS		A			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	158	483	26	737	162	93	107	143	124	226
v/c Ratio	0.39	0.37	0.05	0.69	0.17	0.41	0.31	0.60	0.36	0.47
Control Delay	8.2	7.9	13.8	22.5	8.2	39.3	34.9	46.6	36.6	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	7.9	13.8	22.5	8.2	39.3	34.9	46.6	36.6	7.6
Queue Length 50th (m)	8.0	31.8	2.0	91.9	7.2	16.1	17.8	25.7	21.3	0.0
Queue Length 95th (m)	19.4	65.2	7.9	#202.8	22.9	27.5	29.0	40.4	33.4	16.8
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	476	1296	520	1067	938	415	627	432	628	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.37	0.05	0.69	0.17	0.22	0.17	0.33	0.20	0.33

Intersection Summary

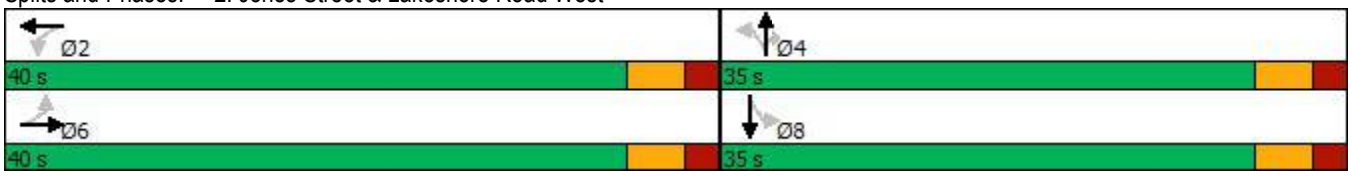
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	445	16	23	776	101	38	32	51	79	51	62
Future Volume (vph)	17	445	16	23	776	101	38	32	51	79	51	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.995			0.983				0.850		0.918	
Flt Protected	0.950			0.950				0.974		0.950		
Satd. Flow (prot)	1789	1874	0	1789	1851	0	0	1834	1601	1789	1729	0
Flt Permitted	0.115			0.338				0.832		0.708		
Satd. Flow (perm)	217	1874	0	637	1851	0	0	1567	1601	1333	1729	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			12				55		67	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			222.3			280.1			270.1	
Travel Time (s)		17.5			16.0			20.2			19.4	
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
Adj. Flow (vph)	18	484	17	25	843	110	41	35	55	86	55	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	501	0	25	953	0	0	76	55	86	122	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5	2.0	2.0	30.5	
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	1.8	2.0	2.0	1.8	
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			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3	29.3	29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%	46.7%	46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7	29.7	29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
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	0.0	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3	5.3	5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0	14.0	14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7	29.7	29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40	0.40	0.40	0.40	
v/c Ratio	0.18	0.58		0.09	1.11			0.12	0.08	0.16	0.17	
Control Delay	17.4	18.0		12.3	86.3			15.1	4.9	15.7	8.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	17.4	18.0		12.3	86.3			15.1	4.9	15.7	8.1	
LOS	B	B		B	F			B	A	B	A	
Approach Delay		18.0			84.4			10.8			11.3	
Approach LOS		B			F			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 52.1		Intersection LOS: D	
Intersection Capacity Utilization 68.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	501	25	953	76	55	86	122
v/c Ratio	0.18	0.58	0.09	1.11	0.12	0.08	0.16	0.17
Control Delay	17.4	18.0	12.3	86.3	15.1	4.9	15.7	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	18.0	12.3	86.3	15.1	4.9	15.7	8.1
Queue Length 50th (m)	1.4	49.2	1.9	~156.2	6.6	0.0	7.6	4.7
Queue Length 95th (m)	5.9	76.9	6.1	#224.6	14.6	6.2	16.5	14.2
Internal Link Dist (m)		218.7		198.3	256.1			246.1
Turn Bay Length (m)	30.0		35.0			10.0	32.0	
Base Capacity (vph)	100	868	294	862	620	667	527	725
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.58	0.09	1.11	0.12	0.08	0.16	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

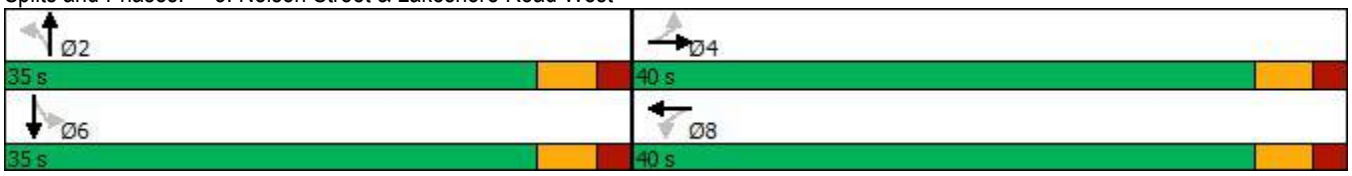
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	398	26	45	748	34	23	63	22	22	68	21
Future Volume (vph)	20	398	26	45	748	34	23	63	22	22	68	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.991			0.993			0.972			0.974	
Flt Protected	0.950			0.950				0.989			0.990	
Satd. Flow (prot)	1789	1866	0	1789	1870	0	0	1811	0	0	1816	0
Flt Permitted	0.115			0.375				0.934			0.940	
Satd. Flow (perm)	217	1866	0	706	1870	0	0	1710	0	0	1724	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			4			21			19	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.3			221.5			272.4			274.9	
Travel Time (s)		16.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	433	28	49	813	37	25	68	24	24	74	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	461	0	49	850	0	0	117	0	0	121	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.22	0.53		0.15	0.98			0.17			0.17	
Control Delay	18.9	17.0		13.2	48.3			12.8			13.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	18.9	17.0		13.2	48.3			12.8			13.2	
LOS	B	B		B	D			B			B	
Approach Delay		17.1			46.3			12.8			13.2	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 32.7		Intersection LOS: C	
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West



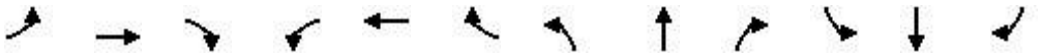
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	22	461	49	850	117	121
v/c Ratio	0.22	0.53	0.15	0.98	0.17	0.17
Control Delay	18.9	17.0	13.2	48.3	12.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	17.0	13.2	48.3	12.8	13.2
Queue Length 50th (m)	1.8	43.6	3.8	112.4	8.5	9.0
Queue Length 95th (m)	7.2	69.0	10.1	#190.4	18.3	19.0
Internal Link Dist (m)		198.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	100	866	326	867	689	694
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	0.22	0.53	0.15	0.98	0.17	0.17

Intersection Summary

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

APPENDIX K

2030 Future Background Synchro Reports

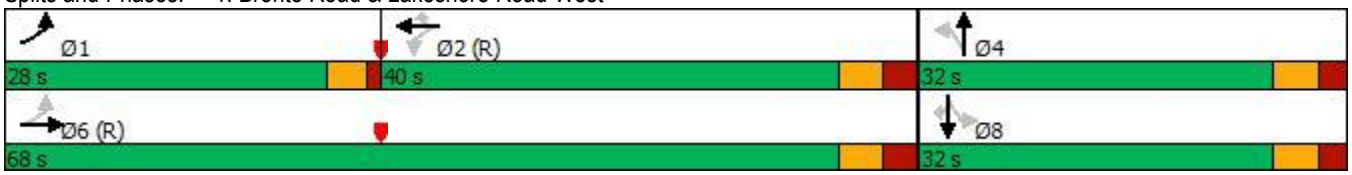


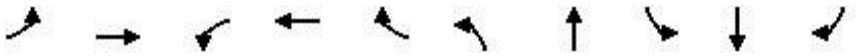
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	958	64	11	546	117	52	61	13	82	68	90
Future Volume (vph)	333	958	64	11	546	117	52	61	13	82	68	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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		0.991				0.850		0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1866	0	1789	1883	1601	1789	1834	0	1789	1883	1601
Flt Permitted	0.271			0.209			0.709			0.705		
Satd. Flow (perm)	510	1866	0	394	1883	1601	1335	1834	0	1328	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				72		10				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	362	1041	70	12	593	127	57	66	14	89	74	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	1111	0	12	593	127	57	80	0	89	74	98
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.0	68.0		40.0	40.0	40.0	32.0	32.0		32.0	32.0	32.0
Total Split (%)	28.0%	68.0%		40.0%	40.0%	40.0%	32.0%	32.0%		32.0%	32.0%	32.0%
Maximum Green (s)	24.0	62.0		34.0	34.0	34.0	26.4	26.4		26.4	26.4	26.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	76.8	74.8		52.0	52.0	52.0	13.6	13.6		13.6	13.6	13.6
Actuated g/C Ratio	0.77	0.75		0.52	0.52	0.52	0.14	0.14		0.14	0.14	0.14
v/c Ratio	0.57	0.80		0.06	0.61	0.15	0.31	0.31		0.49	0.29	0.32
Control Delay	7.6	14.5		18.4	23.1	8.6	42.2	35.9		48.5	40.5	10.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	7.6	14.5		18.4	23.1	8.6	42.2	35.9		48.5	40.5	10.5
LOS	A	B		B	C	A	D	D		D	D	B
Approach Delay		12.8			20.5			38.6			31.9	
Approach LOS		B			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 101.8%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	362	1111	12	593	127	57	80	89	74	98
v/c Ratio	0.57	0.80	0.06	0.61	0.15	0.31	0.31	0.49	0.29	0.32
Control Delay	7.6	14.5	18.4	23.1	8.6	42.2	35.9	48.5	40.5	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	14.5	18.4	23.1	8.6	42.2	35.9	48.5	40.5	10.5
Queue Length 50th (m)	15.9	107.5	1.1	75.1	4.9	10.2	12.4	16.3	13.2	0.0
Queue Length 95th (m)	33.0	#223.6	5.5	#161.4	18.6	20.7	24.1	29.6	24.4	13.0
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	708	1396	204	979	867	352	491	350	497	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.80	0.06	0.61	0.15	0.16	0.16	0.25	0.15	0.20

Intersection Summary

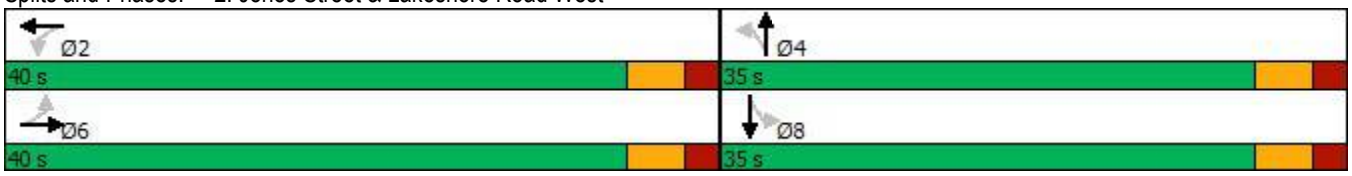
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

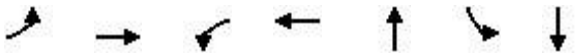
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	915	7	15	440	57	10	19	10	83	19	48
Future Volume (vph)	48	915	7	15	440	57	10	19	10	83	19	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.999			0.983			0.965			0.893	
Flt Protected	0.950			0.950				0.987		0.950		
Satd. Flow (prot)	1789	1882	0	1789	1851	0	0	1794	0	1789	1682	0
Flt Permitted	0.303			0.115				0.948		0.729		
Satd. Flow (perm)	571	1882	0	217	1851	0	0	1723	0	1373	1682	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			12			11			52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			222.3			280.1			270.1	
Travel Time (s)		17.5			16.0			20.2			19.4	
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
Adj. Flow (vph)	52	995	8	16	478	62	11	21	11	90	21	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	1003	0	16	540	0	0	43	0	90	73	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		2.0	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		2.0	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3		29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3		5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.5	3.5		3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7		29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40		0.40	0.40	
v/c Ratio	0.20	1.15		0.16	0.63			0.06		0.17	0.10	
Control Delay	14.4	104.1		16.7	18.9			11.7		15.7	6.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	14.4	104.1		16.7	18.9			11.7		15.7	6.9	
LOS	B	F		B	B			B		B	A	
Approach Delay		99.7			18.8			11.7			11.8	
Approach LOS		F			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 65.0		Intersection LOS: E	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West



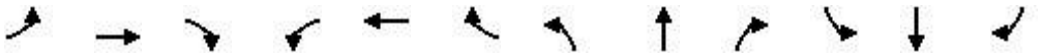


Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	52	1003	16	540	43	90	73
v/c Ratio	0.20	1.15	0.16	0.63	0.06	0.17	0.10
Control Delay	14.4	104.1	16.7	18.9	11.7	15.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	104.1	16.7	18.9	11.7	15.7	6.9
Queue Length 50th (m)	4.1	~171.2	1.3	53.8	2.7	8.0	1.8
Queue Length 95th (m)	11.1	#240.6	5.5	84.8	8.3	17.0	8.9
Internal Link Dist (m)		218.7		198.3	256.1		246.1
Turn Bay Length (m)	30.0		35.0			32.0	
Base Capacity (vph)	264	871	100	862	688	543	697
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	1.15	0.16	0.63	0.06	0.17	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

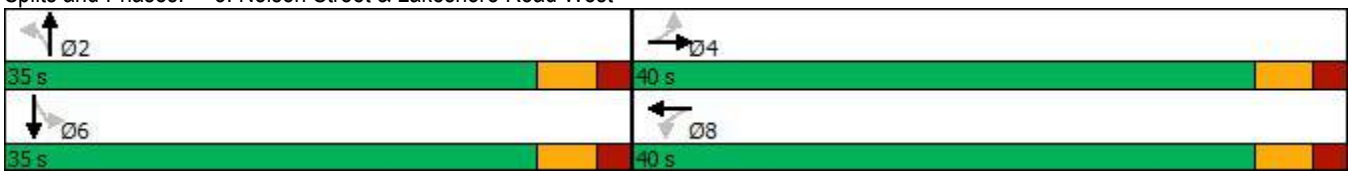


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	914	30	21	461	30	19	68	45	37	32	17
Future Volume (vph)	15	914	30	21	461	30	19	68	45	37	32	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.995			0.991			0.954			0.974	
Flt Protected	0.950			0.950				0.993			0.979	
Satd. Flow (prot)	1789	1874	0	1789	1866	0	0	1784	0	0	1796	0
Flt Permitted	0.308			0.115				0.959			0.853	
Satd. Flow (perm)	580	1874	0	217	1866	0	0	1723	0	0	1565	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			6			41			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.3			221.5			272.4			274.9	
Travel Time (s)		16.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	993	33	23	501	33	21	74	49	40	35	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	1026	0	23	534	0	0	144	0	0	93	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.06	1.18		0.23	0.62			0.20			0.15	
Control Delay	12.1	116.4		19.4	18.8			11.5			12.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.1	116.4		19.4	18.8			11.5			12.8	
LOS	B	F		B	B			B			B	
Approach Delay		114.8			18.8			11.5			12.8	
Approach LOS		F			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 72.4		Intersection LOS: E	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West

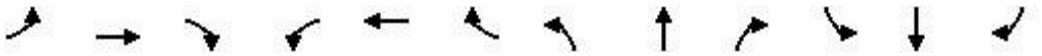


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	16	1026	23	534	144	93
v/c Ratio	0.06	1.18	0.23	0.62	0.20	0.15
Control Delay	12.1	116.4	19.4	18.8	11.5	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	116.4	19.4	18.8	11.5	12.8
Queue Length 50th (m)	1.2	~178.6	1.9	53.4	9.1	6.6
Queue Length 95th (m)	4.5	#248.2	7.5	83.6	20.1	15.3
Internal Link Dist (m)		198.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	268	868	100	866	707	630
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	0.06	1.18	0.23	0.62	0.20	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

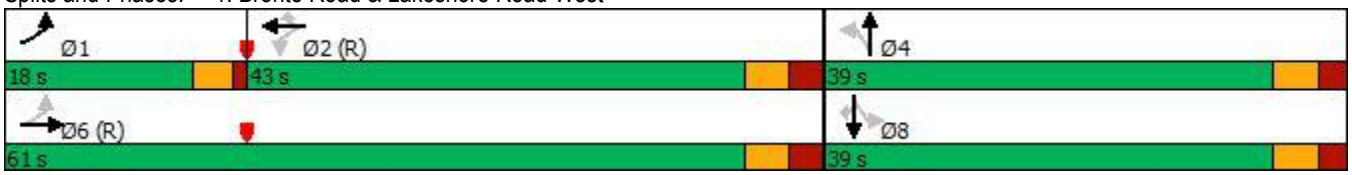


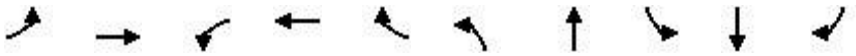
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	426	56	24	746	149	86	96	3	132	114	208
Future Volume (vph)	145	426	56	24	746	149	86	96	3	132	114	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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		0.983				0.850		0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1851	0	1789	1883	1601	1789	1876	0	1789	1883	1601
Flt Permitted	0.161			0.470			0.661			0.688		
Satd. Flow (perm)	303	1851	0	885	1883	1601	1245	1876	0	1296	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				72		2				226
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	463	61	26	811	162	93	104	3	143	124	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	524	0	26	811	162	93	107	0	143	124	226
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	18.0	61.0		43.0	43.0	43.0	39.0	39.0		39.0	39.0	39.0
Total Split (%)	18.0%	61.0%		43.0%	43.0%	43.0%	39.0%	39.0%		39.0%	39.0%	39.0%
Maximum Green (s)	14.0	55.0		37.0	37.0	37.0	33.4	33.4		33.4	33.4	33.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	72.0	70.0		56.7	56.7	56.7	18.4	18.4		18.4	18.4	18.4
Actuated g/C Ratio	0.72	0.70		0.57	0.57	0.57	0.18	0.18		0.18	0.18	0.18
v/c Ratio	0.44	0.40		0.05	0.76	0.17	0.41	0.31		0.60	0.36	0.47
Control Delay	9.4	8.3		13.8	25.2	8.2	39.3	34.9		46.6	36.6	7.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	9.4	8.3		13.8	25.2	8.2	39.3	34.9		46.6	36.6	7.6
LOS	A	A		B	C	A	D	C		D	D	A
Approach Delay		8.5			22.1			36.9			26.2	
Approach LOS		A			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 20.3		Intersection LOS: C	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West

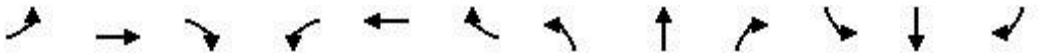




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	158	524	26	811	162	93	107	143	124	226
v/c Ratio	0.44	0.40	0.05	0.76	0.17	0.41	0.31	0.60	0.36	0.47
Control Delay	9.4	8.3	13.8	25.2	8.2	39.3	34.9	46.6	36.6	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	8.3	13.8	25.2	8.2	39.3	34.9	46.6	36.6	7.6
Queue Length 50th (m)	8.0	35.9	2.0	108.0	7.2	16.1	17.8	25.7	21.3	0.0
Queue Length 95th (m)	19.4	72.7	7.9	#234.5	22.9	27.5	29.0	40.4	33.4	16.8
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	426	1298	501	1067	938	415	627	432	628	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.40	0.05	0.76	0.17	0.22	0.17	0.33	0.20	0.33

