

LOCATION	CIVIC ADDRESS :		PID # :	
STAFF USE	HERITAGE AREA: Y / N INTENSIFICATION AREA: Y / N FLOOD RISK AREA: Y / N APPROVED GRADING PLAN: Y / N			
	APPLICATION #:		DATE RECEIVED:	
			RECEIVED BY:	
APPLICANT INFORMATION	APPLICANT	EMAIL	PHONE	
	MAILING ADDRESS		POSTAL CODE	
	CONTRACTOR	EMAIL	PHONE	
	MAILING ADDRESS		POSTAL CODE	
	OWNER	EMAIL	PHONE	
	MAILING ADDRESS		POSTAL CODE	
PRESENT USE:		PROPOSED USE:		
CHECK ALL THAT APPLY	BUILDING	PLANNING	INFRASTRUCTURE	HERITAGE
	<input type="checkbox"/> INTERIOR RENOVATION	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> VARIANCE	<input type="checkbox"/> STREET EXCAVATION
	<input type="checkbox"/> EXTERIOR RENOVATION	<input type="checkbox"/> ACCESSORY BLDG	<input type="checkbox"/> PLANNING LETTER	<input type="checkbox"/> DRIVEWAY CULVERT
	<input type="checkbox"/> ADDITION	<input type="checkbox"/> POOL	<input type="checkbox"/> PAC APPLICATION	<input type="checkbox"/> DRAINAGE
	<input type="checkbox"/> DECK	<input type="checkbox"/> DEMOLITION	<input type="checkbox"/> COUNCIL APP	<input type="checkbox"/> WATER & SEWERAGE
	<input type="checkbox"/> CHANGE OF USE	<input type="checkbox"/> SIGN	<input type="checkbox"/> SUBDIVISION	<input type="checkbox"/> OTHER
	<input type="checkbox"/> MINIMUM STANDARDS	<input type="checkbox"/> OTHER	<input type="checkbox"/> OTHER	<input type="checkbox"/> HERITAGE DEVELOPMENT
			<input type="checkbox"/> HERITAGE SIGN	
			<input type="checkbox"/> HERITAGE INFILL	
			<input type="checkbox"/> HERITAGE DEMO	
			<input type="checkbox"/> OTHER	
DESCRIPTION OF WORK				

I consent to the City of Saint John sending to me commercial electronic messages, from time to time, regarding City initiatives and incentives.

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City Hall Building
 15 Market Square Saint
 John, NB E2L 1E8
commonclerk@saintjohn.ca
 (506) 658-2862



I, the undersigned, hereby apply for the permit(s) or approval(s), indicated above for the work described on plans, submissions and forms herewith submitted. This application includes all relevant documentation necessary for the applied for permit(s) or approval(s). I agree to comply with the plans, specifications and further agree to comply with all relevant City By-laws and conditions imposed.

Applicant Name

Erik de Jong

Applicant Signature

Date

Erik de Jong
Slopeside Holdings Ltd.
93 Veysey Road
Lower Kingsclear, NB E3E1M9
9-17-2023

Jennifer Kirchner
Zoning Application
Manager, Community Planning
City of Saint John

RE: 1440 Loch Lomond Road re-zoning and municipal plan amendment

Dear Jennifer Kirchner:

As discussed in our previous meetings, I have the properties (PID's 00313031 and 55094981) currently under a conditional agreement of purchase and sale. It would be my intent to develop this parcel as a mixed density residential development including multi-unit buildings and townhouses. The current zoning is for PID 00313031 is R2, and PID 55094981 is designated as Urban Reserve. I would like to apply to conditionally re-zone the two PID's to the Mid-Rise Residential (RM) zone. PID 55094981 will also require a municipal plan amendment to change it's designation from Urban Reserve to Stable Residential.

Existing Site and Land Use:

The subject property is approximately 22 acres and includes the vacant land located at 1440 Loch Lomond. This proposed re-zoning does not include the existing farmhouse and outbuildings. That new lot will be subdivided prior to completion of the sale and the original lot will not be included in this re-zoning application.



Historically the land was agricultural in nature and used to farm market crops.

The property is bordered by a few single family dwellings (R2) to the west, a vacant commercial property(GC) that used to be a fuel station and convenience store to the northeast, vacant land to the east (Urban Reserve) and single family dwellings across Little River to the south. Across Loch Lomond road to the north is a church, multi-unit apartment buildings at 1419/1421 Loch Lomond, a proposed multi-residential development, as well as a daycare and residence.

Re-Zoning Proposal

The Saint John apartment vacancy rate is extremely low at only 1.6% (CMHC Oct 2022). There is a high demand for new rental units throughout the city. In response to this rental pressure, the proposed rezoning will add to the supply of rental housing in the city. This development will also incorporate a number of designated CMHC affordable apartments.

As shown in the attached conceptual site plan (Schedule A), there are four proposed 52 unit multi-unit buildings with underground parking, as well as a four townhouse clusters focused to the east of the site.

I am proposing to construct a new public cul-de-sac to provide easier subdivision of the land as the multi phased development is built out.

As part of this development, I will be constructing a walking trail with park benches and picnic tables that winds through the development and lands. I am also planning to develop community gardens as part of each planned phase of construction. These outdoor amenities will be enjoyed by the residents as local food production and the social connections that will be fostered through gardening will be an important part of the future lives of the residents. These small gathering places will be an important part of the culture of community I am planning to foster here.