Intersection Summary

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

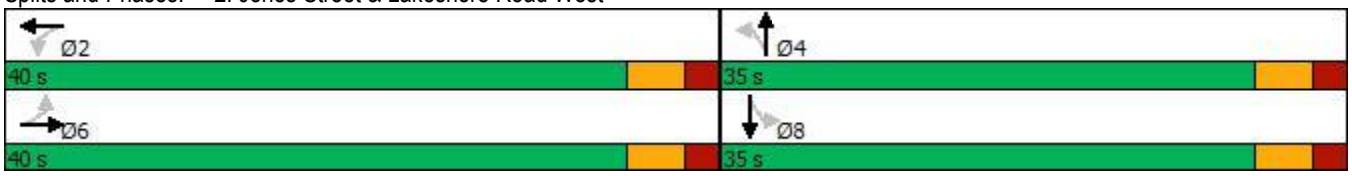


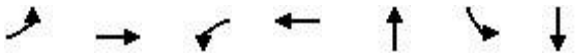
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	488	16	23	853	101	38	32	51	79	51	62
Future Volume (vph)	17	488	16	23	853	101	38	32	51	79	51	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.995			0.984			0.943			0.918	
Flt Protected	0.950			0.950				0.985		0.950		
Satd. Flow (prot)	1789	1874	0	1789	1853	0	0	1749	0	1789	1729	0
Flt Permitted	0.115			0.297				0.892		0.713		
Satd. Flow (perm)	217	1874	0	559	1853	0	0	1584	0	1343	1729	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			11			55			67	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			222.3			280.1			270.1	
Travel Time (s)		17.5			16.0			20.2			19.4	
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
Adj. Flow (vph)	18	530	17	25	927	110	41	35	55	86	55	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	547	0	25	1037	0	0	131	0	86	122	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		2.0	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		2.0	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3		29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3		5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7		29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40		0.40	0.40	
v/c Ratio	0.18	0.63		0.10	1.20			0.20		0.16	0.17	
Control Delay	17.4	19.2		12.7	124.4			9.9		15.7	8.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	17.4	19.2		12.7	124.4			9.9		15.7	8.1	
LOS	B	B		B	F			A		B	A	
Approach Delay		19.2			121.8			9.9			11.3	
Approach LOS		B			F			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 73.2		Intersection LOS: E	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West



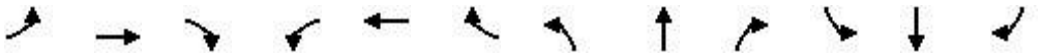


Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	18	547	25	1037	131	86	122
v/c Ratio	0.18	0.63	0.10	1.20	0.20	0.16	0.17
Control Delay	17.4	19.2	12.7	124.4	9.9	15.7	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	19.2	12.7	124.4	9.9	15.7	8.1
Queue Length 50th (m)	1.4	55.6	1.9	~182.1	6.6	7.6	4.7
Queue Length 95th (m)	5.9	86.8	6.2	#252.1	16.9	16.5	14.2
Internal Link Dist (m)		218.7		198.3	256.1		246.1
Turn Bay Length (m)	30.0		35.0			32.0	
Base Capacity (vph)	100	868	258	863	660	531	725
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.63	0.10	1.20	0.20	0.16	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

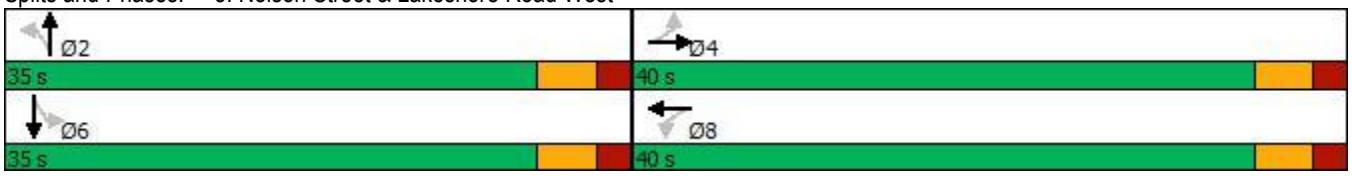


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	438	26	45	824	34	23	63	22	22	68	21
Future Volume (vph)	20	438	26	45	824	34	23	63	22	22	68	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.992			0.994			0.972			0.974	
Flt Protected	0.950			0.950				0.989			0.990	
Satd. Flow (prot)	1789	1868	0	1789	1872	0	0	1811	0	0	1816	0
Flt Permitted	0.115			0.335				0.934			0.940	
Satd. Flow (perm)	217	1868	0	631	1872	0	0	1710	0	0	1724	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			4			21			19	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.3			221.5			272.4			274.9	
Travel Time (s)		16.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	476	28	49	896	37	25	68	24	24	74	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	504	0	49	933	0	0	117	0	0	121	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.22	0.58		0.17	1.07			0.17			0.17	
Control Delay	18.9	18.0		13.7	75.4			12.8			13.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	18.9	18.0		13.7	75.4			12.8			13.2	
LOS	B	B		B	E			B			B	
Approach Delay		18.1			72.3			12.8			13.2	
Approach LOS		B			E			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 47.9		Intersection LOS: D	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	22	504	49	933	117	121
v/c Ratio	0.22	0.58	0.17	1.07	0.17	0.17
Control Delay	18.9	18.0	13.7	75.4	12.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	18.0	13.7	75.4	12.8	13.2
Queue Length 50th (m)	1.8	49.4	3.9	~149.9	8.5	9.0
Queue Length 95th (m)	7.2	77.6	10.3	#217.7	18.3	19.0
Internal Link Dist (m)		198.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	100	866	291	868	689	694
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	0.22	0.58	0.17	1.07	0.17	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

APPENDIX L

ITE Trip Generation Manual Excerpts

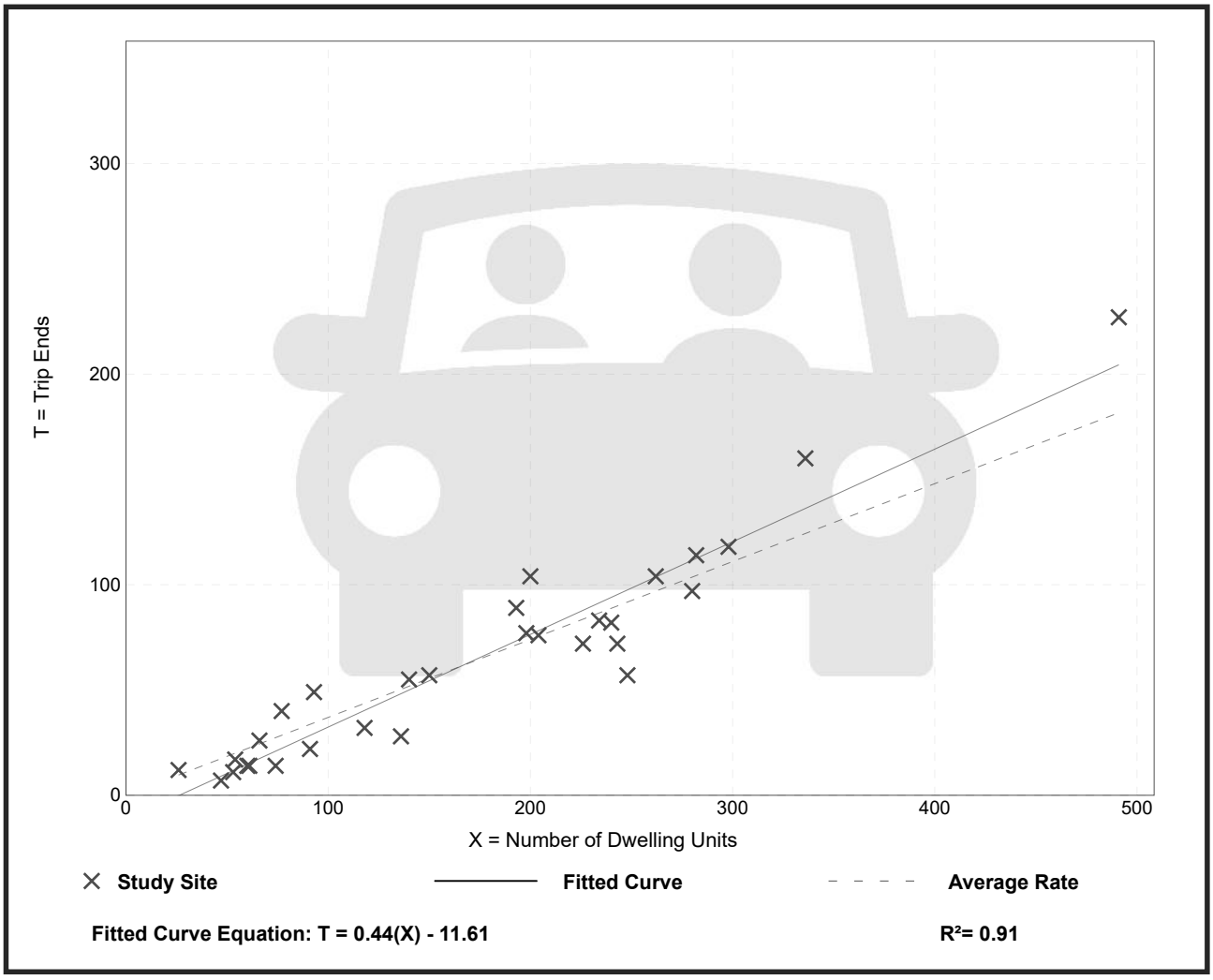
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 30
Avg. Num. of Dwelling Units: 173
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

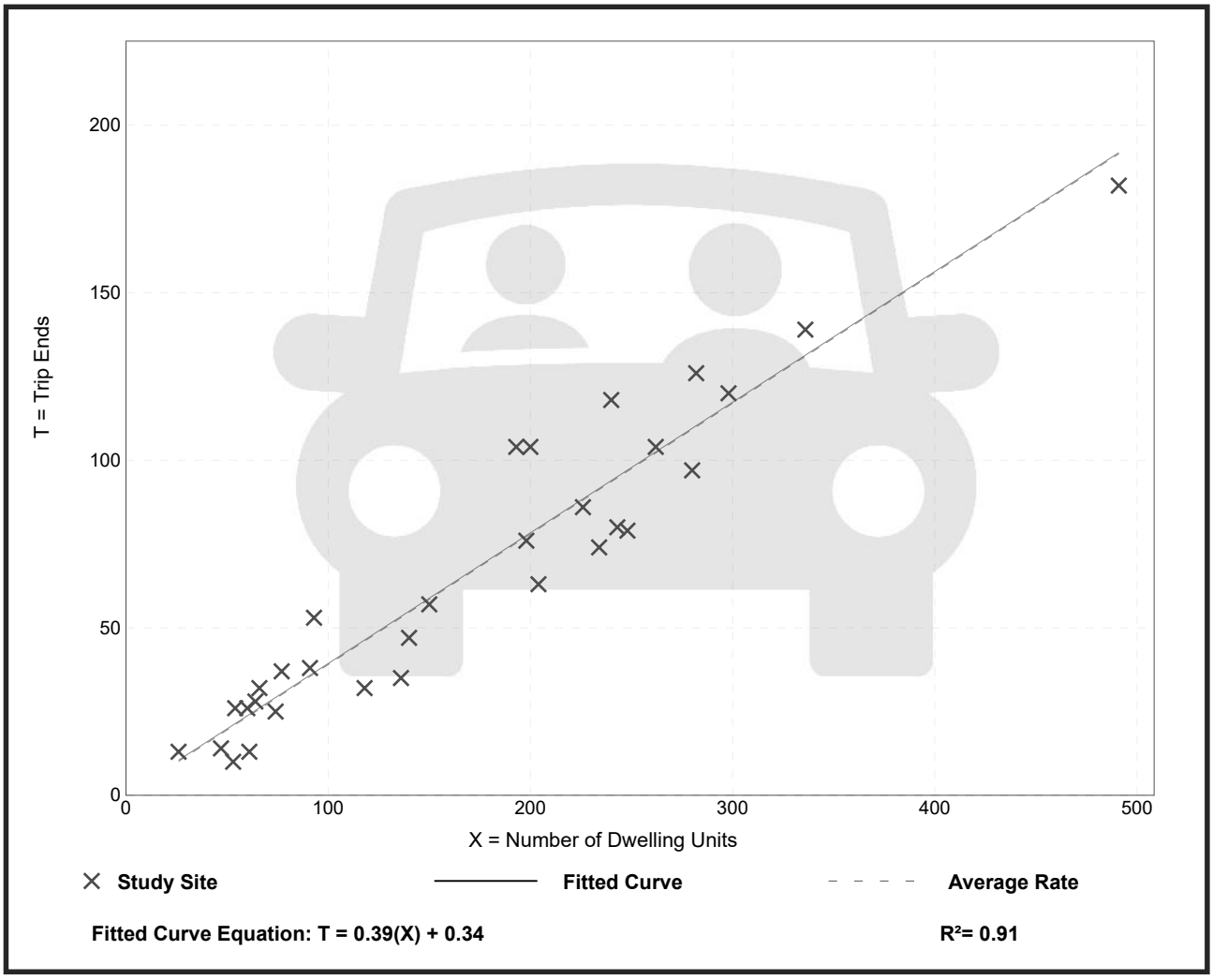
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 31
Avg. Num. of Dwelling Units: 169
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

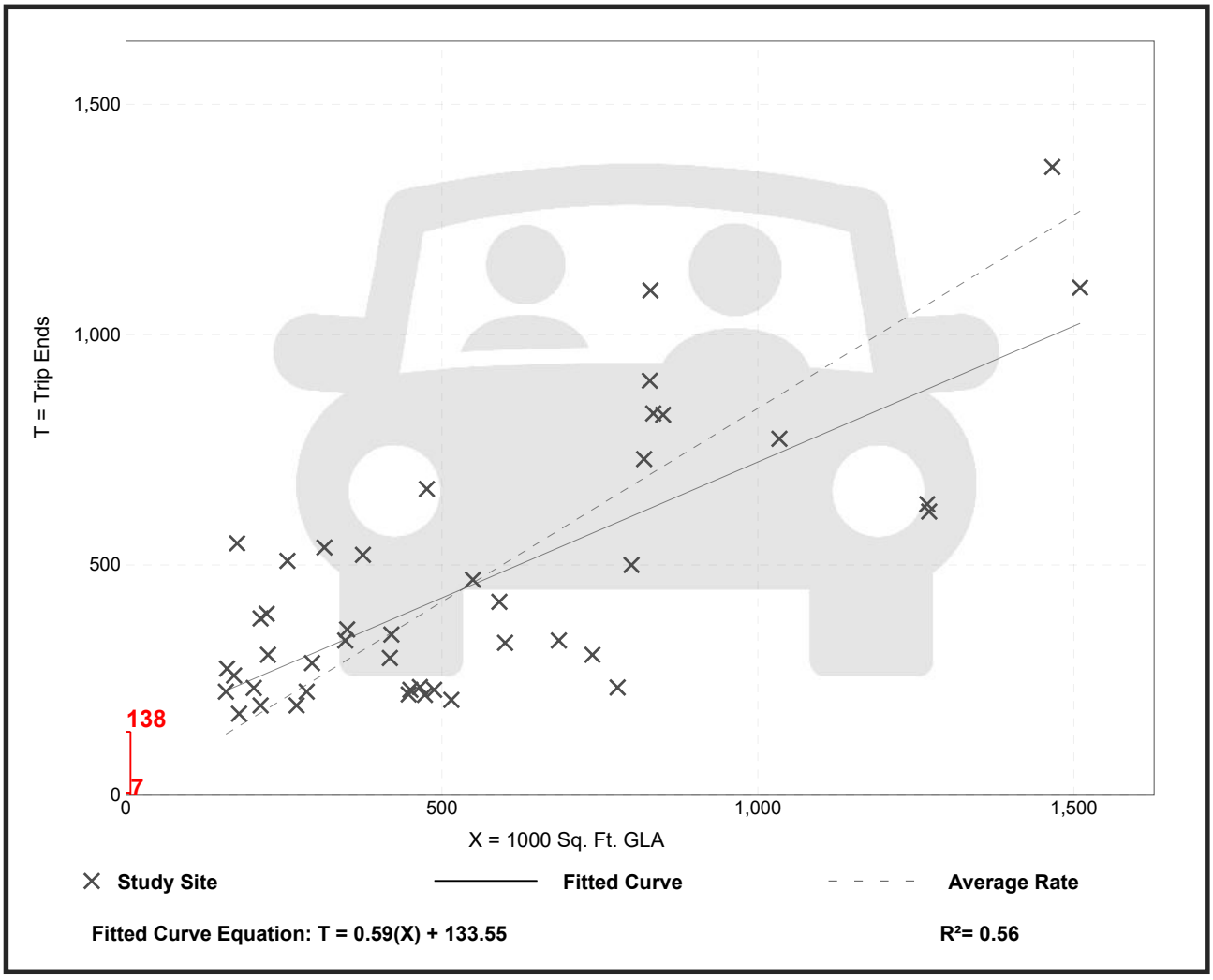
Shopping Center (>150k)
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 44
Avg. 1000 Sq. Ft. GLA: 546
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.84	0.30 - 3.11	0.42