As shown on the draft site plan, our intent is to provide vegetative barriers between the existing farm house and this development. Ultimately, the goal is to create a park-like setting for the residents to enjoy with extensive landscaping across the entire site.

This proposed development meets all requirements of the Mid Rise Residential zoning. These buildings and locations as presented are in draft form and subject to final design. This development with a mix of 4 story apartment buildings and townhouse clusters meets the requirement for accommodation a range of serviced residential development forms. The minimum lot area required for the proposed 52 unit buildings and townhouses is 34 440 sq m, and the proposed development site is approximately 89 000 sq m.

Conformity with Policy LU-88

- The layout of the buildings with a large amount of landscaped green space will contribute to the existing mixed neighborhood.
- The proposed development will fit in well with the mix of multi-family, commercial and residential land surrounding the proposed site
- The current municipal services are adequate to service a development of this magnitude with no additional upgrades needed on behalf of the municipality.

9-17-2023

Page 3

- The site design incorporates buffering from the neighboring residential property, as well as significant setbacks from other neighbors. Stormwater management will be incorporated into the site design as per municipal regulations.
- The buildings will have facades with a number of jogs and recesses, with varying rooflines to break up the rectangular nature of apartment buildings. See schedule B for an example of the apartment design, as well as artistic sketch of the townhome concepts.

I think re-zoning will result in an excellent development that will increase the supply of new rental housing in Saint John. I look forward to receiving feedback from you and your team. Once we know when this application will be reviewed by PAC, I will schedule my own public meeting with the neighborhood and invite the community to come see my concepts for development, as well as go door to door in the immediate neighborhood to describe the development in detail to the residents who will be impacted by this change in use.

Sincerely,

A handwritten signature in black ink that reads "Erik de Jong". The signature is written in a cursive, flowing style.

Erik de Jong

Schedule B

Artistic renderings similar in concept to the proposed buildings.



Schedule B cont

Artistic renderings similar in concept to the proposed buildings.



Schedule B Cont

Architectural sketch of townhouses similar to those envisioned by the developer.



DEVELOPMENT INFORMATION						
Development Name:						
Development Address:						
Owner:						
Contact Information:						
Consultant:						
Contact Information:						
PROJECT INFORMATION – DEVELOPMENT USE:						
<input type="checkbox"/> Residential		<input type="checkbox"/> Commercial		<input type="checkbox"/> Residential & Commercial		
<input type="checkbox"/> Other:						
RESIDENTIAL POPULATION INFORMATION						
Total Number of Units:		Persons / Dwelling:		Bedrooms / Unit:		
BUILDING INFORMATION						
Storeys:		Type of Use:				
Total Building Area (m ²):		Average Daily Wastewater Flow:				
<i>Please note: submitted calculations are to be completed in accordance with the Atlantic Canada Wastewater Guidelines</i>						
PEAK SANITARY FLOW (FULL BUILD OUT)			PEAKING FACTOR			
Total Residential Flow (L/s)				Residential Peaking Factor:		
Total Commercial Flow (L/s)				Commercial Peaking Factor:		
Total Other Flow (L/s)				Other Peaking Factor:		
TOTAL FLOW (L/s)				<i>Please include peaking factor calculations</i>		
MUNICIPAL CONNECTION POINT			PHASING INFORMATION			
<p>Please provide the general location (street name) of the proposed sanitary service/main connection to the municipal system.</p> <p>Please provide the proposed location of the service / main as it relates to the municipal system.</p> <p>Please provide a drawing to scale including site contours, illustrating the conceptual design of the proposed development.</p>			Phase	Buildings per Phase	Construction Estimate (# of years / phase)	Estimated Occupancy Date (mm/yy)
			1			
			2			
			3			
			4			
			TOTAL			

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DEVELOPER INPUT:	
<p>The Developer is expected to provide the following information to the City of Saint John for their proposed development:</p> <ul style="list-style-type: none"> • The Developer shall; <ul style="list-style-type: none"> ○ Complete and submit this form to the City of Saint John. ○ Provide back-up information and calculations illustrating assumptions for all calculated peak sanitary design flows. 	
CITY OF SAINT JOHN OUTPUT:	
<p>Potential outputs for the Developer from the City of Saint John based on development information provided by the Developer:</p> <ul style="list-style-type: none"> • At this time, based on the information provided, Saint John Water does not see and issues with the proposed development in relation to the downstream sanitary sewer system. • At this time, based on the information provided, Saint John Water does see issues with the downstream sanitary sewer system when incorporating the proposed development flows, thus further discussions between the Developer and the City are required as potentially more in-depth analysis and/or investigation may be required to be completed by the Developer for the proposed development. <p>NOTE: The sewer model is a simulated analysis. Information provided by the city of Saint John is to be received by the Developer as an estimation of the municipal system’s capability.</p>	
ENGINEERING CONSULTANT INFORMATION:	
Firm Name:	
Consultant Name:	
Contact Number:	
E-Mail Address:	
Signature of Applicant / Engineering Consultant	Date