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

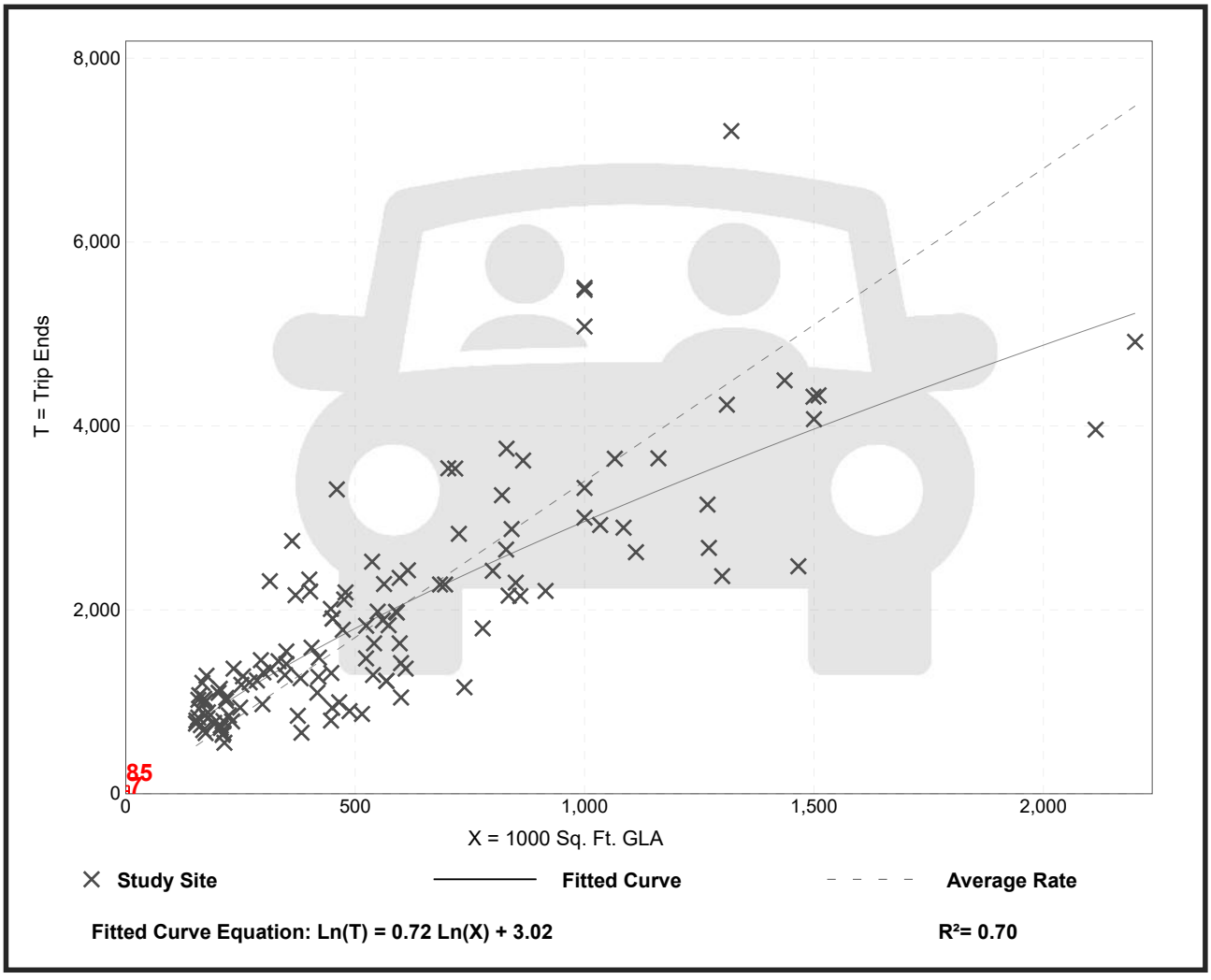
Shopping Center (>150k)
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 126
Avg. 1000 Sq. Ft. GLA: 581
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.40	1.57 - 7.58	1.26

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

APPENDIX M

TTS Results – Trip Distribution

Project Details

Project Name:	2365-2377 Lakeshore Road West
Project Number:	2239-6282
Created By:	Farah C
Date Started:	2022.02.04
Client:	Greywood

Site Information

Summary of Development	9-storey mixed use residential tower
Site Type	Residential
Subject Zones	4005,4004,4001,4006

TTS Query Results	
Distribution:	**AM IN**

Field	Selection	Value
Row variable:	**2006 GTA zone of origin**	**-**
Column variable:	**2006 GTA zone of destination**	**-**
Filter 1:	**2006 GTA zone of destination**	**4005,4004,4001,4006**
Filter 2:	**Start time of trip**	**0630-0930**
Filter 3:	**Trip purpose of destination**	**Home (H)**

AM IN	Internal									External								Totals
	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	External	External	External	External	External	External	External	External	
Direction	**I**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	
Trips	0	0	59	203	99	0	0	0	0	98	0	73	0	0	0	0	80	612
%	0.00%	0.00%	9.64%	33.17%	16.18%	0.00%	0.00%	0.00%	0.00%	16.01%	0.00%	11.93%	0.00%	0.00%	0.00%	0.00%	13.07%	100.00%
% w/o trips in subject TAZ	0.00%	0.00%	9.64%	33.17%	16.18%	0.00%	0.00%	0.00%	0.00%	16.01%	0.00%	11.93%	0.00%	0.00%	0.00%	0.00%	13.07%	100.00%

Wed Mar 02 2022 15:54:21 GMT-0500 (Eastern Standard Time) - Run Time: 2422ms

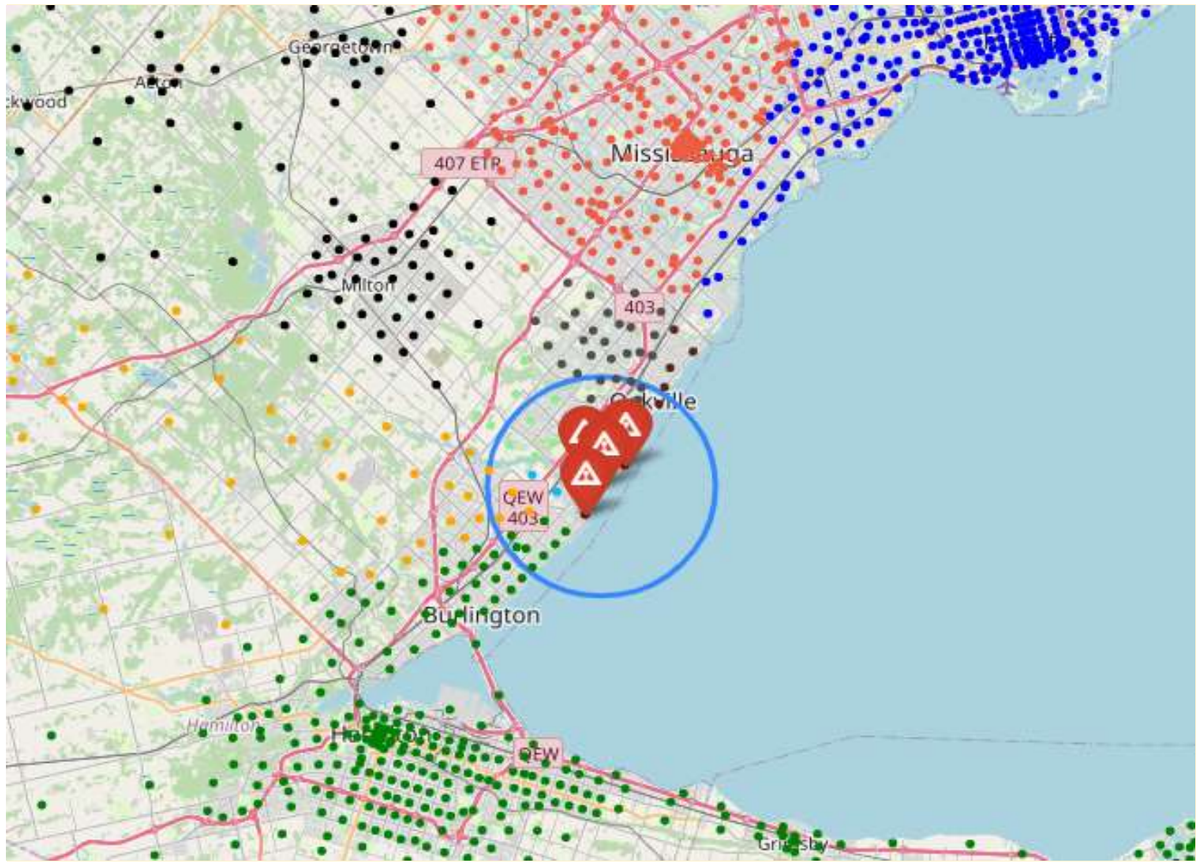
Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of destination - gta06_dest In 4005,4004,4001,4006
and
Start time of trip - start_time In 630-930
and
Trip purpose of destination - purp_dest In H
and
Primary travel mode of trip - mode_prime Not In O,S,9)

Trip 2016
Table:

,4001,4004,4005,4006
3501,0,0,0,15
3632,0,0,34,0
3709,0,24,0,0
4003,15,33,0,0
4004,91,0,0,0
4005,26,0,78,0
4006,0,61,0,18
4007,10,0,0,0
4008,30,0,0,0
4009,43,0,0,0
4010,14,0,14,0
4011,0,0,49,33



4014,25,0,0,0
4017,17,0,0,0
4022,0,15,0,0
4030,0,8,0,0
4037,0,0,33,0
4039,0,0,11,0
4075,33,0,0,0
4076,0,0,47,0
4077,20,0,0,0
4080,18,0,0,0
4183,0,0,11,0
4190,0,60,0,0
9998,0,25,25,0

TTS Query Results	
Distribution:	**AM OUT**

Field	Selection	Value
Row variable:	**2006 GTA zone of destination**	**-**
Column variable:	**2006 GTA zone of origin**	**-**
Filter 1:	**2006 GTA zone of origin**	**4005,4004,4001,4006**
Filter 2:	**Start time of trip**	**0630-0930**
Filter 3:	**Trip purpose of origin**	**Home (H)**

AM OUT	Internal									External								Totals
	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	External	External	External	External	External	External	External	External	
Direction	**I**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	
Trips	0	80	529	1791	1091	0	0	0	0	409	134	1233	1238	0	0	0	874	7379
%	0.00%	1.08%	7.17%	24.27%	14.79%	0.00%	0.00%	0.00%	0.00%	5.54%	1.82%	16.71%	16.78%	0.00%	0.00%	0.00%	11.84%	100.00%
% w/o trips in subject TAZ	0.00%	1.08%	7.17%	24.27%	14.79%	0.00%	0.00%	0.00%	0.00%	5.54%	1.82%	16.71%	16.78%	0.00%	0.00%	0.00%	11.84%	100.00%

Wed Mar 02 2022 15:56:47 GMT-0500 (Eastern Standard Time) - Run Time: 2538ms

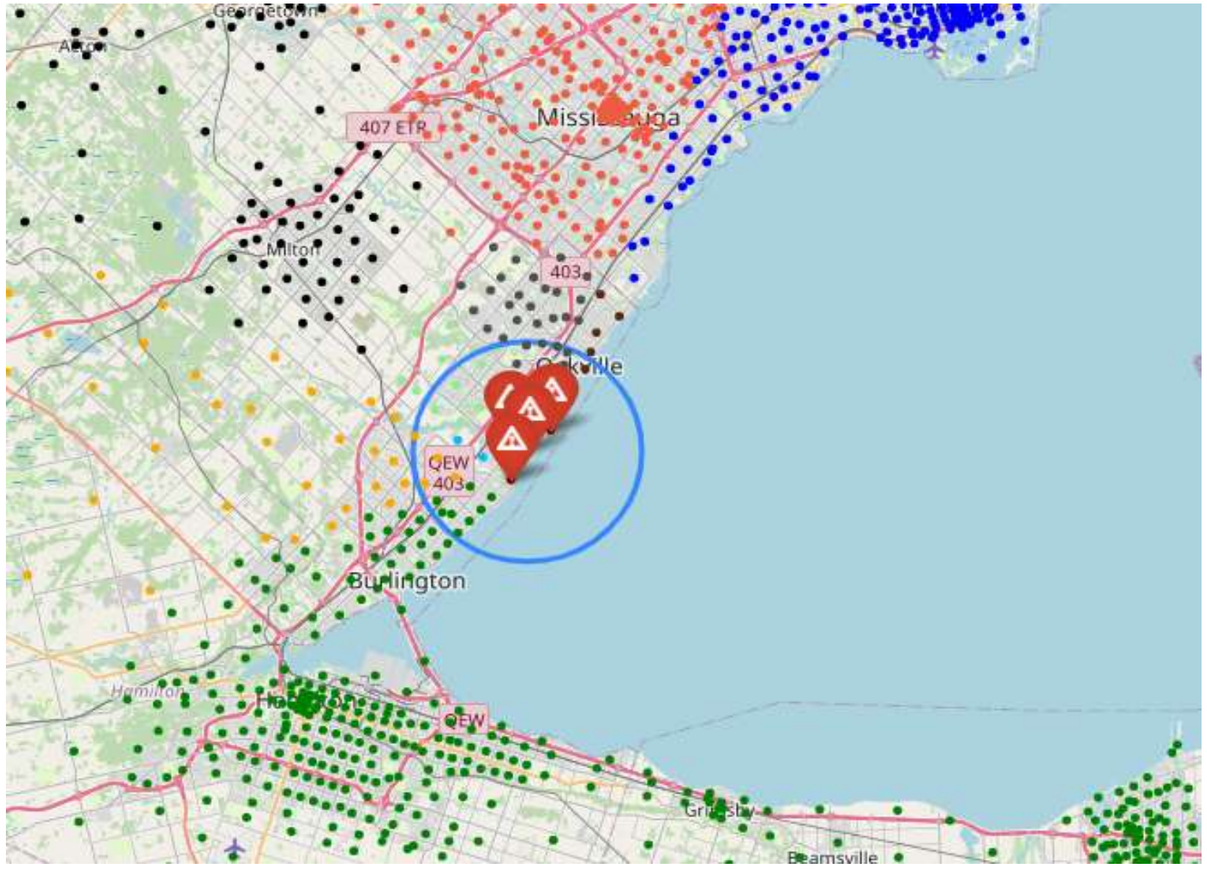
Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
(2006 GTA zone of origin - gta06_orig In 4005,4004,4001,4006
and
Start time of trip - start_time In 630-930
and
Trip purpose of origin - purp_orig In H
and
Primary travel mode of trip - mode_prime Not In O,S,9)

Trip 2016
Table:

,4001,4004,4005,4006
21,0,8,0,0
33,0,0,10,0
36,22,0,26,0
37,15,56,0,0
38,17,0,0,0
43,17,0,0,0
44,18,0,0,0
50,0,0,22,0
51,0,7,14,0
52,45,0,6,17
54,31,0,21,0
55,92,7,0,20



56,58,0,0,0
57,54,15,21,51
59,0,8,0,0
62,0,0,33,0
66,0,7,0,0
68,20,0,0,0
69,0,0,45,0
70,23,0,0,0
90,0,0,15,0
106,0,0,0,16
204,0,6,0,0
268,0,0,0,30
290,0,66,0,0
292,43,0,0,0
296,16,0,0,0
301,0,0,0,16
307,39,0,0,0
309,28,0,0,0
313,8,0,0,0
322,0,0,23,0
331,0,0,11,0
345,21,0,0,0
537,0,0,7,0
2201,0,0,14,0
2444,22,0,0,0
3102,0,0,18,0
3331,16,0,0,0
3357,9,0,0,0
3423,16,0,0,0
3462,0,15,0,0
3495,16,0,0,0
3601,0,6,12,0
3605,74,0,11,0
3607,28,0,0,0
3613,53,0,18,0
3614,0,0,14,0
3617,31,0,0,0
3618,31,13,16,0
3621,0,37,0,0
3627,18,0,0,0
3631,0,0,0,28
3632,0,0,0,126
3633,0,0,37,0
3634,25,39,0,0
3638,23,0,0,0
3639,0,14,59,0
3649,24,0,0,0
3659,28,0,0,0
3674,18,0,0,0
3693,15,0,0,0
3698,16,0,0,0

3699,19,0,41,0
3702,0,0,11,0
3703,0,0,23,0
3704,0,14,0,41
3709,0,0,16,0
3715,20,0,0,0
3723,30,0,0,0
3809,23,0,0,0
3835,0,0,23,0
3842,0,0,8,0
3848,58,0,37,0
4001,38,0,16,0
4002,20,12,48,0
4003,57,128,26,65
4004,234,105,79,0
4005,62,0,269,0
4006,263,161,29,73
4007,19,0,23,92
4008,78,75,0,0
4009,128,21,0,0
4010,101,42,0,0
4011,197,121,184,140
4012,62,13,58,0
4014,58,74,12,0
4015,9,0,0,0
4016,50,0,75,75
4017,32,44,42,0
4018,0,0,16,0
4019,0,0,32,0
4020,62,0,0,0
4021,0,11,42,0
4022,37,0,26,0
4023,0,0,24,0
4024,225,32,0,0
4025,0,34,0,65
4027,32,7,0,0
4029,0,0,33,0
4030,18,8,0,0
4034,10,0,0,0
4035,0,0,12,0
4036,32,0,29,0
4037,0,0,33,0
4039,0,0,11,0
4040,22,11,55,0
4041,70,0,0,0
4042,0,0,6,0
4051,30,0,0,0
4058,17,0,0,0
4059,0,0,17,0
4064,0,7,22,0
4068,0,9,0,57

4069,179,16,48,0
4075,33,9,0,0
4076,28,0,102,0
4077,20,0,0,0
4078,135,11,0,24
4080,18,0,0,0
4082,19,0,51,0
4093,20,0,0,0
4103,20,0,0,0
4122,27,0,0,0
4148,0,0,18,0
4152,0,0,20,0
4177,0,0,13,0
4183,0,138,11,0
4185,49,0,46,11
4186,16,0,44,0
4190,49,60,0,0
4192,18,0,0,0
5119,0,0,13,0
5120,19,0,0,0
5142,42,0,0,65
5147,0,0,26,0
5172,0,0,13,0
5181,20,0,0,0
5193,13,0,0,0
5208,19,0,0,0
7141,29,0,0,0
7381,0,0,22,0
7421,0,0,21,0
8627,0,20,0,0
8656,0,0,14,0
9068,0,0,18,0
9998,15,0,12,0

TTS Query Results	
Distribution:	**PM IN**

Field	Selection	Value
Row variable:	**2006 GTA zone of origin**	**-**
Column variable:	**2006 GTA zone of destination**	**-**
Filter 1:	**2006 GTA zone of destination**	**4005,4004,4001,4006**
Filter 2:	**Start time of trip**	**1530-1830**
Filter 3:	**Trip purpose of destination**	**Home (H)**

PM IN	Internal									External								Totals
	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	External	External	External	External	External	External	External	External	
Direction	**I**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	
Trips	0	171	303	2317	653	0	0	0	0	516	89	1346	1601	0	0	0	857	7853
%	0.00%	2.18%	3.86%	29.50%	8.32%	0.00%	0.00%	0.00%	0.00%	6.57%	1.13%	17.14%	20.39%	0.00%	0.00%	0.00%	10.91%	100.00%
% w/o trips in subject TAZ	0.00%	2.18%	3.86%	29.50%	8.32%	0.00%	0.00%	0.00%	0.00%	6.57%	1.13%	17.14%	20.39%	0.00%	0.00%	0.00%	10.91%	100.00%

Wed Mar 02 2022 15:55:29 GMT-0500 (Eastern Standard Time) - Run Time: 2649ms

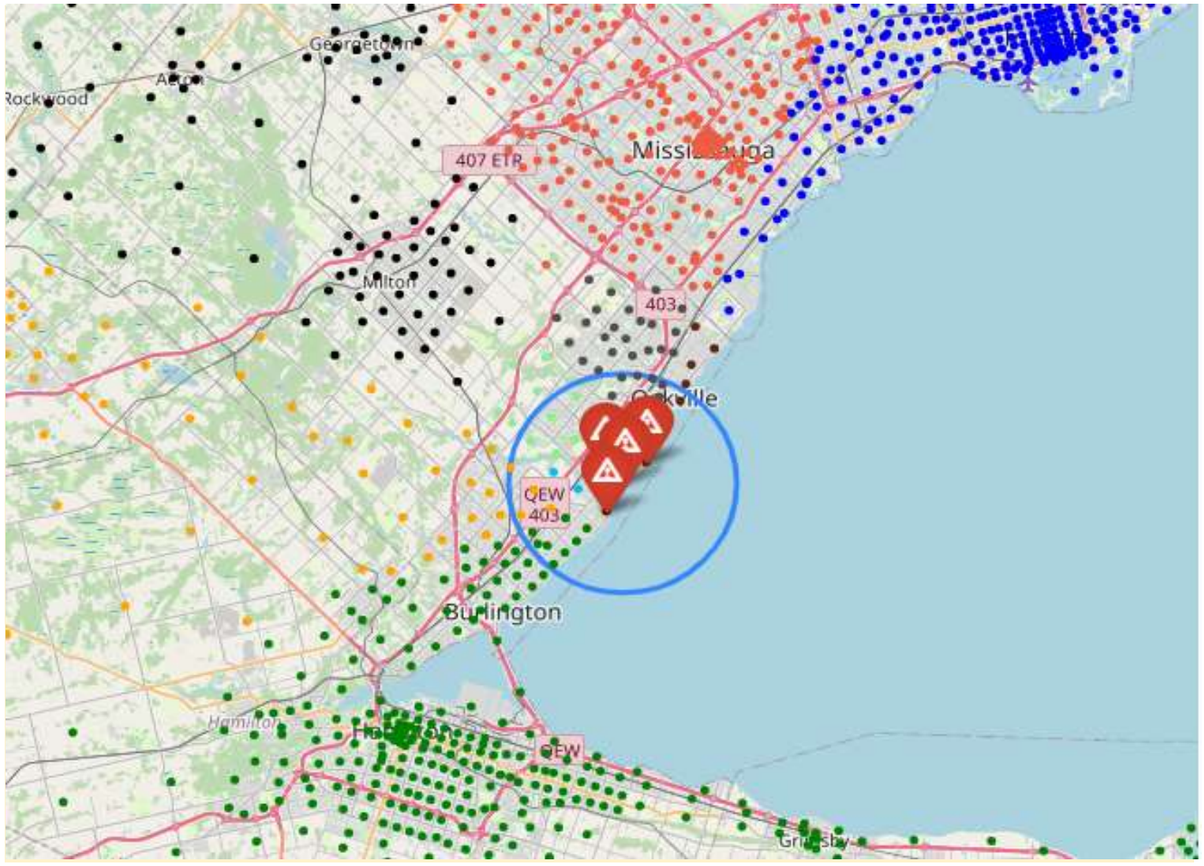
Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of destination - gta06_dest In 4005,4004,4001,4006
and
Start time of trip - start_time In 1530-1830
and
Trip purpose of destination - purp_dest In H
and
Primary travel mode of trip - mode_prime Not In O,S,9)

Trip 2016
Table:

,4001,4004,4005,4006
25,0,56,0,0
33,0,0,10,0
34,28,0,0,0
36,22,0,54,0
37,15,0,0,0
38,17,0,0,0
43,12,0,0,0
48,22,21,0,0
50,0,0,22,0
51,0,0,14,0
52,91,0,6,17
53,0,0,15,0



54,31,0,21,0
55,92,0,0,20
56,74,0,0,0
57,48,15,33,57
59,0,8,0,0
60,34,0,0,0
62,0,0,33,0
65,0,0,0,28
66,0,7,0,8
67,0,6,0,0
68,20,0,0,0
69,28,0,0,0
70,23,0,0,0
71,0,8,0,0
90,32,0,0,0
98,0,0,14,0
204,0,6,0,0
209,0,0,30,0
212,0,0,9,0
264,25,0,0,0
268,0,0,0,30
290,0,66,0,0
296,16,0,0,0
301,43,0,0,16
307,39,20,0,0
309,58,0,0,0
313,8,0,0,0
322,0,0,23,0
331,0,0,11,0
342,0,0,14,0
345,21,0,0,0
1072,30,0,0,0
3327,0,0,0,24
3357,9,0,0,0
3462,0,15,0,0
3479,0,0,23,0
3495,16,0,0,0
3601,0,6,0,0
3605,74,0,43,0
3607,39,0,0,0
3613,53,0,0,0
3614,0,0,14,0
3615,0,37,0,0
3617,31,0,0,0
3618,31,13,16,0
3621,0,37,0,0
3627,18,0,0,0
3632,0,12,0,190
3633,0,0,37,0
3634,25,39,0,7
3638,23,0,0,0

3639,0,14,71,0
3643,0,21,0,0
3659,28,0,0,0
3669,0,0,15,0
3671,35,0,0,0
3674,18,0,0,0
3698,16,0,0,0
3699,19,0,41,0
3701,17,0,0,0
3702,0,0,11,0
3704,0,14,0,41
3707,16,0,0,0
3709,0,0,16,0
3811,0,0,14,0
3835,0,0,23,0
3848,58,0,37,0
3851,43,0,0,0
4002,80,38,53,0
4003,74,81,12,0
4004,143,0,51,0
4005,35,81,104,0
4006,21,0,21,28
4007,95,73,156,51
4008,95,75,9,0
4009,69,17,19,24
4011,122,0,156,65
4012,89,13,86,0
4014,88,110,12,0
4015,9,0,11,0
4016,28,0,50,18
4017,0,0,42,0
4018,0,0,16,0
4019,0,0,32,63
4020,62,0,0,0
4021,0,11,83,0
4022,15,0,11,0
4023,0,0,24,0
4024,259,32,52,0
4025,0,17,14,130
4026,0,0,0,11
4027,50,7,14,0
4029,0,48,20,0
4030,0,0,24,0
4034,31,7,0,0
4035,0,0,17,0
4036,32,0,14,0
4039,0,0,11,0
4040,49,20,121,0
4042,0,0,16,0
4047,0,0,30,0
4051,30,0,0,0

4057,0,0,14,0
4058,17,0,0,0
4059,0,0,17,0
4060,0,0,17,0
4061,0,0,16,0
4064,28,0,40,0
4067,16,0,0,0
4068,50,0,11,57
4069,179,16,12,0
4072,18,0,0,0
4073,17,0,0,0
4075,20,0,0,0
4076,23,0,23,0
4077,100,0,0,0
4078,145,50,13,0
4082,19,0,13,0
4085,0,0,32,0
4103,20,0,0,0
4122,27,0,0,0
4144,0,0,23,0
4148,0,0,8,0
4181,0,0,10,0
4183,0,92,0,0
4185,46,0,9,0
4186,0,24,0,0
4188,14,0,0,0
4190,49,0,18,0
4195,0,0,11,0
5119,0,0,13,0
5141,19,0,0,0
5147,19,0,26,0
5181,20,0,0,0
5193,13,0,0,0
5206,0,42,0,0
6044,0,0,9,0
7141,29,0,0,0
7168,0,56,0,0
7421,0,0,21,0
8057,21,0,0,0
8627,0,20,0,0
8948,0,0,11,0
9068,0,27,18,0
9998,15,0,17,0

TTS Query Results	
Distribution:	**PM OUT**

Field	Selection	Value
Row variable:	**2006 GTA zone of destination**	**-**
Column variable:	**2006 GTA zone of origin**	**-**
Filter 1:	**2006 GTA zone of origin**	**4005,4004,4001,4006**
Filter 2:	**Start time of trip**	**0630-0930**
Filter 3:	**Trip purpose of origin**	**Home (H)**

PM OUT	Internal									External								Totals
	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	External	External	External	External	External	External	External	External	
Direction	**I**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	
Trips	0	66	276	884	375	0	0	0	0	202	51	208	26	0	0	0	513	2601
%	0.00%	2.54%	10.61%	33.99%	14.42%	0.00%	0.00%	0.00%	0.00%	7.77%	1.96%	8.00%	1.00%	0.00%	0.00%	0.00%	19.72%	100.00%
% w/o trips in subject TAZ	0.00%	2.54%	10.61%	33.99%	14.42%	0.00%	0.00%	0.00%	0.00%	7.77%	1.96%	8.00%	1.00%	0.00%	0.00%	0.00%	19.72%	100.00%

Wed Mar 02 2022 15:56:07 GMT-0500 (Eastern Standard Time) - Run Time: 2965ms

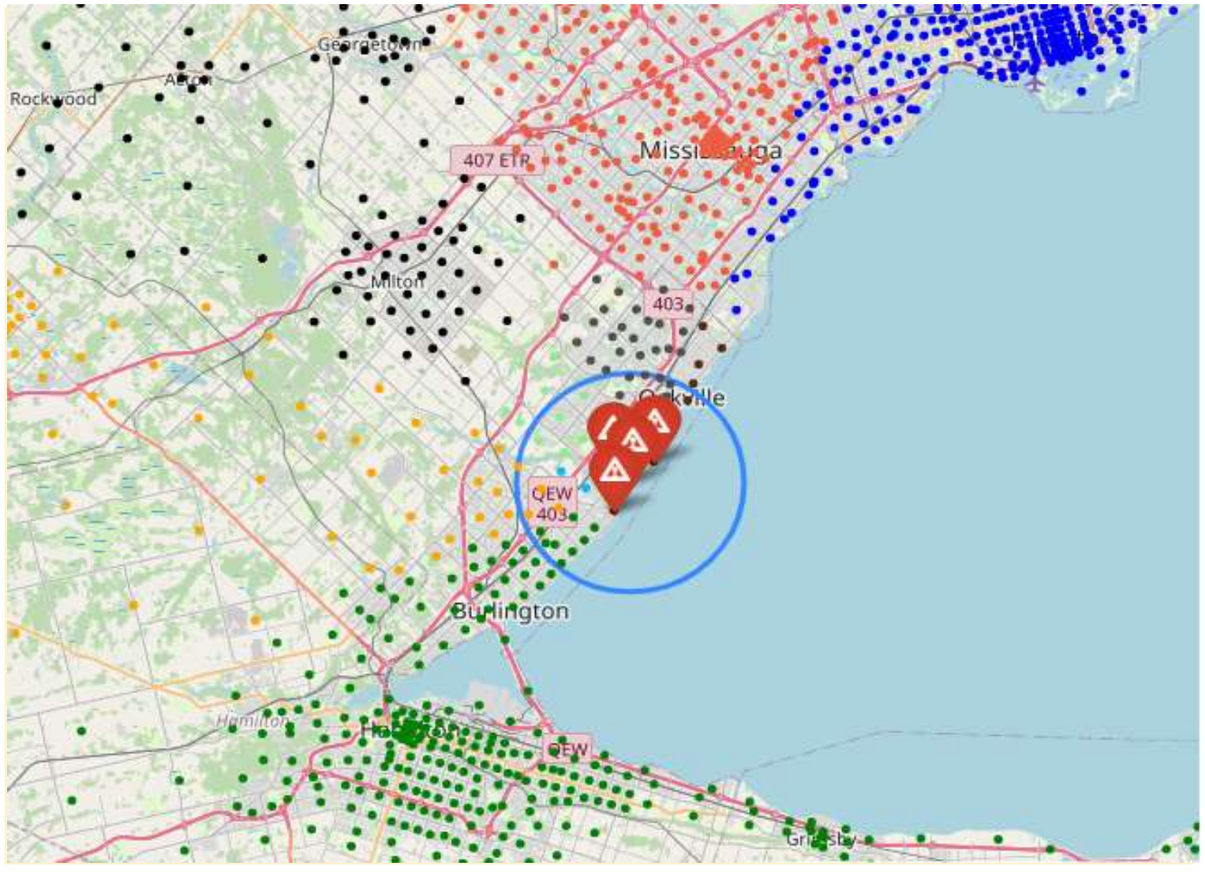
Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
(2006 GTA zone of origin - gta06_orig In 4005,4004,4001,4006
and
Start time of trip - start_time In 1530-1830
and
Trip purpose of origin - purp_orig In H
and
Primary travel mode of trip - mode_prime Not In O,S,9)

Trip 2016
Table:

,4001,4004,4005,4006
38,0,0,12,0
45,0,0,14,0
3007,0,0,28,0
3634,0,0,0,28
3651,0,48,0,0
3660,0,24,0,0
3669,0,0,21,0
3671,35,0,0,0
3693,24,0,0,0
4002,66,0,0,0
4003,31,0,33,0
4004,47,0,0,0

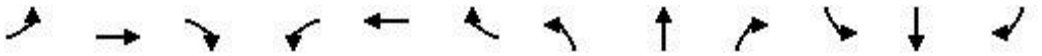


4005,41,0,23,18
4006,0,0,6,56
4007,0,38,61,0
4008,0,0,0,35
4009,27,0,0,0
4011,55,60,110,48
4012,63,13,131,0
4016,56,0,46,0
4022,0,0,22,0
4024,0,0,8,0
4025,0,0,0,65
4026,0,0,52,0
4030,0,0,16,0
4034,22,0,0,0
4035,0,0,28,0
4039,0,64,0,11
4040,169,51,37,0
4041,87,30,0,0
4042,0,20,0,0
4051,0,0,69,0
4057,41,0,0,0
4059,90,0,0,0
4060,0,0,37,0
4063,25,7,0,57
4064,0,0,6,0
4067,16,0,0,0
4068,0,0,0,57
4076,42,0,0,0
4078,0,0,13,0
4081,43,0,0,0
4083,0,0,15,0
4084,0,0,31,0
4095,75,0,0,0
4119,17,0,0,0
4183,0,46,0,0
4190,0,0,18,0
4194,0,0,34,0
5104,18,0,0,0
5133,0,0,28,0
5182,20,0,0,0
7254,0,0,7,0
9068,0,13,0,0

Time Period	Internal								External								Total
	NW	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	
AM (IN)	0.0%	9.6%	33.2%	16.2%	0.0%	0.0%	0.0%	0.0%	16.0%	0.0%	11.9%	0.0%	0.0%	0.0%	0.0%	13.1%	100.0%
AM (OUT)	1.1%	7.2%	24.3%	14.8%	0.0%	0.0%	0.0%	0.0%	5.5%	1.8%	16.7%	16.8%	0.0%	0.0%	0.0%	11.8%	100.0%
PM (IN)	2.2%	3.9%	29.5%	8.3%	0.0%	0.0%	0.0%	0.0%	6.6%	1.1%	17.1%	20.4%	0.0%	0.0%	0.0%	10.9%	100.0%
PM (OUT)	2.5%	10.6%	34.0%	14.4%	0.0%	0.0%	0.0%	0.0%	7.8%	2.0%	8.0%	1.0%	0.0%	0.0%	0.0%	19.7%	100.0%
SAT (IN)																	0.0%
SAT (OUT)																	0.0%

APPENDIX N

2025 Future Total Synchro Reports

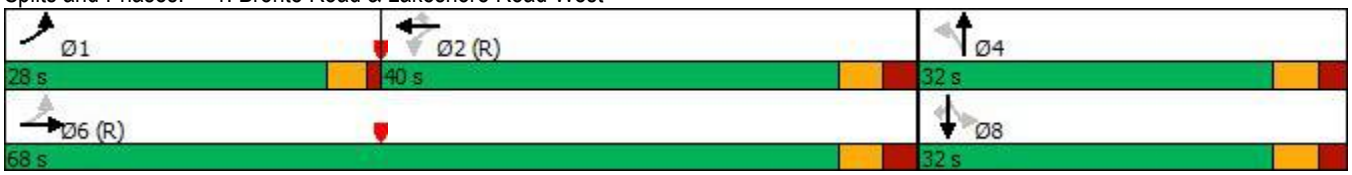


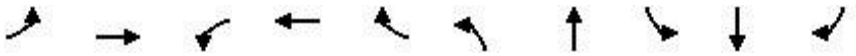
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	873	64	11	502	136	52	61	13	91	68	90
Future Volume (vph)	333	873	64	11	502	136	52	61	13	91	68	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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		0.990				0.850		0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1865	0	1789	1883	1601	1789	1834	0	1789	1883	1601
Flt Permitted	0.314			0.257			0.709			0.705		
Satd. Flow (perm)	591	1865	0	484	1883	1601	1335	1834	0	1328	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				72		10				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	362	949	70	12	546	148	57	66	14	99	74	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	1019	0	12	546	148	57	80	0	99	74	98
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.0	68.0		40.0	40.0	40.0	32.0	32.0		32.0	32.0	32.0
Total Split (%)	28.0%	68.0%		40.0%	40.0%	40.0%	32.0%	32.0%		32.0%	32.0%	32.0%
Maximum Green (s)	24.0	62.0		34.0	34.0	34.0	26.4	26.4		26.4	26.4	26.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	76.1	74.1		53.4	53.4	53.4	14.3	14.3		14.3	14.3	14.3
Actuated g/C Ratio	0.76	0.74		0.53	0.53	0.53	0.14	0.14		0.14	0.14	0.14
v/c Ratio	0.56	0.74		0.05	0.54	0.17	0.30	0.30		0.52	0.28	0.31
Control Delay	7.5	12.4		17.4	20.7	9.2	41.0	35.0		48.9	39.5	10.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	7.5	12.4		17.4	20.7	9.2	41.0	35.0		48.9	39.5	10.1
LOS	A	B		B	C	A	D	C		D	D	B
Approach Delay		11.1			18.2			37.5			32.3	
Approach LOS		B			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 97.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	362	1019	12	546	148	57	80	99	74	98
v/c Ratio	0.56	0.74	0.05	0.54	0.17	0.30	0.30	0.52	0.28	0.31
Control Delay	7.5	12.4	17.4	20.7	9.2	41.0	35.0	48.9	39.5	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	12.4	17.4	20.7	9.2	41.0	35.0	48.9	39.5	10.1
Queue Length 50th (m)	16.6	91.0	1.0	64.0	6.6	10.1	12.3	18.1	13.1	0.0
Queue Length 95th (m)	34.4	182.7	5.3	131.7	22.5	20.4	23.8	31.8	24.1	12.8
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	742	1384	258	1005	888	352	491	350	497	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.74	0.05	0.54	0.17	0.16	0.16	0.28	0.15	0.20