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DEVELOPMENT INFORMATION						
Development Name:						
Development Address:						
Owner:						
Contact Information:						
Consultant:						
Contact Information:						
PROJECT INFORMATION – DEVELOPMENT USE:						
<input type="checkbox"/> Residential		<input type="checkbox"/> Commercial		<input type="checkbox"/> Residential & Commercial		
<input type="checkbox"/> Other:						
RESIDENTIAL POPULATION INFORMATION						
Total Number of Units:		Persons / Dwelling:		Bedrooms / Unit:		
BUILDING INFORMATION						
Type of Use:		Storeys:		Total Building Area (m ²):		
<i>Please note: submitted calculations are to be completed in accordance with the Atlantic Canada Water Supply Guidelines</i>						
WATER DEMAND (FULL BUILD OUT – ALL PHASES)			FIRE HYDRANT FLOW TEST			
Average Day Demand (ADD)		*Fire flow testing helps confirm SJW model results. If there has not been a Fire Flow Test completed, please note this on the form.				
Maximum Day Demand (MDD)						
Peak Hourly Demand (PHD)						
*Please provide all demand flow in L/s		Fire Hydrant Flow Test Attached:		<input type="checkbox"/> Yes	<input type="checkbox"/> No	
		Sprinkler System Required?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	
FIRE DEMAND						
Requested fire flow for the proposed site:		L/s		PSI		
MUNICIPAL CONNECTION POINT			PHASING INFORMATION			
Please provide the general location (street name) of the proposed water connection to the municipal system. Please provide a drawing to scale including site contours, illustrating the conceptual design of the proposed development. The new water main that is incorporated into the City's water model will use these contours for approximate water main elevations.			Phase	Buildings per Phase	Construction Estimate (# of years / phase)	Estimated Occupancy Date (mm/yy)
			1			
			2			
			3			
			4			
			TOTAL			

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DEVELOPER INPUT:	
<p>The Developer is expected to provide the following information to the City of Saint John for their proposed development:</p> <ul style="list-style-type: none"> • The Developer shall; <ul style="list-style-type: none"> ○ Complete and submit this form to the City of Saint John. ○ Provide back-up information and calculations illustrating assumptions for all calculated water demands. ○ Complete a Hydrant Flow Test in the area of the Development if one is not available from the City of Saint John. 	
CITY OF SAINT JOHN OUTPUT:	
<p>Potential outputs for the Developer from the City of Saint John based on development information provided by the Developer:</p> <ul style="list-style-type: none"> • Approximate pressure in the City of Saint John municipal system near the proposed development from the Water Model using the Developer’s Water Demands. • Approximate available fire flow in the City of Saint John municipal system near the proposed development from the Water Model using the Developer’s Water Demands. <p>NOTE: The Water Model is a simulated analysis. Information provided by the City of Saint John is to be received by the Developer as an estimation of available flow / pressure.</p>	
ENGINEERING CONSULTANT INFORMATION:	
Firm Name:	
Consultant Name:	
Contact Number:	
E-Mail Address:	
Signature of Applicant / Engineering Consultant	Date

General Collection Statement

This information is being collected for the City of Saint John to deliver an existing program/service; the collection is limited to that which is necessary to deliver the program/service. Unless required to do so by law, the City of Saint John will not share your personal information with any third party without your express consent. The legal authority for collecting this information is to be found in the Municipalities Act and the Right to Information and Protection of Privacy Act. For further information or questions regarding the collection of personal information, please contact the Access & Privacy Officer: City Hall Building, 2nd Floor -15 Market Square, Saint John, NB E2L 1E8, commonclerk@saintjohn.ca (506) 658-2862.

Conceptual Sanitary Demand Calculations

Number of Units	228	
Persons/Dwelling	2.5	
Per Capita Daily Flow	380	L/cap*d
Average Daily Wastewater Flow	216600	L/d
Peaking Factor (Harman)	3.9	
Tributary Area	4.1	ha
Peak Extraneous Flow per Hectare	0.15	L/s
Sag Manhole Inflow Allowance	0.4	L/s
Manholes in sag locations	1	
Peak Domestic Flow	10.9	L/s

Conceptual Water Demand Calculations

Number of Units	228	
Persons/Dwelling	2.5	
Per Capita Daily Flow	380	L/cap*d
Average Daily Water Flow	216600	L/d
Average Day Demand	2.5	L/s
Maximum Day Demand (2.75 x ADD)	6.9	L/s
Peak hourly Demand (4.13 x ADD)	10.4	L/s




Loch Lomond Estates Traffic Impact Study

Draft Report

222939.02 • December 2022



1	Draft Report	Mark MacDonald	Dec. 22/22	Brendan McPhee
Issue or Revision		Reviewed By:	Date	Issued By:
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December 22, 2022

Erik de Jong
Owner
Loch Lomond Estates Ltd.
927 Prospect Street
Fredericton, NB E3B 2T7

Dear Mr. de Jong:

RE: Loch Lomond Estates - Traffic Impact Study - DRAFT

We are pleased to present this draft Traffic Impact Study (TIS) for the proposed residential development located at 1440 Loch Lomond Road in Saint John, NB. The study was completed in accordance with industry best practices to address potential traffic impacts.

Thank you for the opportunity to assist with your proposed development. If you have any questions or concerns, please do not hesitate to contact us at your convenience.

Yours very truly,

CBCL Limited

DRAFT

Prepared by:
Brendan McPhee, M.Sc.E., P.Eng.
Transportation Engineer
Direct: 506-633-6650 ext. 3236
Email: bmcphee@cbcl.ca

Reviewed by:
Mark MacDonald, P.Eng.
Senior Transportation Engineer
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Email: markmacd@cbcl.ca

cc: Evan Embree, P.Eng.

Project No.: 222939.02

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Executive Summary

A residential development, proposed for 1440 Loch Lomond Road in Saint John, NB, is planned to include a total of 312 residential units to be developed over six (6) phases. It is expected to be fully constructed and occupied by 2032.