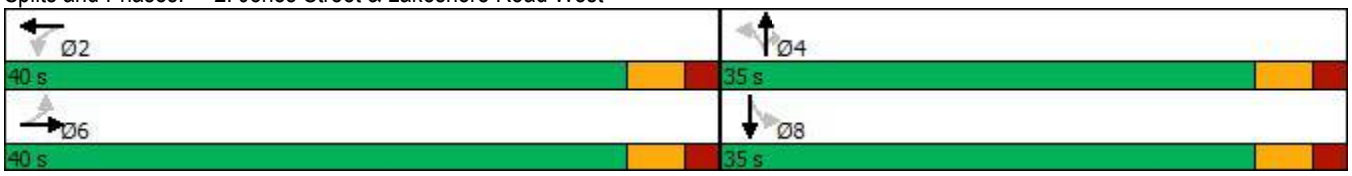
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	843	7	15	427	60	10	19	10	85	19	48
Future Volume (vph)	48	843	7	15	427	60	10	19	10	85	19	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.999			0.982				0.850		0.893	
Flt Protected	0.950			0.950				0.983		0.950		
Satd. Flow (prot)	1789	1882	0	1789	1850	0	0	1851	1601	1789	1682	0
Flt Permitted	0.313			0.115				0.933		0.736		
Satd. Flow (perm)	590	1882	0	217	1850	0	0	1757	1601	1386	1682	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			13				33		52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			84.4			280.1			270.1	
Travel Time (s)		17.5			6.1			20.2			19.4	
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
Adj. Flow (vph)	52	916	8	16	464	65	11	21	11	92	21	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	924	0	16	529	0	0	32	11	92	73	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5	2.0	2.0	30.5	
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	1.8	2.0	2.0	1.8	
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			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3	29.3	29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%	46.7%	46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7	29.7	29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
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	0.0	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3	5.3	5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.5	3.5	3.5	3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		14.0	14.0	14.0	14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7	29.7	29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40	0.40	0.40	0.40	
v/c Ratio	0.19	1.06		0.16	0.61			0.05	0.02	0.17	0.10	
Control Delay	14.2	70.6		16.7	18.5			14.3	1.3	15.8	6.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	14.2	70.6		16.7	18.5			14.3	1.3	15.8	6.9	
LOS	B	E		B	B			B	A	B	A	
Approach Delay		67.6			18.5			11.0			11.8	
Approach LOS		E			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 45.4		Intersection LOS: D	
Intersection Capacity Utilization 83.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	52	924	16	529	32	11	92	73
v/c Ratio	0.19	1.06	0.16	0.61	0.05	0.02	0.17	0.10
Control Delay	14.2	70.6	16.7	18.5	14.3	1.3	15.8	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	70.6	16.7	18.5	14.3	1.3	15.8	6.9
Queue Length 50th (m)	4.1	~146.9	1.3	52.1	2.7	0.0	8.2	1.8
Queue Length 95th (m)	11.0	#214.4	5.5	82.1	7.5	0.9	17.3	8.9
Internal Link Dist (m)		218.7		60.4	256.1			246.1
Turn Bay Length (m)	30.0		35.0			10.0	32.0	
Base Capacity (vph)	272	871	100	862	695	653	548	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	1.06	0.16	0.61	0.05	0.02	0.17	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

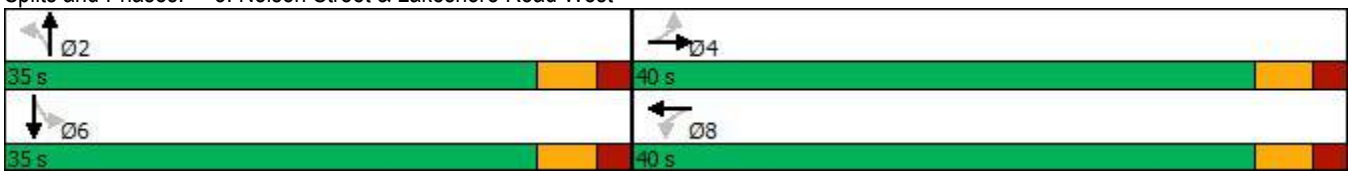
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	856	30	21	426	30	19	68	45	37	32	18
Future Volume (vph)	16	856	30	21	426	30	19	68	45	37	32	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.995			0.990			0.954			0.972	
Flt Protected	0.950			0.950				0.993			0.979	
Satd. Flow (prot)	1789	1874	0	1789	1865	0	0	1784	0	0	1792	0
Flt Permitted	0.343			0.115				0.959			0.856	
Satd. Flow (perm)	646	1874	0	217	1865	0	0	1723	0	0	1567	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			6			41			20	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.9			221.5			272.4			274.9	
Travel Time (s)		9.9			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	930	33	23	463	33	21	74	49	40	35	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	963	0	23	496	0	0	144	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.06	1.11		0.23	0.57			0.20			0.15	
Control Delay	11.9	87.8		19.4	17.8			11.5			12.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	11.9	87.8		19.4	17.8			11.5			12.6	
LOS	B	F		B	B			B			B	
Approach Delay		86.5			17.9			11.5			12.6	
Approach LOS		F			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 55.7		Intersection LOS: E	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	17	963	23	496	144	95
v/c Ratio	0.06	1.11	0.23	0.57	0.20	0.15
Control Delay	11.9	87.8	19.4	17.8	11.5	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	87.8	19.4	17.8	11.5	12.6
Queue Length 50th (m)	1.3	~159.1	1.9	48.3	9.1	6.6
Queue Length 95th (m)	4.6	#227.6	7.5	75.9	20.1	15.3
Internal Link Dist (m)		113.9		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	298	868	100	866	707	632
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	0.06	1.11	0.23	0.57	0.20	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

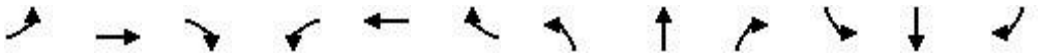
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	886	448	7	27	28
Future Volume (vph)	13	886	448	7	27	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	5.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.931	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1789	1883	1880	0	1711	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1789	1883	1880	0	1711	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		84.4	137.9		74.4	
Travel Time (s)		6.1	9.9		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	963	487	8	29	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	963	495	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	886	448	7	27	28
Future Volume (Veh/h)	13	886	448	7	27	28
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)	14	963	487	8	29	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.81				0.63	0.81
vC, conflicting volume	495				1482	491
vC1, stage 1 conf vol					491	
vC2, stage 2 conf vol					991	
vCu, unblocked vol	256				782	251
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				90	95
cM capacity (veh/h)	1057				296	636

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	14	963	495	59
Volume Left	14	0	0	29
Volume Right	0	0	8	30
cSH	1057	1700	1700	406
Volume to Capacity	0.01	0.57	0.29	0.15
Queue Length 95th (m)	0.3	0.0	0.0	3.8
Control Delay (s)	8.5	0.0	0.0	15.4
Lane LOS	A			C
Approach Delay (s)	0.1		0.0	15.4
Approach LOS				C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

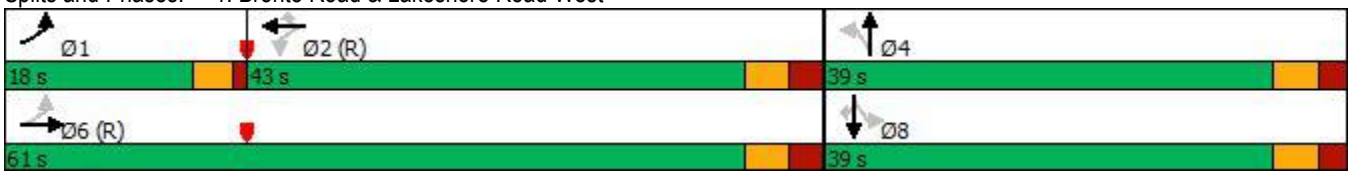


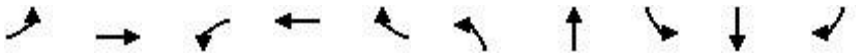
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	395	56	24	687	165	86	96	3	152	114	208
Future Volume (vph)	145	395	56	24	687	165	86	96	3	152	114	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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				0.850		0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1848	0	1789	1883	1601	1789	1876	0	1789	1883	1601
Flt Permitted	0.187			0.485			0.667			0.688		
Satd. Flow (perm)	352	1848	0	913	1883	1601	1256	1876	0	1296	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				72		2				226
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	429	61	26	747	179	93	104	3	165	124	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	490	0	26	747	179	93	107	0	165	124	226
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	18.0	61.0		43.0	43.0	43.0	39.0	39.0		39.0	39.0	39.0
Total Split (%)	18.0%	61.0%		43.0%	43.0%	43.0%	39.0%	39.0%		39.0%	39.0%	39.0%
Maximum Green (s)	14.0	55.0		37.0	37.0	37.0	33.4	33.4		33.4	33.4	33.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	70.3	68.3		54.9	54.9	54.9	20.1	20.1		20.1	20.1	20.1
Actuated g/C Ratio	0.70	0.68		0.55	0.55	0.55	0.20	0.20		0.20	0.20	0.20
v/c Ratio	0.41	0.39		0.05	0.72	0.20	0.37	0.28		0.63	0.33	0.45
Control Delay	9.3	8.9		14.9	24.9	9.4	36.5	33.0		46.4	34.6	6.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	9.3	8.9		14.9	24.9	9.4	36.5	33.0		46.4	34.6	6.9
LOS	A	A		B	C	A	D	C		D	C	A
Approach Delay		9.0			21.7			34.6			26.2	
Approach LOS		A			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 20.3		Intersection LOS: C	
Intersection Capacity Utilization 75.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	158	490	26	747	179	93	107	165	124	226
v/c Ratio	0.41	0.39	0.05	0.72	0.20	0.37	0.28	0.63	0.33	0.45
Control Delay	9.3	8.9	14.9	24.9	9.4	36.5	33.0	46.4	34.6	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.3	8.9	14.9	24.9	9.4	36.5	33.0	46.4	34.6	6.9
Queue Length 50th (m)	8.6	35.0	2.2	99.0	9.1	15.7	17.4	29.6	20.8	0.0
Queue Length 95th (m)	20.7	70.7	8.3	#215.7	27.3	26.6	28.1	45.0	32.4	16.2
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	449	1265	501	1033	911	419	627	432	628	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.39	0.05	0.72	0.20	0.22	0.17	0.38	0.20	0.33

Intersection Summary

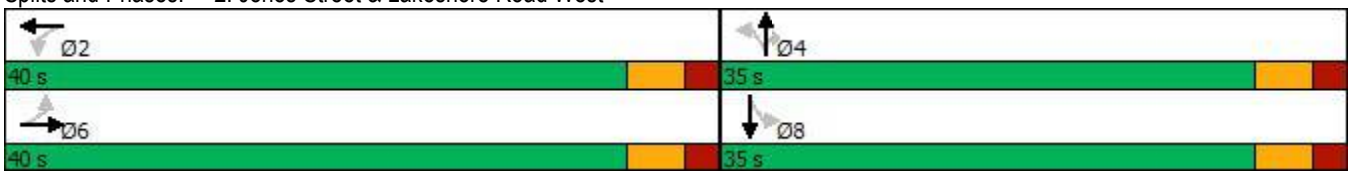
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	471	16	23	800	105	38	32	51	83	51	62
Future Volume (vph)	17	471	16	23	800	105	38	32	51	83	51	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.995			0.983				0.850		0.918	
Flt Protected	0.950			0.950				0.974		0.950		
Satd. Flow (prot)	1789	1874	0	1789	1851	0	0	1834	1601	1789	1729	0
Flt Permitted	0.115			0.313				0.832		0.708		
Satd. Flow (perm)	217	1874	0	590	1851	0	0	1567	1601	1333	1729	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			12				55		67	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			84.4			280.1			270.1	
Travel Time (s)		17.5			6.1			20.2			19.4	
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
Adj. Flow (vph)	18	512	17	25	870	114	41	35	55	90	55	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	529	0	25	984	0	0	76	55	90	122	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5	2.0	2.0	30.5	
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	1.8	2.0	2.0	1.8	
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			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3	29.3	29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%	46.7%	46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7	29.7	29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
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	0.0	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3	5.3	5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0	14.0	14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7	29.7	29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40	0.40	0.40	0.40	
v/c Ratio	0.18	0.61		0.09	1.14			0.12	0.08	0.17	0.17	
Control Delay	17.4	18.7		12.5	100.0			15.1	4.9	15.8	8.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	17.4	18.7		12.5	100.0			15.1	4.9	15.8	8.1	
LOS	B	B		B	F			B	A	B	A	
Approach Delay		18.7			97.9			10.8			11.4	
Approach LOS		B			F			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 59.4		Intersection LOS: E	
Intersection Capacity Utilization 69.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	529	25	984	76	55	90	122
v/c Ratio	0.18	0.61	0.09	1.14	0.12	0.08	0.17	0.17
Control Delay	17.4	18.7	12.5	100.0	15.1	4.9	15.8	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	18.7	12.5	100.0	15.1	4.9	15.8	8.1
Queue Length 50th (m)	1.4	53.1	1.9	~165.8	6.6	0.0	8.0	4.7
Queue Length 95th (m)	5.9	82.8	6.1	#234.8	14.6	6.2	17.1	14.2
Internal Link Dist (m)		218.7		60.4	256.1			246.1
Turn Bay Length (m)	30.0		35.0			10.0	32.0	
Base Capacity (vph)	100	868	272	862	620	667	527	725
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.61	0.09	1.14	0.12	0.08	0.17	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

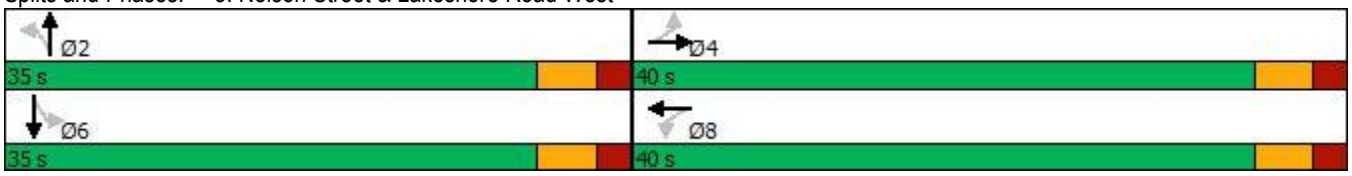
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	411	26	45	774	34	23	63	22	22	68	22
Future Volume (vph)	21	411	26	45	774	34	23	63	22	22	68	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.991			0.994			0.972			0.973	
Flt Protected	0.950			0.950				0.989			0.990	
Satd. Flow (prot)	1789	1866	0	1789	1872	0	0	1811	0	0	1814	0
Flt Permitted	0.115			0.362				0.934			0.940	
Satd. Flow (perm)	217	1866	0	682	1872	0	0	1710	0	0	1723	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			4			21			19	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		137.9			221.5			272.4			274.9	
Travel Time (s)		9.9			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	447	28	49	841	37	25	68	24	24	74	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	475	0	49	878	0	0	117	0	0	122	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.23	0.55		0.16	1.01			0.17			0.18	
Control Delay	19.4	17.3		13.4	56.0			12.8			13.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	19.4	17.3		13.4	56.0			12.8			13.2	
LOS	B	B		B	E			B			B	
Approach Delay		17.4			53.7			12.8			13.2	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 37.0		Intersection LOS: D	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	23	475	49	878	117	122
v/c Ratio	0.23	0.55	0.16	1.01	0.17	0.18
Control Delay	19.4	17.3	13.4	56.0	12.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	17.3	13.4	56.0	12.8	13.2
Queue Length 50th (m)	1.9	45.5	3.8	~122.1	8.5	9.1
Queue Length 95th (m)	7.5	71.6	10.1	#199.5	18.3	19.2
Internal Link Dist (m)		113.9		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	100	866	315	868	689	693
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	0.23	0.55	0.16	1.01	0.17	0.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	29	561	804	27	14	27
Future Volume (vph)	29	561	804	27	14	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	5.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.996		0.911	
Flt Protected	0.950				0.983	
Satd. Flow (prot)	1789	1883	1876	0	1687	0
Flt Permitted	0.950				0.983	
Satd. Flow (perm)	1789	1883	1876	0	1687	0
Link Speed (k/h)		50	50		48	
Link Distance (m)		84.4	137.9		74.4	
Travel Time (s)		6.1	9.9		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	610	874	29	15	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	610	903	0	44	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

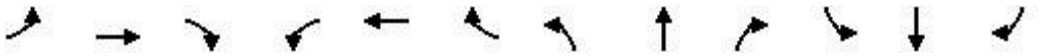
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	561	804	27	14	27
Future Volume (Veh/h)	29	561	804	27	14	27
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	610	874	29	15	29
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.55				0.65	0.55
vC, conflicting volume	903				1562	888
vC1, stage 1 conf vol					888	
vC2, stage 2 conf vol					674	
vCu, unblocked vol	407				849	380
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	95				96	92
cM capacity (veh/h)	629				336	364

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	32	610	903	44
Volume Left	32	0	0	15
Volume Right	0	0	29	29
cSH	629	1700	1700	354
Volume to Capacity	0.05	0.36	0.53	0.12
Queue Length 95th (m)	1.2	0.0	0.0	3.2
Control Delay (s)	11.0	0.0	0.0	16.6
Lane LOS	B			C
Approach Delay (s)	0.5		0.0	16.6
Approach LOS				C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX O

2030 Future Total Synchro Reports

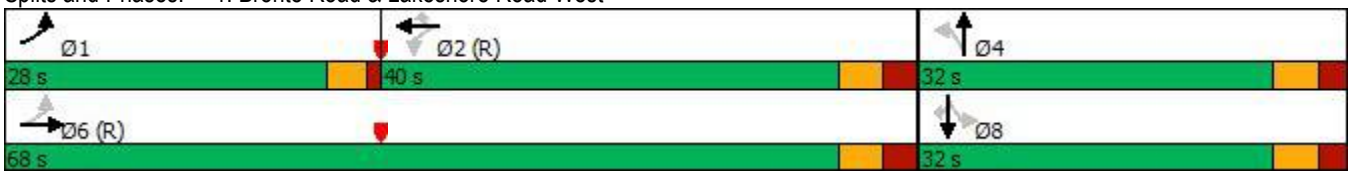


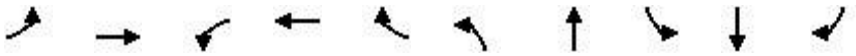
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	972	64	11	559	153	52	61	13	128	68	90
Future Volume (vph)	333	972	64	11	559	153	52	61	13	128	68	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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		0.991				0.850		0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1866	0	1789	1883	1601	1789	1834	0	1789	1883	1601
Flt Permitted	0.236			0.160			0.709			0.705		
Satd. Flow (perm)	444	1866	0	301	1883	1601	1335	1834	0	1328	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				72		10				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	362	1057	70	12	608	166	57	66	14	139	74	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	1127	0	12	608	166	57	80	0	139	74	98
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.0	68.0		40.0	40.0	40.0	32.0	32.0		32.0	32.0	32.0
Total Split (%)	28.0%	68.0%		40.0%	40.0%	40.0%	32.0%	32.0%		32.0%	32.0%	32.0%
Maximum Green (s)	24.0	62.0		34.0	34.0	34.0	26.4	26.4		26.4	26.4	26.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	73.3	71.3		48.8	48.8	48.8	17.1	17.1		17.1	17.1	17.1
Actuated g/C Ratio	0.73	0.71		0.49	0.49	0.49	0.17	0.17		0.17	0.17	0.17
v/c Ratio	0.63	0.85		0.08	0.66	0.20	0.25	0.25		0.61	0.23	0.28
Control Delay	11.5	19.9		22.1	27.3	11.6	36.2	31.1		49.0	35.3	8.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	11.5	19.9		22.1	27.3	11.6	36.2	31.1		49.0	35.3	8.6
LOS	B	B		C	C	B	D	C		D	D	A
Approach Delay		17.8			23.9			33.3			33.0	
Approach LOS		B			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 105.1%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West

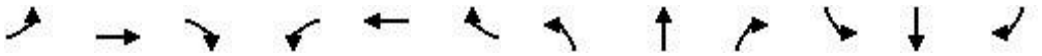




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	362	1127	12	608	166	57	80	139	74	98
v/c Ratio	0.63	0.85	0.08	0.66	0.20	0.25	0.25	0.61	0.23	0.28
Control Delay	11.5	19.9	22.1	27.3	11.6	36.2	31.1	49.0	35.3	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	19.9	22.1	27.3	11.6	36.2	31.1	49.0	35.3	8.6
Queue Length 50th (m)	19.4	132.8	1.2	85.4	9.5	9.7	11.9	25.4	12.6	0.0
Queue Length 95th (m)	47.0	#291.6	6.0	#180.8	28.0	19.1	22.3	40.7	22.6	12.0
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	652	1332	146	918	818	352	491	350	497	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.85	0.08	0.66	0.20	0.16	0.16	0.40	0.15	0.20

Intersection Summary

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

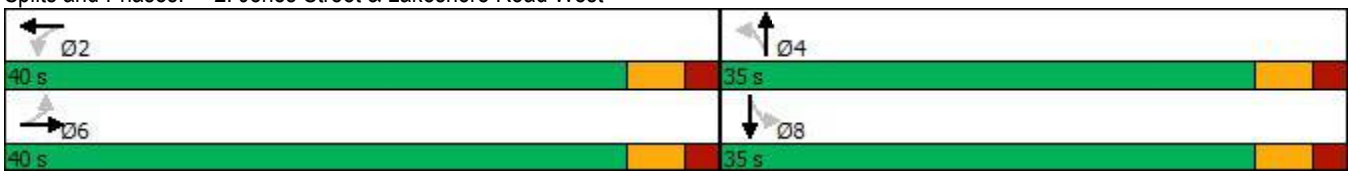


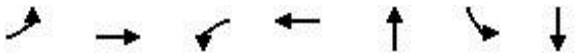
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	974	7	15	489	63	10	19	10	90	19	48
Future Volume (vph)	48	974	7	15	489	63	10	19	10	90	19	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.999			0.983			0.965			0.893	
Flt Protected	0.950			0.950				0.987		0.950		
Satd. Flow (prot)	1789	1882	0	1789	1851	0	0	1794	0	1789	1682	0
Flt Permitted	0.250			0.115				0.948		0.729		
Satd. Flow (perm)	471	1882	0	217	1851	0	0	1723	0	1373	1682	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			11			11			52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			84.0			280.1			270.1	
Travel Time (s)		17.5			6.0			20.2			19.4	
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
Adj. Flow (vph)	52	1059	8	16	532	68	11	21	11	98	21	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	1067	0	16	600	0	0	43	0	98	73	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		2.0	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		2.0	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3		29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3		5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.5	3.5		3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7		29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40		0.40	0.40	
v/c Ratio	0.24	1.23		0.16	0.70			0.06		0.18	0.10	
Control Delay	15.9	134.2		16.7	21.0			11.7		15.9	6.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	15.9	134.2		16.7	21.0			11.7		15.9	6.9	
LOS	B	F		B	C			B		B	A	
Approach Delay		128.7			20.8			11.7			12.1	
Approach LOS		F			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 81.8		Intersection LOS: F	
Intersection Capacity Utilization 73.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	52	1067	16	600	43	98	73
v/c Ratio	0.24	1.23	0.16	0.70	0.06	0.18	0.10
Control Delay	15.9	134.2	16.7	21.0	11.7	15.9	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	134.2	16.7	21.0	11.7	15.9	6.9
Queue Length 50th (m)	4.3	~191.0	1.3	62.8	2.7	8.8	1.8
Queue Length 95th (m)	11.8	#261.3	5.5	98.5	8.3	18.3	8.9
Internal Link Dist (m)		218.7		60.0	256.1		246.1
Turn Bay Length (m)	30.0		35.0			32.0	
Base Capacity (vph)	217	871	100	862	688	543	697
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	1.23	0.16	0.70	0.06	0.18	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

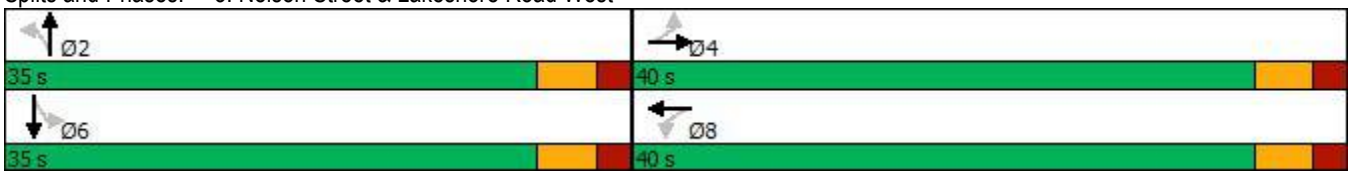
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	965	30	21	496	30	19	68	45	37	32	18
Future Volume (vph)	16	965	30	21	496	30	19	68	45	37	32	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.995			0.991			0.954			0.972	
Flt Protected	0.950			0.950				0.993			0.979	
Satd. Flow (prot)	1789	1874	0	1789	1866	0	0	1784	0	0	1792	0
Flt Permitted	0.275			0.115				0.959			0.856	
Satd. Flow (perm)	518	1874	0	217	1866	0	0	1723	0	0	1567	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			5			41			20	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.3			221.5			272.4			274.9	
Travel Time (s)		10.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	1049	33	23	539	33	21	74	49	40	35	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1082	0	23	572	0	0	144	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.07	1.25		0.23	0.66			0.20			0.15	
Control Delay	12.3	143.3		19.4	20.0			11.5			12.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.3	143.3		19.4	20.0			11.5			12.6	
LOS	B	F		B	C			B			B	
Approach Delay		141.3			20.0			11.5			12.6	
Approach LOS		F			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 88.0		Intersection LOS: F	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	17	1082	23	572	144	95
v/c Ratio	0.07	1.25	0.23	0.66	0.20	0.15
Control Delay	12.3	143.3	19.4	20.0	11.5	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	143.3	19.4	20.0	11.5	12.6
Queue Length 50th (m)	1.3	~195.8	1.9	59.2	9.1	6.6
Queue Length 95th (m)	4.7	#266.4	7.5	92.4	20.1	15.3
Internal Link Dist (m)		114.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	239	868	100	866	707	632
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	0.07	1.25	0.23	0.66	0.20	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

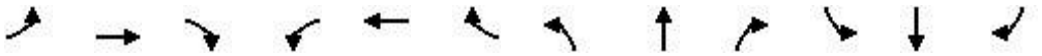
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	66	976	492	36	51	54
Future Volume (vph)	66	976	492	36	51	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	5.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.930	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1789	1883	1866	0	1710	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1789	1883	1866	0	1710	0
Link Speed (k/h)		48	48		48	
Link Distance (m)		84.0	138.3		77.6	
Travel Time (s)		6.3	10.4		5.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	1061	535	39	55	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	1061	574	0	114	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	66	976	492	36	51	54
Future Volume (Veh/h)	66	976	492	36	51	54
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)	72	1061	535	39	55	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.76				0.65	0.76
vC, conflicting volume	574				1760	554
vC1, stage 1 conf vol					554	
vC2, stage 2 conf vol					1205	
vCu, unblocked vol	279				1065	253
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	93				70	90
cM capacity (veh/h)	974				181	596

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	72	1061	574	114
Volume Left	72	0	0	55
Volume Right	0	0	39	59
cSH	974	1700	1700	283
Volume to Capacity	0.07	0.62	0.34	0.40
Queue Length 95th (m)	1.8	0.0	0.0	14.1
Control Delay (s)	9.0	0.0	0.0	26.0
Lane LOS	A			D
Approach Delay (s)	0.6		0.0	26.0
Approach LOS				D

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

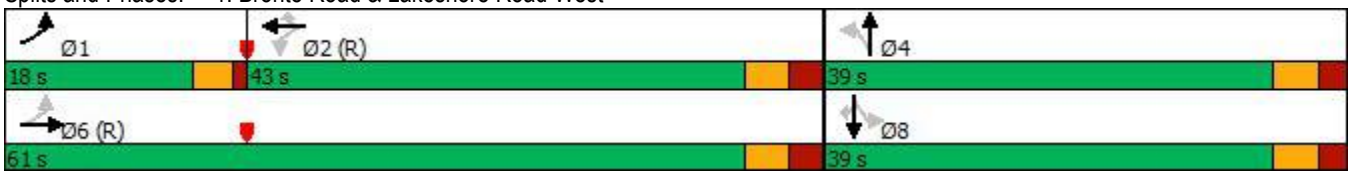


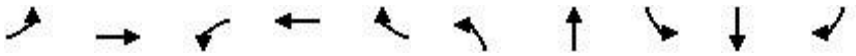
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	436	56	24	761	177	86	96	3	162	114	208
Future Volume (vph)	145	436	56	24	761	177	86	96	3	162	114	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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		0.983				0.850		0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1851	0	1789	1883	1601	1789	1876	0	1789	1883	1601
Flt Permitted	0.127			0.465			0.670			0.688		
Satd. Flow (perm)	239	1851	0	876	1883	1601	1262	1876	0	1296	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				72		2				226
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	474	61	26	827	192	93	104	3	176	124	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	535	0	26	827	192	93	107	0	176	124	226
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	18.0	61.0		43.0	43.0	43.0	39.0	39.0		39.0	39.0	39.0
Total Split (%)	18.0%	61.0%		43.0%	43.0%	43.0%	39.0%	39.0%		39.0%	39.0%	39.0%
Maximum Green (s)	14.0	55.0		37.0	37.0	37.0	33.4	33.4		33.4	33.4	33.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	69.4	67.4		53.9	53.9	53.9	21.0	21.0		21.0	21.0	21.0
Actuated g/C Ratio	0.69	0.67		0.54	0.54	0.54	0.21	0.21		0.21	0.21	0.21
v/c Ratio	0.51	0.43		0.06	0.82	0.21	0.35	0.27		0.65	0.31	0.44
Control Delay	12.8	9.8		15.5	29.8	10.2	35.2	32.0		46.0	33.5	6.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	12.8	9.8		15.5	29.8	10.2	35.2	32.0		46.0	33.5	6.6
LOS	B	A		B	C	B	D	C		D	C	A
Approach Delay		10.5			25.8			33.5			26.2	
Approach LOS		B			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West

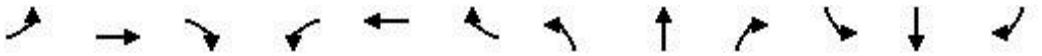




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	158	535	26	827	192	93	107	176	124	226
v/c Ratio	0.51	0.43	0.06	0.82	0.21	0.35	0.27	0.65	0.31	0.44
Control Delay	12.8	9.8	15.5	29.8	10.2	35.2	32.0	46.0	33.5	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	9.8	15.5	29.8	10.2	35.2	32.0	46.0	33.5	6.6
Queue Length 50th (m)	8.9	40.8	2.2	120.6	10.6	15.6	17.2	31.5	20.6	0.0
Queue Length 95th (m)	22.9	81.7	8.5	#254.0	30.4	26.2	27.7	47.1	31.9	16.0
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	383	1250	471	1014	895	421	627	432	628	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.43	0.06	0.82	0.21	0.22	0.17	0.41	0.20	0.33

Intersection Summary

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

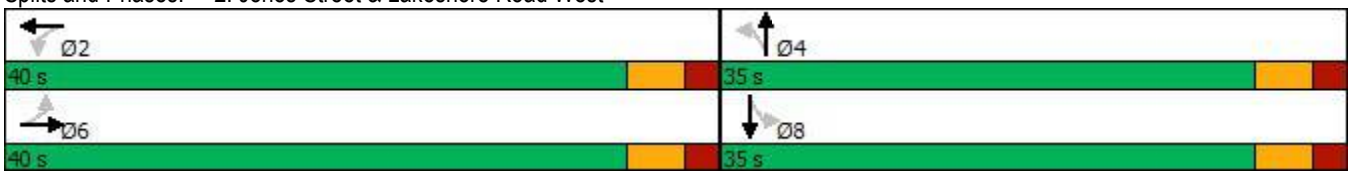


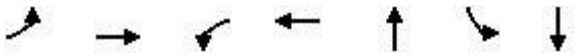
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	528	16	23	896	107	38	32	51	84	51	62
Future Volume (vph)	17	528	16	23	896	107	38	32	51	84	51	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.996			0.984			0.943			0.918	
Flt Protected	0.950			0.950				0.985		0.950		
Satd. Flow (prot)	1789	1876	0	1789	1853	0	0	1749	0	1789	1729	0
Flt Permitted	0.115			0.258				0.892		0.713		
Satd. Flow (perm)	217	1876	0	486	1853	0	0	1584	0	1343	1729	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			11			55			66	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			84.0			280.1			270.1	
Travel Time (s)		17.5			6.0			20.2			19.4	
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
Adj. Flow (vph)	18	574	17	25	974	116	41	35	55	91	55	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	591	0	25	1090	0	0	131	0	91	122	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		2.0	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		2.0	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3		29.3	29.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3		5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7		29.7	29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40		0.40	0.40	
v/c Ratio	0.18	0.68		0.11	1.26			0.20		0.17	0.17	
Control Delay	17.4	20.6		13.1	150.2			9.9		15.8	8.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	17.4	20.6		13.1	150.2			9.9		15.8	8.2	
LOS	B	C		B	F			A		B	A	
Approach Delay		20.5			147.2			9.9			11.5	
Approach LOS		C			F			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 87.2		Intersection LOS: F	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	18	591	25	1090	131	91	122
v/c Ratio	0.18	0.68	0.11	1.26	0.20	0.17	0.17
Control Delay	17.4	20.6	13.1	150.2	9.9	15.8	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	20.6	13.1	150.2	9.9	15.8	8.2
Queue Length 50th (m)	1.4	62.2	1.9	~198.5	6.6	8.1	4.8
Queue Length 95th (m)	5.9	96.5	6.3	#269.1	16.9	17.3	14.4
Internal Link Dist (m)		218.7		60.0	256.1		246.1
Turn Bay Length (m)	30.0		35.0			32.0	
Base Capacity (vph)	100	869	224	863	660	531	724
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.68	0.11	1.26	0.20	0.17	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

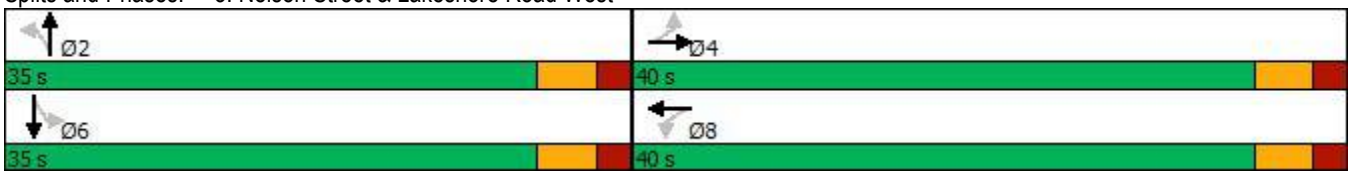
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	462	26	45	864	34	23	63	22	22	68	22
Future Volume (vph)	21	462	26	45	864	34	23	63	22	22	68	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.992			0.994			0.972			0.973	
Flt Protected	0.950			0.950				0.989			0.990	
Satd. Flow (prot)	1789	1868	0	1789	1872	0	0	1811	0	0	1814	0
Flt Permitted	0.115			0.312				0.934			0.940	
Satd. Flow (perm)	217	1868	0	588	1872	0	0	1710	0	0	1723	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			4			21			19	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.3			221.5			272.4			274.9	
Travel Time (s)		10.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	502	28	49	939	37	25	68	24	24	74	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	530	0	49	976	0	0	117	0	0	122	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	34.7	34.7		34.7	34.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	34.7	34.7		34.7	34.7			29.7			29.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.40			0.40	
v/c Ratio	0.23	0.61		0.18	1.12			0.17			0.18	
Control Delay	19.4	18.7		14.0	93.4			12.8			13.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	19.4	18.7		14.0	93.4			12.8			13.2	
LOS	B	B		B	F			B			B	
Approach Delay		18.8			89.6			12.8			13.2	
Approach LOS		B			F			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 58.0		Intersection LOS: E	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	23	530	49	976	117	122
v/c Ratio	0.23	0.61	0.18	1.12	0.17	0.18
Control Delay	19.4	18.7	14.0	93.4	12.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	18.7	14.0	93.4	12.8	13.2
Queue Length 50th (m)	1.9	53.0	3.9	~163.1	8.5	9.1
Queue Length 95th (m)	7.5	82.9	10.5	#231.9	18.3	19.2
Internal Link Dist (m)		114.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	100	866	272	868	689	693
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	0.23	0.61	0.18	1.12	0.17	0.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	44	616	884	41	24	48
Future Volume (vph)	44	616	884	41	24	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	5.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.910	
Flt Protected	0.950				0.984	
Satd. Flow (prot)	1789	1883	1872	0	1687	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1789	1883	1872	0	1687	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.0	138.3		77.6	
Travel Time (s)		6.0	10.0		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	670	961	45	26	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	670	1006	0	78	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

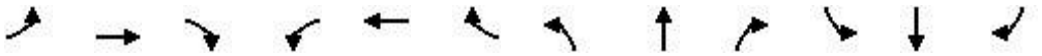
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	44	616	884	41	24	48
Future Volume (Veh/h)	44	616	884	41	24	48
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	48	670	961	45	26	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.54				0.67	0.54
vC, conflicting volume	1006				1750	984
vC1, stage 1 conf vol					984	
vC2, stage 2 conf vol					766	
vCu, unblocked vol	591				1011	550
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	91				91	82
cM capacity (veh/h)	535				278	291

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	48	670	1006	78
Volume Left	48	0	0	26
Volume Right	0	0	45	52
cSH	535	1700	1700	286
Volume to Capacity	0.09	0.39	0.59	0.27
Queue Length 95th (m)	2.2	0.0	0.0	8.2
Control Delay (s)	12.4	0.0	0.0	22.2
Lane LOS	B			C
Approach Delay (s)	0.8		0.0	22.2
Approach LOS				C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX P