New traffic counts were obtained for three (3) study intersections along Loch Lomond Road at Bon Accord Drive, Hickey Road, and McAllister Drive/Champlain Drive. These counts were used to analyse existing 2022 Baseline traffic conditions during the weekday morning (AM) and afternoon (PM) peak hours.

Analysis of the 2022 Baseline condition using Synchro 11 software suggests the study intersections are all currently operating within acceptable limits for V/C ratios and average delays. Several lane groups at the intersection of Loch Lomond Road, McAllister Drive and Champlain Drive have 95th percentile queue lengths exceeding 100m. The 95th percentile queues at intersection of Loch Lomond Road and Hickey Road also exceed 100m for WB throughs (AM peak hour), and EB throughs (PM peak hour).

A 2032 No Build scenario was then analysed to quantify the impact of both background traffic growth and another nearby development planned for construction at 1429 Loch Lomond Road. Analysis of the 2032 No Build condition suggests certain traffic movements at the study intersections will begin to experience reduced performance. At Loch Lomond Road/McAllister Drive/Champlain Drive, the NB left turns (AM peak hour) and SB lefts (PM peak hour) are both expected to operate at LOS E with V/C ratios at or near 1.0. At Hickey Road and Loch Lomond, NB lefts are expected to operate at LOS E and LOS F during the AM and PM peak hours, respectively. At Bon Accord Drive and Loch Lomond Road, the SB left/rights operate at LOS F and LOS E during the AM and PM peak hours, respectively.

Using the Institute of Transportation Engineer's Trip Generation Manual, 11th Edition, it was estimated that 120 and 126 new trips would be generated by the proposed residential development during the weekday AM and PM peak hours, respectively.

Analysis of the 2032 Build scenario suggests the study intersections will operate at similar levels as the 2032 No Build scenario with marginal decreases in performance with the development traffic added. The proposed driveway, Loch Lomond Road, and Civic 1429 would operate at LOS B and LOS A during the AM and PM peak hours, respectively; however, the NB approach would operate at LOS F during both peak hours, and the SB lane group would operate at LOS F during the PM peak hour.

A traffic signal warrant analysis was subsequently carried out for the intersection at the proposed driveway. The analysis indicated that traffic signals would not be warranted. A pedestrian crossing warrant was also completed, which recommended that a crossing outfitted with Rectangular Rapid Flashing Beacons (RRFB) be provided at this intersection.

1 Introduction

1.1 Project Background

CBCL Limited (CBCL) was engaged to prepare a Traffic Impact Study (TIS) for a proposed residential development to be located at 1440 Loch Lomond Road in Saint John, NB, on the south side of the road. It is proposed to include six (6) multi-story apartment buildings comprised of 52 units each, for a total of 312 residential units. We understand construction is anticipated to begin during the spring of 2023, with full build-out of the site expected by 2032.

Access to the proposed development will be provided by a single two-way driveway with access onto Loch Lomond Road. City staff have indicated that the anticipated traffic generated by another nearby proposed multi-unit residential development, to be built at 1429 Loch Lomond Road, must be considered as part of this study. Due to the proximity of the developments, the proposed driveway accesses were initially assumed to be aligned for the purpose of this study.

1.2 Study Objectives

The following goals and primary objectives were identified for this study:

- ▶ Establish existing traffic operations throughout the study area.
- ▶ Estimate the peak hour trip generation for the proposed development.
- ▶ Evaluate the traffic impacts at the study intersections, while considering the planned development at 1429 Loch Lomond Road.
- ▶ Conduct traffic signal and crosswalk warrant analyses for the intersection of the proposed site driveway and Loch Lomond Road.
- ▶ Identify and recommend mitigation measures to address any anticipated traffic impacts.

2 Study Area

The study area considered for this assignment is the nearby road network that might be impacted by the added traffic from the proposed development. The intersections and associated roads considered for this study were confirmed with City staff, and include:

- ▶ Proposed Site Driveway and Loch Lomond Road;
- ▶ Loch Lomond Road and Bon Accord Drive;
- ▶ Loch Lomond Road and Hickey Road; and,
- ▶ Loch Lomond Road and McAllister Drive/Champlain Drive.

2.1 Road Network

The road network considered in the study area include the streets immediately adjacent to the proposed development, as illustrated in Figure 2.1 and are summarized in Table 2.1.

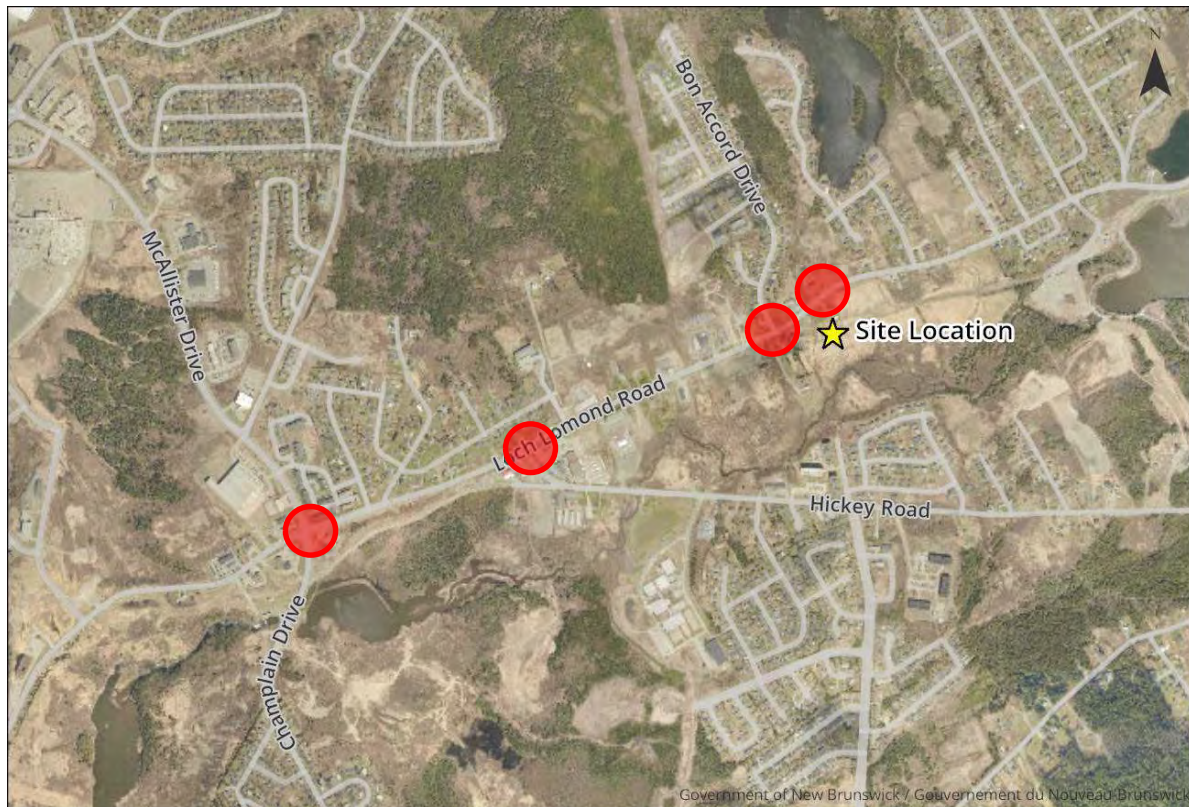


Figure 2.1: Study Area with Study Intersections (Red Circles)

Table 2.1: Characteristics of Study Area Streets

Street Name	No. of Lanes	Street Classification	Orientation	AT Facilities	Posted Speed Limit
Loch Lomond Road	2 to 3	Arterial	East-West	Sidewalk – South side	50 km/h; 60 km/h
Bon Accord Drive	2	Local	North-South	Sidewalk- West side	50 km/h
Hickey Road	2	Collector	East-West	Sidewalk – South side	60 km/h
McAllister Drive	5	Arterial	North-South	Sidewalk – both sides	50 km/h
Champlain Drive	2	Collector	North-South	Sidewalk – East side	50 km/h

The road classifications presented in Table 2.1 above were selected to align with the classes presented in the 2017 MoveSJ Transportation Strategic Plan (Phase 1) Final Report prepared by IBI Group.

2.2 Study Intersections

2.2.1 Loch Lomond Road and McAllister Drive/Champlain Drive

This four-leg signalized intersection is located west of the proposed development, and is the largest intersection included in this study. Westbound (WB) right turns have a channelized right-turn.

The intersection approaches have the following lane configurations:

- ▶ Loch Lomond Road Eastbound: left turn lane | through lane | through/right turn lane
- ▶ Loch Lomond Road Westbound: left turn lane | through lane | right turn lane
- ▶ Champlain Drive Northbound: left turn lane | through lane | right turn lane
- ▶ McAllister Drive Southbound: left turn lane | left turn lane | through/right turn lane

All approaches have crosswalks with pedestrian signals and pedestrian push buttons. There is a pork chop island on the northeast corner of the intersection, but it is too small to provide pedestrian refuge and the adjacent crosswalks bypass it; it is occupied by a utility pole and traffic signal pole. Pedestrians using either of these crosswalks are required to cross five traffic lanes. Figure 2.2 illustrates this intersection.



Figure 2.2: Intersection of Loch Lomond Road and McAllister Drive/Champlain Drive (Photo taken from southeast corner, facing west)

2.2.2 Loch Lomond Road and Hickey Road

This three-leg signalized intersection is located west of the proposed development.

The intersection approaches have the following lane configurations:

- ▶ Loch Lomond Road Eastbound: through lane | right turn lane
- ▶ Loch Lomond Road Westbound: left turn lane | through lane
- ▶ Hickey Road Northbound: left turn lane | right turn lane

There is sidewalk along the south side of the road, with a pedestrian crossing on Hickey Road marked by twin parallel lines; however, there are no pedestrian signal heads. Figure 2.3 illustrates this intersection.



Figure 2.3: Intersection of Loch Lomond Road and Hickey Road (Photo taken from southeast corner, facing northwest)

2.2.3 Loch Lomond Road and Bon Accord Drive

This three-leg unsignalized intersection is located west of the proposed development. The intersection operates under Two-Way Stop Control (TWSC) with free flow traffic along Loch Lomond Road and a stop sign on Bon Accord Drive.

The intersection approaches have the following lane configurations:

- ▶ Loch Lomond Road Eastbound: left turn lane | through lane
- ▶ Loch Lomond Road Westbound: through/right turn lane
- ▶ Bon Accord Drive Southbound: left/right turn lane

A pedestrian crosswalk is available on the west leg of the intersection and has crosswalk signage. Figure 2.4 illustrates the intersection of Loch Lomond Road and Bon Accord Drive.

2.2.4 Proposed Site Driveway and Loch Lomond Road

This planned four-leg unsignalized intersection will be created by the proposed driveway at 1440 Loch Lomond Road. It was also initially assumed that the driveway from the development at 1429 Loch Lomond Road would form the 4th leg to the north. The intersection was assumed to operate under Two-Way Stop Control (TWSC) with free flow along Loch Lomond Road and stop signs on both driveways.