2030 Future Total Synchro Reports (Optimized)

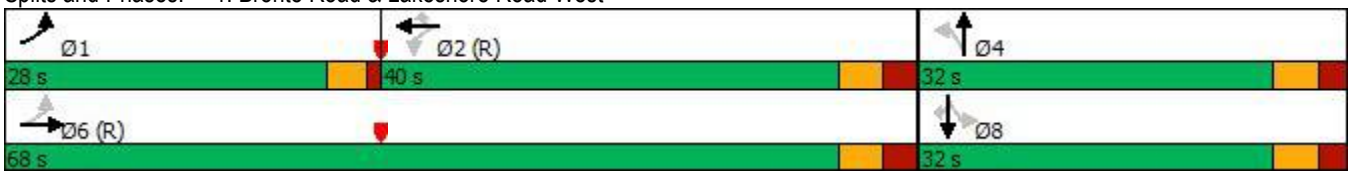


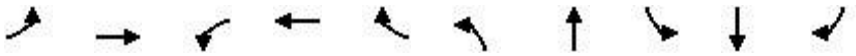
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	962	64	11	554	138	52	61	13	96	68	90
Future Volume (vph)	333	962	64	11	554	138	52	61	13	96	68	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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		0.991				0.850		0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1866	0	1789	1883	1601	1789	1834	0	1789	1883	1601
Flt Permitted	0.257			0.196			0.709			0.705		
Satd. Flow (perm)	484	1866	0	369	1883	1601	1335	1834	0	1328	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				72		10				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	362	1046	70	12	602	150	57	66	14	104	74	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	1116	0	12	602	150	57	80	0	104	74	98
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	28.0	68.0		40.0	40.0	40.0	32.0	32.0		32.0	32.0	32.0
Total Split (%)	28.0%	68.0%		40.0%	40.0%	40.0%	32.0%	32.0%		32.0%	32.0%	32.0%
Maximum Green (s)	24.0	62.0		34.0	34.0	34.0	26.4	26.4		26.4	26.4	26.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	75.8	73.8		51.0	51.0	51.0	14.6	14.6		14.6	14.6	14.6
Actuated g/C Ratio	0.76	0.74		0.51	0.51	0.51	0.15	0.15		0.15	0.15	0.15
v/c Ratio	0.59	0.81		0.06	0.63	0.18	0.29	0.29		0.54	0.27	0.31
Control Delay	8.8	15.8		19.5	24.5	10.0	40.5	34.6		49.1	39.0	9.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	8.8	15.8		19.5	24.5	10.0	40.5	34.6		49.1	39.0	9.9
LOS	A	B		B	C	B	D	C		D	D	A
Approach Delay		14.1			21.6			37.0			32.5	
Approach LOS		B			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 102.8%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West

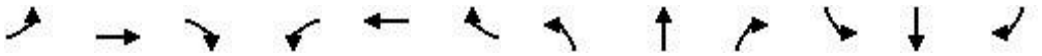




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	362	1116	12	602	150	57	80	104	74	98
v/c Ratio	0.59	0.81	0.06	0.63	0.18	0.29	0.29	0.54	0.27	0.31
Control Delay	8.8	15.8	19.5	24.5	10.0	40.5	34.6	49.1	39.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	15.8	19.5	24.5	10.0	40.5	34.6	49.1	39.0	9.9
Queue Length 50th (m)	17.0	115.0	1.1	78.9	7.3	10.1	12.3	19.0	13.0	0.0
Queue Length 95th (m)	36.4	#270.6	5.7	#171.1	23.8	20.3	23.7	33.3	24.0	12.7
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	690	1379	188	960	852	352	491	350	497	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.81	0.06	0.63	0.18	0.16	0.16	0.30	0.15	0.20

Intersection Summary

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

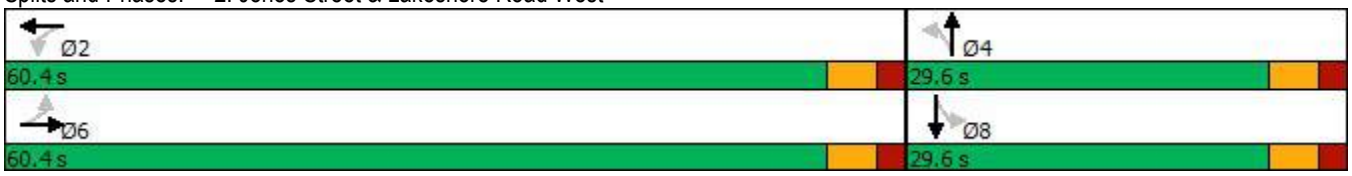


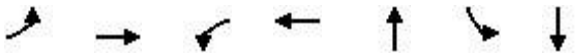
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	933	7	15	469	61	10	19	10	85	19	48
Future Volume (vph)	48	933	7	15	469	61	10	19	10	85	19	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.999			0.983			0.965			0.893	
Flt Protected	0.950			0.950				0.987		0.950		
Satd. Flow (prot)	1789	1882	0	1789	1851	0	0	1794	0	1789	1682	0
Flt Permitted	0.357			0.078				0.941		0.729		
Satd. Flow (perm)	672	1882	0	147	1851	0	0	1710	0	1373	1682	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			13			11			52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			84.0			280.1			270.1	
Travel Time (s)		17.5			6.0			20.2			19.4	
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
Adj. Flow (vph)	52	1014	8	16	510	66	11	21	11	92	21	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	1022	0	16	576	0	0	43	0	92	73	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		2.0	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		2.0	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3		29.3	29.3	
Total Split (s)	60.4	60.4		60.4	60.4		29.6	29.6		29.6	29.6	
Total Split (%)	67.1%	67.1%		67.1%	67.1%		32.9%	32.9%		32.9%	32.9%	
Maximum Green (s)	55.1	55.1		55.1	55.1		24.3	24.3		24.3	24.3	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3		5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.5	3.5		3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	55.1	55.1		55.1	55.1			24.3		24.3	24.3	
Actuated g/C Ratio	0.61	0.61		0.61	0.61			0.27		0.27	0.27	
v/c Ratio	0.13	0.89		0.18	0.51			0.09		0.25	0.15	
Control Delay	8.3	26.4		13.4	11.5			20.4		28.0	11.6	
Queue Delay	0.0	0.3		0.0	0.0			0.0		0.0	0.0	
Total Delay	8.3	26.7		13.4	11.5			20.4		28.0	11.6	
LOS	A	C		B	B			C		C	B	
Approach Delay		25.8			11.5			20.4			20.7	
Approach LOS		C			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 20.7		Intersection LOS: C	
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West

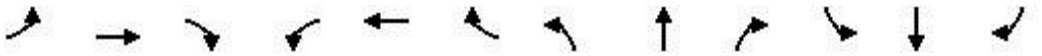




Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	52	1022	16	576	43	92	73
v/c Ratio	0.13	0.89	0.18	0.51	0.09	0.25	0.15
Control Delay	8.3	26.4	13.4	11.5	20.4	28.0	11.6
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	26.7	13.4	11.5	20.4	28.0	11.6
Queue Length 50th (m)	3.4	136.6	1.1	49.7	4.1	12.4	2.7
Queue Length 95th (m)	8.4	#234.4	4.9	74.1	11.9	25.0	12.6
Internal Link Dist (m)		218.7		60.0	256.1		246.1
Turn Bay Length (m)	30.0		35.0			32.0	
Base Capacity (vph)	411	1152	89	1138	469	370	492
Starvation Cap Reductn	0	12	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.90	0.18	0.51	0.09	0.25	0.15

Intersection Summary

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

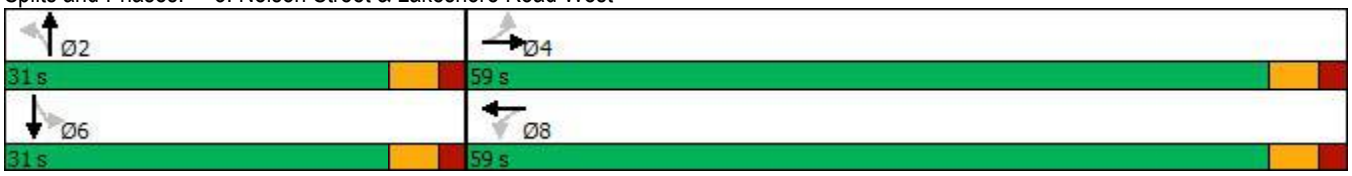


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	944	30	21	472	30	19	68	45	37	32	18
Future Volume (vph)	16	944	30	21	472	30	19	68	45	37	32	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.995			0.991			0.954			0.972	
Flt Protected	0.950			0.950				0.993			0.979	
Satd. Flow (prot)	1789	1874	0	1789	1866	0	0	1784	0	0	1792	0
Flt Permitted	0.369			0.076				0.955			0.842	
Satd. Flow (perm)	695	1874	0	143	1866	0	0	1716	0	0	1541	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			6			29			15	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.3			221.5			272.4			274.9	
Travel Time (s)		10.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	1026	33	23	513	33	21	74	49	40	35	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1059	0	23	546	0	0	144	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	59.0	59.0		59.0	59.0		31.0	31.0		31.0	31.0	
Total Split (%)	65.6%	65.6%		65.6%	65.6%		34.4%	34.4%		34.4%	34.4%	
Maximum Green (s)	53.7	53.7		53.7	53.7		25.7	25.7		25.7	25.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	52.9	52.9		52.9	52.9			25.7			25.7	
Actuated g/C Ratio	0.59	0.59		0.59	0.59			0.29			0.29	
v/c Ratio	0.04	0.95		0.27	0.49			0.28			0.21	
Control Delay	7.9	36.1		18.9	12.1			21.5			22.0	
Queue Delay	0.0	2.7		0.0	0.0			0.0			0.0	
Total Delay	7.9	38.8		18.9	12.1			21.5			22.0	
LOS	A	D		B	B			C			C	
Approach Delay		38.3			12.4			21.5			22.0	
Approach LOS		D			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 89.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 28.4		Intersection LOS: C	
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	17	1059	23	546	144	95
v/c Ratio	0.04	0.95	0.27	0.49	0.28	0.21
Control Delay	7.9	36.1	18.9	12.1	21.5	22.0
Queue Delay	0.0	2.7	0.0	0.0	0.0	0.0
Total Delay	7.9	38.8	18.9	12.1	21.5	22.0
Queue Length 50th (m)	1.1	155.5	1.8	48.7	15.2	10.4
Queue Length 95th (m)	3.8	#254.7	7.9	72.8	30.1	22.1
Internal Link Dist (m)		114.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	418	1129	86	1125	514	454
Starvation Cap Reductn	0	31	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	0.04	0.96	0.27	0.49	0.28	0.21

Intersection Summary

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

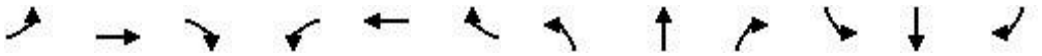
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	976	492	11	30	32
Future Volume (vph)	20	976	492	11	30	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	5.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.931	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1789	1883	1878	0	1711	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1789	1883	1878	0	1711	0
Link Speed (k/h)		48	48		48	
Link Distance (m)		84.0	138.3		77.6	
Travel Time (s)		6.3	10.4		5.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	1061	535	12	33	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	1061	547	0	68	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	976	492	11	30	32
Future Volume (Veh/h)	20	976	492	11	30	32
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)	22	1061	535	12	33	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.83				0.54	0.83
vC, conflicting volume	547				1646	541
vC1, stage 1 conf vol					541	
vC2, stage 2 conf vol					1105	
vCu, unblocked vol	353				1066	345
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				85	94
cM capacity (veh/h)	1002				226	579

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	22	1061	547	68
Volume Left	22	0	0	33
Volume Right	0	0	12	35
cSH	1002	1700	1700	329
Volume to Capacity	0.02	0.62	0.32	0.21
Queue Length 95th (m)	0.5	0.0	0.0	5.8
Control Delay (s)	8.7	0.0	0.0	18.7
Lane LOS	A			C
Approach Delay (s)	0.2		0.0	18.7
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

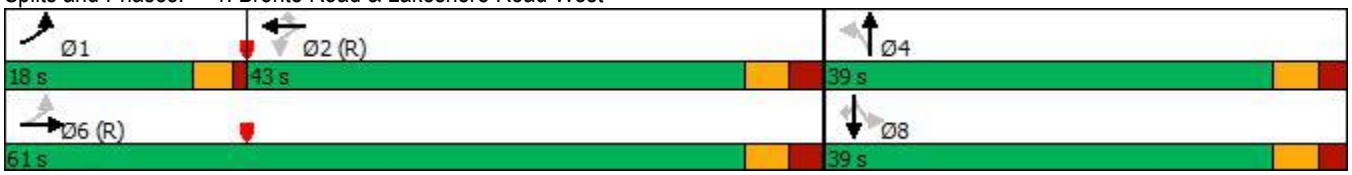


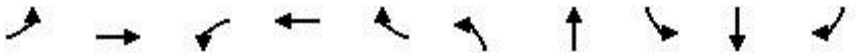
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	436	56	24	761	177	86	96	3	162	114	208
Future Volume (vph)	145	436	56	24	761	177	86	96	3	162	114	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	30.0		25.0	20.0		20.0	80.0		25.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	2.5			10.0			5.0			25.0		
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		0.983				0.850		0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1851	0	1789	1883	1601	1789	1876	0	1789	1883	1601
Flt Permitted	0.127			0.465			0.670			0.688		
Satd. Flow (perm)	239	1851	0	876	1883	1601	1262	1876	0	1296	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				72		2				226
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		197.9			242.7			310.4			218.8	
Travel Time (s)		14.2			17.5			22.3			15.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	474	61	26	827	192	93	104	3	176	124	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	535	0	26	827	192	93	107	0	176	124	226
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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		2	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	26.0		26.0	26.0	26.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.5	32.0		32.0	32.0	32.0	32.0	32.0		32.0	32.0	32.0
Total Split (s)	18.0	61.0		43.0	43.0	43.0	39.0	39.0		39.0	39.0	39.0
Total Split (%)	18.0%	61.0%		43.0%	43.0%	43.0%	39.0%	39.0%		39.0%	39.0%	39.0%
Maximum Green (s)	14.0	55.0		37.0	37.0	37.0	33.4	33.4		33.4	33.4	33.4
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.0	2.7		2.7	2.7	2.7	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0		6.0	6.0	6.0	5.6	5.6		5.6	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.5		4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0	15.0	16.0	16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	69.4	67.4		53.9	53.9	53.9	21.0	21.0		21.0	21.0	21.0
Actuated g/C Ratio	0.69	0.67		0.54	0.54	0.54	0.21	0.21		0.21	0.21	0.21
v/c Ratio	0.51	0.43		0.06	0.82	0.21	0.35	0.27		0.65	0.31	0.44
Control Delay	12.8	9.8		15.5	29.8	10.2	35.2	32.0		46.0	33.5	6.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	12.8	9.8		15.5	29.8	10.2	35.2	32.0		46.0	33.5	6.6
LOS	B	A		B	C	B	D	C		D	C	A
Approach Delay		10.5			25.8			33.5			26.2	
Approach LOS		B			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Bronte Road & Lakeshore Road West

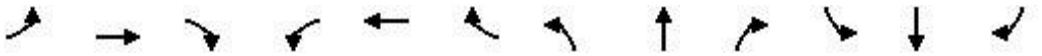




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	158	535	26	827	192	93	107	176	124	226
v/c Ratio	0.51	0.43	0.06	0.82	0.21	0.35	0.27	0.65	0.31	0.44
Control Delay	12.8	9.8	15.5	29.8	10.2	35.2	32.0	46.0	33.5	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	9.8	15.5	29.8	10.2	35.2	32.0	46.0	33.5	6.6
Queue Length 50th (m)	8.9	40.8	2.2	120.6	10.6	15.6	17.2	31.5	20.6	0.0
Queue Length 95th (m)	22.9	81.7	8.5	#254.0	30.4	26.2	27.7	47.1	31.9	16.0
Internal Link Dist (m)		173.9		218.7			286.4		194.8	
Turn Bay Length (m)			30.0		25.0	20.0		80.0		25.0
Base Capacity (vph)	383	1250	471	1014	895	421	627	432	628	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.43	0.06	0.82	0.21	0.22	0.17	0.41	0.20	0.33

Intersection Summary

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

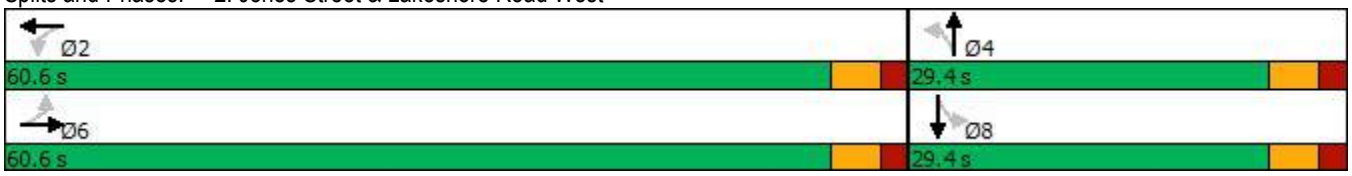


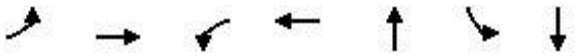
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	528	16	23	896	107	38	32	51	84	51	62
Future Volume (vph)	17	528	16	23	896	107	38	32	51	84	51	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	35.0		0.0	0.0		10.0	32.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.996			0.984			0.943			0.918	
Flt Protected	0.950			0.950				0.985		0.950		
Satd. Flow (prot)	1789	1876	0	1789	1853	0	0	1749	0	1789	1729	0
Flt Permitted	0.072			0.348				0.879		0.670		
Satd. Flow (perm)	136	1876	0	655	1853	0	0	1561	0	1262	1729	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			12			40			67	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.7			84.0			280.1			270.1	
Travel Time (s)		17.5			6.0			20.2			19.4	
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
Adj. Flow (vph)	18	574	17	25	974	116	41	35	55	91	55	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	591	0	25	1090	0	0	131	0	91	122	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)		3.7			3.7			0.0			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes						Yes	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		2.0	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		2.0	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.3	29.3		29.3	29.3	
Total Split (s)	60.6	60.6		60.6	60.6		29.4	29.4		29.4	29.4	
Total Split (%)	67.3%	67.3%		67.3%	67.3%		32.7%	32.7%		32.7%	32.7%	
Maximum Green (s)	55.3	55.3		55.3	55.3		24.1	24.1		24.1	24.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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	0.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3			5.3		5.3	5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	55.3	55.3		55.3	55.3			24.1		24.1	24.1	
Actuated g/C Ratio	0.61	0.61		0.61	0.61			0.27		0.27	0.27	
v/c Ratio	0.22	0.51		0.06	0.95			0.29		0.27	0.24	
Control Delay	15.4	11.7		7.5	35.2			20.1		28.7	14.2	
Queue Delay	0.0	0.0		0.0	4.4			0.0		0.0	0.0	
Total Delay	15.4	11.7		7.5	39.7			20.1		28.7	14.2	
LOS	B	B		A	D			C		C	B	
Approach Delay		11.8			38.9			20.1			20.4	
Approach LOS		B			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 27.8		Intersection LOS: C	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Jones Street & Lakeshore Road West