Figure 2.4: Intersection of Loch Lomond Road and Bon Accord Drive (Photo taken from southwest corner, facing east)

The proposed intersection approaches would have the following lane configurations:

- ▶ Loch Lomond Road Eastbound: one left/thru/right lane
- ▶ Loch Lomond Road Westbound: one left/thru/right lane
- ▶ Proposed 1440 Loch Lomond Driveway Northbound: one left/thru/right lane
- ▶ 1429 Loch Lomond Driveway Southbound: one left/thru/right lane

2.3 Active Transportation

The City of Saint John's Active Transportation (AT) network provides connectivity across the city, primarily by the use of sidewalks and trails. There is a concrete sidewalk along the south side of Loch Lomond Road, from the intersection at McAllister Drive/Champlain Drive to the Irving Circle K at Civic 1233 where it switches and continues along the north side of the road.

2.4 Public Transit

Saint John Transit provides transit services via bus throughout the city and to neighbouring municipalities. There are several bus stops close to the proposed development that serve several routes. The nearest bus stops are on Loch Lomond Road approximately 250m to the west, and 110m east of the proposed development.

3 2022 Baseline Condition

3.1 2022 Baseline Traffic Volumes

Baseline turning movement traffic volumes were obtained utilizing Miovision Scout video collection units on Tuesday and Wednesday, November 22nd and 23rd, 2022 at the Loch Lomond Road intersections of Bon Accord Drive, Hickey Road, and McAllister Drive/Champlain Drive. Traffic movements were recorded during the morning (AM) peak period between 7:00AM and 9:00AM, and the afternoon (PM) peak period between 4:00PM and 6:00PM over those typical weekdays. The mid-day (MD) peak period between 11:30AM-1:30PM was also captured at the Bon Accord Drive intersection because six (6) hours of traffic data are required to complete a Traffic Signal Warrant Analysis. The video files were uploaded for processing by Miovision, and the raw traffic data reports are provided in Appendix A.

Peak hours for the network were determined to fall between 7:45-8:45AM for the AM peak period and 4:30-5:30PM for the PM peak period. Since the traffic volumes were observed to be similar across both days for the peak periods, the average traffic volume for each turning movement was utilized.

While restrictions associated with the COVID-19 pandemic have caused some traffic reductions over the past two years, it appears that traffic has now returned to relatively 'normal' volumes. Therefore, the new traffic counts were not adjusted to account for COVID-19 restrictions.

3.1.1 Resulting Baseline Volumes

The following adjustments were made to the new traffic counts to develop the 2022 Baseline volumes for analysis:

- ▶ Rounded volumes to the nearest multiple of 5; and,
- ▶ Adjusted as needed so that all movements have a minimum peak hour volume of 5.

The resulting 2022 Baseline traffic volumes are shown in Figure 3.1.

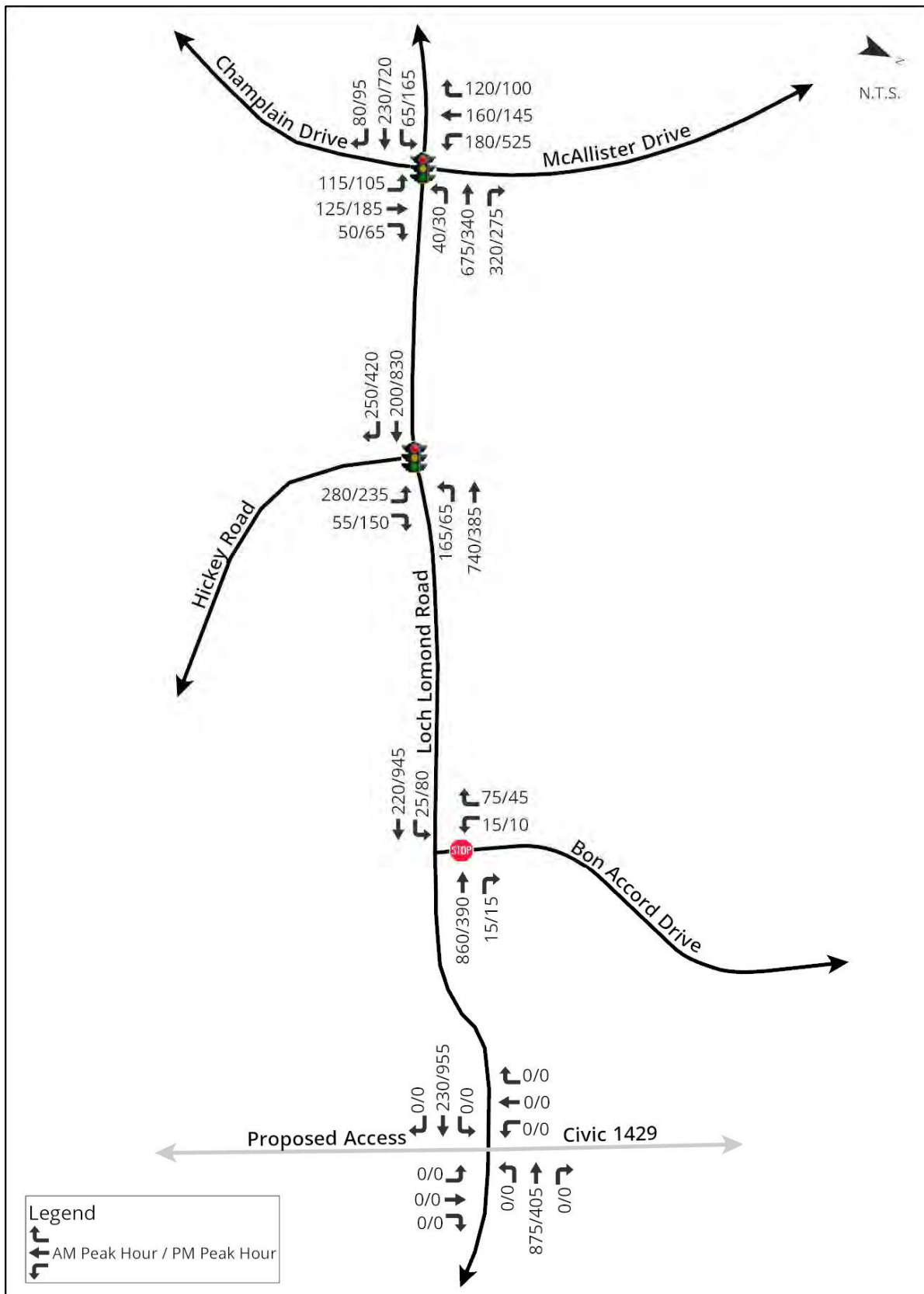


Figure 3.1: 2022 Baseline Peak Hour Traffic Volumes

3.2 Intersection Analysis and Performance Indicators

Using the 2022 Baseline peak hour volume data, Synchro software (Version 11) was used to perform a Level of Service (LOS) analysis of the study intersections for the weekday AM and PM peak hours, using the methods outlined in the Highway Capacity Manual (HCM), 6th Edition, published by the Transportation Research Board (TRB).

LOS is the key indicator of intersection performance with respect to traffic movement and is defined by the average amount of delay experienced by drivers using each of the various intersection movements. Higher delays result in increased driver discomfort, fuel consumption, and travel time. LOS gives an indication of speed, travel time, traffic interruptions, traffic flow, comfort, and convenience, and is expressed as a scale from 'A' to 'F'. LOS 'A' represents conditions approaching free-flow and LOS 'F' represents a level of delay generally unacceptable to drivers and where traffic volumes usually exceed capacity. LOS 'D' is used by most jurisdictions as the minimum acceptable LOS during peak periods and it was used as such for this study.

The criteria associated with each LOS are found in Table 3.1. As shown, the delays listed for signalized intersections are higher than for the same LOS at unsignalized intersections; this is because motorists are generally more tolerant of extended delays at signalized intersections.

Table 3.1: Level of Service (LOS) Criteria for Signalized and Unsignalized Intersections

Level of Service (LOS)	Average Delay per Vehicle (sec)	
	Signalized	Unsignalized
A	<10	<10
B	>10 and <20	>10 and <15
C	>20 and <35	>15 and <25
D	>35 and <55	>25 and <35
E	>55 and <80	>35 and <50
F	>80	>50

In addition to LOS, the Volume-to-Capacity (V/C) ratio is a strong indicator of intersection performance. The V/C ratio is the relationship between traffic volumes and the maximum theoretical capacity of an intersection or traffic movement. As the V/C ratio approaches 1.0, the intersection has less ability to accommodate additional traffic. Adjustments to intersection geometry or traffic control can be implemented to increase capacity and therefore reduce the V/C ratio. V/C ratios of 0.85 and 0.90, or less, are generally considered acceptable for shared and exclusive turning movements, respectively.

Synchro was also used to approximate the anticipated 95th percentile queue lengths for each lane group. For unsignalized intersections, the queue lengths are given as number of vehicles; therefore, these values were converted to metres (m) assuming each vehicle adds approximately 7.0m to a queue.

3.3 2022 Baseline Traffic Operations

CBCL developed a detailed street network of the study area using Synchro 11 that includes existing infrastructure, such as traffic control devices, road alignments, intersection geometry, and lane configurations. The corresponding Synchro LOS analysis reports for the 2022 Baseline condition are provided in Appendix B, and Table 3.2 shows the results of the LOS analyses.

The intersection of Loch Lomond Road, McAllister Drive and Champlain Drive operates within acceptable limits at LOS C during both peak hours. The average delay for each of the lane groups are within acceptable limits during both peak hours. The highest V/C ratio of 0.81 was recorded for the WB through lane group during the AM peak period. The 95th percentile queue for WB throughs are expected to exceed 200m during the AM peak hour as well. The EB through/rights and WB throughs have 95th percentile queues exceeding 100m in the PM peak hour.

The intersection of Loch Lomond Road and Hickey Road operates at LOS C and LOS B during the AM and PM peak hours, respectively. The average delays for each of the lane groups are within acceptable limits during both peak hours. The V/C ratios are also within acceptable limits for all lane groups, with the highest V/C ratio of 0.86 recorded for EB throughs during the PM peak hour. The 95th percentile queues for the WB through and EB through movements are expected to reach roughly 120m (AM peak hour) and 235m (PM peak hour), respectively.

The intersection of Loch Lomond Road and Bon Accord Drive operates at LOS A during both peak hours. The V/C ratios and 95th percentile queues are all within acceptable limits for all lane groups.