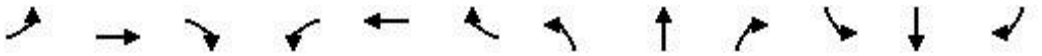




Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	18	591	25	1090	131	91	122
v/c Ratio	0.22	0.51	0.06	0.95	0.29	0.27	0.24
Control Delay	15.4	11.7	7.5	35.2	20.1	28.7	14.2
Queue Delay	0.0	0.0	0.0	4.4	0.0	0.0	0.0
Total Delay	15.4	11.7	7.5	39.7	20.1	28.7	14.2
Queue Length 50th (m)	1.3	52.0	1.6	158.7	12.2	12.4	7.2
Queue Length 95th (m)	5.8	77.2	4.7	#261.4	26.8	25.0	20.2
Internal Link Dist (m)		218.7		60.0	256.1		246.1
Turn Bay Length (m)	30.0		35.0			32.0	
Base Capacity (vph)	83	1153	402	1143	447	337	512
Starvation Cap Reductn	0	0	0	36	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.51	0.06	0.98	0.29	0.27	0.24

Intersection Summary

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

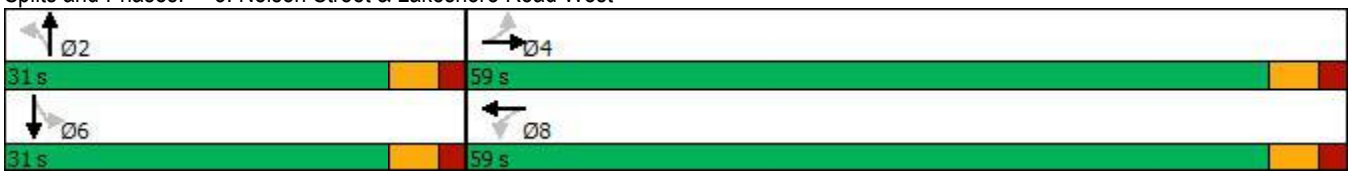


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	462	26	45	864	34	23	63	22	22	68	22
Future Volume (vph)	21	462	26	45	864	34	23	63	22	22	68	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
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		0.992			0.994			0.972			0.973	
Flt Protected	0.950			0.950				0.989			0.990	
Satd. Flow (prot)	1789	1868	0	1789	1872	0	0	1811	0	0	1814	0
Flt Permitted	0.080			0.375				0.928			0.935	
Satd. Flow (perm)	151	1868	0	706	1872	0	0	1699	0	0	1713	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			4			14			14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		138.3			221.5			272.4			274.9	
Travel Time (s)		10.0			15.9			19.6			19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	502	28	49	939	37	25	68	24	24	74	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	530	0	49	976	0	0	117	0	0	122	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)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	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	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	37.3	37.3		37.3	37.3		29.5	29.5		29.5	29.5	
Total Split (s)	59.0	59.0		59.0	59.0		31.0	31.0		31.0	31.0	
Total Split (%)	65.6%	65.6%		65.6%	65.6%		34.4%	34.4%		34.4%	34.4%	
Maximum Green (s)	53.7	53.7		53.7	53.7		25.7	25.7		25.7	25.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	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)	5.3	5.3		5.3	5.3			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	50.1	50.1		50.1	50.1			25.8			25.8	
Actuated g/C Ratio	0.58	0.58		0.58	0.58			0.30			0.30	
v/c Ratio	0.26	0.49		0.12	0.90			0.23			0.23	
Control Delay	18.0	12.2		8.8	28.7			22.8			23.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	18.0	12.2		8.8	28.7			22.8			23.0	
LOS	B	B		A	C			C			C	
Approach Delay		12.5			27.8			22.8			23.0	
Approach LOS		B			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 86.6			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nelson Street & Lakeshore Road West



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	23	530	49	976	117	122
v/c Ratio	0.26	0.49	0.12	0.90	0.23	0.23
Control Delay	18.0	12.2	8.8	28.7	22.8	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	12.2	8.8	28.7	22.8	23.0
Queue Length 50th (m)	1.7	46.7	3.4	129.8	13.5	14.2
Queue Length 95th (m)	7.5	69.9	8.3	#222.4	26.9	27.8
Internal Link Dist (m)		114.3		197.5	248.4	250.9
Turn Bay Length (m)	35.0		35.0			
Base Capacity (vph)	94	1165	440	1167	516	520
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	0.45	0.11	0.84	0.23	0.23

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	44	616	884	41	24	48
Future Volume (vph)	44	616	884	41	24	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	5.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.910	
Flt Protected	0.950				0.984	
Satd. Flow (prot)	1789	1883	1872	0	1687	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1789	1883	1872	0	1687	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		84.0	138.3		77.6	
Travel Time (s)		6.0	10.0		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	670	961	45	26	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	670	1006	0	78	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	44	616	884	41	24	48
Future Volume (Veh/h)	44	616	884	41	24	48
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)	48	670	961	45	26	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		84	138			
pX, platoon unblocked	0.47				0.57	0.47
vC, conflicting volume	1006				1750	984
vC1, stage 1 conf vol					984	
vC2, stage 2 conf vol					766	
vCu, unblocked vol	451				1140	403
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	91				90	83
cM capacity (veh/h)	522				266	305

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	48	670	1006	78
Volume Left	48	0	0	26
Volume Right	0	0	45	52
cSH	522	1700	1700	291
Volume to Capacity	0.09	0.39	0.59	0.27
Queue Length 95th (m)	2.3	0.0	0.0	8.0
Control Delay (s)	12.6	0.0	0.0	21.9
Lane LOS	B			C
Approach Delay (s)	0.8		0.0	21.9
Approach LOS				C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX Q

TTS Results – Modal Split

Thu Mar 10 2022 08:59:17 GMT-0500 (Eastern Standard Time) - Run Time: 2672ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of household - gta06_hhld
Column: Primary travel mode of trip - mode_prime

Filters:
(2006 GTA zone of household - gta06_hhld In 4005,4006,4001,4004
and
Primary travel mode of trip - mode_prime Not In O,S,9
and
Start time of trip - start_time In 630-930, 1500-1800)

Trip 2016
Table:

,Transit excluding GO rail,Cycle,Auto driver,GO rail only,Joint GO rail and local transit,Auto passenger,Paid rideshare,Walk
4001,189,0,8086,783,178,1231,0,57
4004,119,118,3096,99,64,680,0,113
4005,223,79,5501,352,44,864,12,433
4006,10,113,1745,226,0,343,0,144

Household GTA Zone	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Joint GO rail and local transit	Auto passenger	Walk
4001	189	0	8086	783	178	1231	57
4004	119	118	3096	99	64	680	113
4005	223	79	5501	352	44	864	433
4006	10	113	1745	226	0	343	144
Total	541	310	18428	1460	286	3118	747
%	2%	1%	74%	6%	1%	13%	3%

Mode of Trip	Modal Split
Auto	87%
Transit	9%
Walk	3%
Cycling	1%

APPENDIX R

Proxy Site Data – 5340 Lakeshore Road

Parking Survey

Location: 5340 Lakeshore Road, Burlington

Survey Time: March 29th, 2017, 11:30 p.m.

Total Underground Residential Parking Supply:	60	spaces
Total Surface Residential Parking Supply:	3	spaces
Overall Residential Parking Supply:	63	spaces
Total number of Residential spaces occupied:	**45**	**spaces**
Total Visitor Parking Supply:	16	spaces
Total number of visitor spaces occupied:	**4**	**spaces**
Total number of dweling units occupied:	**42**	**units**
Residential Parking Rate:	1.07	residential spaces/dwelling unit
Visitor Parking Rate:	0.10	visitor spaces/dwelling unit

APPENDIX S

City of Hamilton TDM Excerpts

Hamilton

Final

TDM for Development

Prepared for City of Hamilton
by IBI Group

June 2015

3.D Mixed Use (Residential and Commercial)

Category	TDM Initiative	Low density residential, commercial frontage	High density residential, commercial frontage	High density residential, large commercial
Cycling	Visible, well-lit, short-term bicycle parking for visitors and customers (above minimum provisions or recommendations)	●	●	●
	Secure, indoor bicycle parking storage spaces for residents and employees	○	●	●
	Provide end-of-trip amenities for employees (e.g. showers, change rooms, lockers)	○	○	●
Walking	Safe and attractive walkways for pedestrians linking building entrances with public sidewalks	●	●	●
	Enhanced pedestrian amenities on-site (benches, landscaping, lighting)	●	●	●
Transit	Enhance walking routes between main building entrance(s) and transit stops/stations	●	●	●
	Provide weather-protected waiting areas	●	●	●
	Bicycle parking located at or near transit stops	●	●	●
	Provision of transit information on-site and adjacent to stops/ stations	●	●	●
Parking	Provide no more than the minimum number of required spaces for residents, employees, and visitors	●	●	●
	Reduced minimum parking requirements based on proximity to transit	●	●	●
	Implement paid parking for employees and visitors	●	●	●
	Unbundle parking costs from residential unit costs	●	●	●
	Shared parking with nearby developments or on-street spaces	○	●	●
	Cash-in-lieu of parking to fund public parking or fund sustainable transportation	-	●	●
	Reduced minimum parking requirements for dedicated car share vehicle parking spaces	-	●	●
Carpool	Preferential carpool parking spaces for employees	○	○	●
Carshare/ Bikeshare	On-site carshare vehicle(s)	-	●	●
	On-site bikeshare facility	-	●	●
Wayfinding and Travel Planning	Travel planning resources for residents and employees (individualized marketing, trip planning tools, active transportation maps, information resources)	-	●	●
	Wayfinding signage	-	●	●
Education/ Promotion, Incentives	Include discounted transit passes, carshare memberships, and/ or bikeshare memberships with new home/condo purchase or commercial space purchase/rental	●	●	●
	Membership in a Transportation Management Association (TMAs defined under “Education/Promotion and Incentives)	○	○	●
	Contribute to building a strong TDM brand	-	●	●

Legend: ○ Low Priority ● High Priority

3.D Mixed Use

Why it's important/relevant?

- Reduce commuter and shopping trips by auto.
- Lower building/lease costs and increase efficient use of property (more space to be allocated for retail and/or amenities).
- Provide amenities that encourage efficient and sustainable travel by tenants (employees and residents) and visitors/shoppers.
- Encourage vibrant commercial centres that promote a live-work-play environment and diverse range of business and retail activity (satisfy shopping/service needs in one area).
- Encourage customers, visitors, and residents to linger.

Guidelines and Best Practices

Cycling

Focus: Encourage cycling as a viable option for commuting (residents and commercial tenants) and shopping.

- Convenient, secure, and readily accessible short-term parking:
  - Within 50 ft of building entrances (if multiple entrances, distribute to all main entrances)
  - Avoid conflicts with pedestrians and vehicles
- Secure bicycle parking for long-term users:
  - Parking near elevator/stairs
  - Locate parking on ground floor or first floor in below grade vehicle parking, and at established grade (avoid access with steps or steep incline)
  - Provide employees with a place to shower, change and/or store clothes (commuters who cycle may often arrive wet, dirty or sweaty).
- Typical number of bicycle parking spaces:
  - Long-term: 1.25 per dwelling unit [1 (p24)]
  - Short-term: 0.2 per dwelling unit [1 (p24)]
  - Total spaces: 0.5 per dwelling unit or 5–20% of auto spaces (min. 5, max. 50) [2,3 (p24)]; cumulative total of all bicycle parking spaces required for each use on the lot [4, 5]
- Potential to negotiate a reduction in number of vehicle parking spaces in exchange for additional bicycle parking spaces:
  - E.g. 5 bike parking spaces above minimum requirement = 1 parking space (up to 20% reduction for residential [6 (p24)]; or max 1 space/300m2 of gross floor area [7 (p24)])

Walking

Focus: Encourage walking by providing safe and attractive environments for all pedestrians.

- Support pedestrian mobility through routine accommodation and design solutions [8 (p24)]
- Develop a pleasant storefront environment, with greenery, shade and amenities [9, 10 (p24)]
  - Well-lit sidewalks and walkways throughout building(s) (e.g. avoid dark alleys, hallways, stairwells)
  - Direct connections to/from streets and main entrances
  - Weather protection by main entrances and on adjacent sidewalks
- Amenities such as benches, pedestrian-scale lighting and street trees, help create/define public spaces that prioritize pedestrians
  - However, amenities should not create physical barriers and diminish accessibility

Transit

Focus: Prioritize connections and access to transit. Encourage transit as a desirable mode choice.

- Design direct and convenient connections to transit stations/stops:
  - Well-lit
  - Weather protected waiting area (e.g. overhang, awning)
  - Barrier free access including connecting sidewalks to bus stops
  - Bike parking near stops
- Consult with HSR to enhance nearby bus stops (e.g., provide for benches, shelters)

3.D Mixed Use (continued)

- Incorporate displays or kiosks into design of common areas (e.g., lobby) or near entrances to display transit information, such as schedules of nearby routes.

Parking

Focus: Reduce auto ownership, reduce oversupply of parking, and private vehicle trips, reduce single occupant vehicle commuting patterns.

- Supply only the minimum number of required parking spaces as outlined in the zoning bylaw [11 (p24)]
  - » Reducing parking spaces should not exacerbate any current parking issues
- Explore potential to reduce parking requirements due to proximity to transit corridors with increased service levels (e.g. 1-5% parking reduction for development within ~400-600m of transit) [12 , 16, 17(p24)]:
  - » Development Planning staff will work with development community to determine if reductions are feasible based on site context
  - » Encourage employees and shoppers to take transit
- Explore opportunities to apply for cash-in-lieu of parking provisions [13]
  - » Typical range: $5,000–$7,000 per space
- Explore potential to meet parking requirements through shared parking, depending on context and proximity to developments with complimentary uses [14 (p24)]:
  - » Residential land uses have lower occupancy rates during daytime weekdays, while offices have higher occupancy rates during this same time and lower occupancy rates on evening periods and the weekends.
- Encourage building owner to implement paid parking:
  - » Implementation and pricing must be in line with surrounding parking supply (i.e., not suitable where free public parking is offered nearby)
  - » Benefits: encourages employees and customers to find alternative travel modes, and recovers parking facility or management costs
- Carshare parking encourages sustainable modes of transportation - employees, customers and community at large
  - » Requires coordination with providers (see “Carshare/Bikeshare”)
  - » Typical: 2% parking reduction for providing carshare spaces for 2% of building occupants [12]
- Unbundling the purchase of parking spaces from the rental/sale cost of residential units:
  - » Generally for buildings with multiple units (> 10 units) [15]
  - » Benefits: more efficient use of parking, and lower auto ownership rates (resident does not feel need to own a car because of unused space)
  - » Requires parking management of excess parking spaces (sell or lease) and measures to prevent sale of multiple spaces to single buyer (avoid monopoly)
  - » Additional monitoring and regulation to avoid spillover to public on- and off-street parking supply

Carpool

Focus: Provide incentives to employees and/or customers who carpool.

- Reserve premium parking spaces for carpool vehicles:
  - » At ground level or close to entrances/elevators
  - » Wider or more easily maneuverable spaces
  - » Typical: ~5% of employee spaces [12 (p24)]
- Clearly mark spaces and establish enforcement

Carshare/Bikeshare

Focus: Providing alternatives for employees, customers and community members.

- Encourage more sustainable travel and lower auto ownership levels by residents
- Consult/discuss with carshare providers to provide vehicle(s) and dedicated parking stall(s) on-site
- Consult/discuss with bikeshare providers to provide a docking station and bikes on-site where appropriate
- Benefits residents and employees of building, as well as nearby residents and businesses (community at large) by providing easy access to carshare where suitable

3.D Mixed Use (continued)

Wayfinding and Travel Planning

Focus: Increase awareness of sustainable transportation opportunities for residents/tenant employees, visitors, and community members.

- Install kiosks with information on nearby transit routes and schedules, bicycle routes and pedestrian walkways, where applicable
- Install wayfinding signage directing residents, employees and visitors to transit and active transportation facilities, where applicable
- Work with building owner/property manager/tenant to support travel planning resources (see Education/ Promotion)
  - » Provide transit and active transportation maps to new residents, employees and customers (coordinate with HSR and active transportation groups to obtain/ distribute)
  - » Encourage visitors/customers to take transit when visiting by providing transit information on website or on-site (e.g., “Directions by Transit” information on retailers’ websites)
- Support the development of an individualized marketing program for tenants and employees to customize travel routes (e.g. to work, school, etc)

Education/Promotion and Incentives

Focus: Promote early adoption of sustainable transportation modes by residents and tenants.

- Encourage building owner and/or commercial tenants to join Smart Commute or other transportation management association (TMA) that promotes sustainable choices, monitors progress, develops incentive programs, and provides online tools.
- Brand or highlight TDM elements in sale or rental marketing materials: proximity to transit, cycling facilities, carshare/bikeshare facilities, etc.
- Utilize Smart Commute’s basic or enhanced service package to provide discounted transit passes for employment uses.
- Benefits of purchasing transit passes or carshare/ bikeshare membership with new home/condo purchase, or office space rental agreement:
  - » Encourage sustainable mode of travel;
  - » Reduce parking requirements; and,
  - » Great marketing tool for developer/builder/property manager

Resources

1. City of Richmond Zoning Bylaw 8500 (Section 7, Parking and Loading).
2. City of Ottawa Zoning By-law 2008-250 (Part 4).
3. City of Edmonton Zoning Bylaw 12800 (Section 54.3, Schedule 2).
4. City of Toronto Zoning Bylaw 569-2013 (230.5.10 Bicycle Parking Rates All Zones).
5. Association of Pedestrian and Bicycle Professionals (APBP). 2010. Bicycle Parking Guidelines, 2nd Ed.
6. City of Toronto. 2013. Zoning By-Law 569-2013. Parking Rates (200.5.10).
7. City of Vancouver. 2013. Parking By-law. 6059 Off-street Bicycle Parking Regulations.
8. City of Hamilton. 2013. Pedestrian Mobility Plan.
9. City of Hamilton. 2003. Site Plan Guidelines. Site Context (s 2.2, 2.5, 2.6), Site Design (s 3.2).
10. Institute for Transportation Engineers (ITE). 2010. Promoting sustainable transportation through site design.
11. City of Hamilton. 2005. Zoning By-Law 05-200. Parking Regulations (s 5.6).
12. Region of Waterloo. 2013. TDM parking and trip reduction strategy. TDM Checklist.
13. City of Hamilton Cash-in-lieu of Parking Program and Application.
14. Smith, M.S. 2005. Shared parking 2nd Ed. Washington, DC. ULI - the Urban Land Institute and the International Council of Shopping Centres.
15. Nelson-Nygaard. 2011. Getting more with less: Managing residential parking in urban developments with carsharing and unbundling.
16. City of Hamilton. 2012. B-Line Background Information Report.
17. City of Hamilton 2010. Transit-Oriented Development Guidelines.