Table 3.2: Intersection Performance Results - 2022 Baseline Traffic Volumes

Intersection [Synchro Node]	Lane Group [Queue Storage Length (m)]	AM Peak Hour				PM Peak Hour			
		95th % Queue (m)	V/C Ratio ²	Average Delay (sec) ³	LOS ⁴	95th % Queue (m)	V/C Ratio ²	Average Delay (sec) ³	LOS ⁴
Loch Lomond, McAllister Drive & Champlain Drive [1] (Traffic Signals)	EB Left (78m)	16.1	0.30	17.5	B	37.6	0.41	20.3	C
	EB Thru/Right	36.1	0.22	19.6	B	111.2	0.61	29.0	C
	WB Left (100m)	10.5	0.07	14.7	B	9.9	0.12	18.4	B
	WB Thru	213.4	0.81	39.5	D	111.1	0.66	39.1	D
	WB Right (160m)	0.0	0.21	0.3	A	18.8	0.45	5.8	A
	NB Left (70m)	34.3	0.48	33.1	C	27.6	0.35	23.2	C
	NB Thru	45.2	0.35	42.5	D	67.4	0.66	50.9	D
	NB Right (40m)	0.0	0.12	0.5	A	0.0	0.19	2.7	A
	SB Left	24.7	0.24	27.1	C	61.2	0.68	25.0	C
	SB Thru/Right	95.9	0.75	53.9	D	74.4	0.58	36.9	D
Overall			29.7	C			28.0	C	
Loch Lomond & Hickey Road [2] (Traffic Signals)	EB Thru	38.2	0.40	19.1	C	234.9	0.86	29.3	C
	EB Right	9.8	0.42	4.3	A	35.1	0.44	5.9	A
	WB Left (130m)	19.9	0.28	8.3	A	9.3	0.28	9.0	A
	WB Thru	119.6	0.75	16.6	C	50.1	0.33	8.1	A
	NB Left	64.5	0.62	27.5	D	61.2	0.70	42.3	D
	NB Right (120m)	7.7	0.12	7.0	A	11.5	0.35	6.5	A
	Overall			15.7	C			20.0	B
Loch Lomond & Bon Accord Drive [3] (Unsignalized)	EB Left (50m)	0.7	0.04	10.4	B	2.1	0.08	8.5	A
	SB Left/Right	15.4	0.46	29.5	D	5.6	0.22	19.4	C
	Overall			2.7	A			1.3	A

Notes:

Analysis by CBCL Limited using Synchro 11

1. 95% Queue - 95th percentile queue length [highlighted if >available storage or 100m]
2. V/C Ratio - Volume-to-Capacity ratio [highlighted if >0.85 for shared movements or >0.90 for exclusive turning movements]
3. Average Delay - average total delay per vehicle [highlighted for LOS E or F]
4. LOS - Level of Service [highlighted for LOS E or F]

4 Future 2032 No Build Condition

A future “No Build” scenario was developed to compare with the future “Build” conditions to quantify the impact of the estimated traffic volumes on the proposed development in the future. The No Build traffic volumes are an estimate of future traffic volumes if the proposed development was not built. The time horizon for traffic studies typically considers a horizon five-years post development; however, since the final phase is not expected to be completed until 2032 and analysing traffic operations 15 years from now would not yield a meaningful result, 2032 was used as the future horizon year for analyses.

The 2032 No Build volumes were developed as the sum of:

- ▶ 2022 Baseline traffic volumes;
- ▶ Annual background traffic growth over 10 years; and,
- ▶ Traffic generated by the other planned development at 1429 Loch Lomond Road.

4.1 Annual Background Traffic Growth

The background growth rate accounts for other developments or densification that may occur within or near the study area that would impact traffic volumes at the study intersections. As directed by Saint John City staff, an annual background growth rate of 1.5% per year was used for this study.

The 2032 No Build traffic volumes were calculated by cumulatively adding assumed annual background traffic growth to the 2022 Baseline volumes at the rate of 1.5% per year for 10 years. Therefore, all 2022 Baseline turning movement traffic volumes were increased by 16.1% using the equation below to estimate the background volumes.

$$A = (1 + r)^n$$

where:

A – Proportional increase in traffic volumes

r – Rate of background traffic growth

n – Number of periods from base year

4.2 Other Planned Developments

Another high-density residential development is proposed for the property at 1429 Loch Lomond Road directly across the road from the 1440 Loch Lomond Road development site; as per direction from City staff, new traffic from it is required to be considered in the analysis for this study.

Anticipated trip generation, distribution, and traffic volumes were provided in a Traffic Impact Statement, *1429 Loch Lomond Road Residential Development* report prepared by Englobe in October 2021. The report stated the development will be comprised of 20 units of Multifamily Housing (Low-Rise), and 85 units of Multifamily Housing (Mid-Rise). The resulting trips to be generated by this site are summarized in Table 4.1 and were distributed through the study network per existing traffic patterns.

Table 4.1: Summary of New Site Trips

Time Period	Trips In	Trips Out	Total Trips
AM Peak Hour	10	30	40
PM Peak Hour	29	19	48

There were no other planned developments specified to be considered for this study.

4.3 2032 No Build Traffic Volumes

The additional traffic associated with the background growth rate was added to the 2022 Baseline traffic volumes, along with the estimated traffic associated with other planned development to obtain the estimated 2032 No Build traffic volumes. The resulting 2032 No Build traffic volumes are shown in Figure 4.1.

4.4 2032 No Build Traffic Operations

Synchro 11 was used to perform LOS analyses for the study intersections under the 2032 No Build traffic volumes for the AM and PM peak hours. Splits and cycle lengths were optimized for all signalized intersections. Table 4.2 summarizes the results of the Synchro analysis, and the corresponding analysis reports are provided in Appendix C.

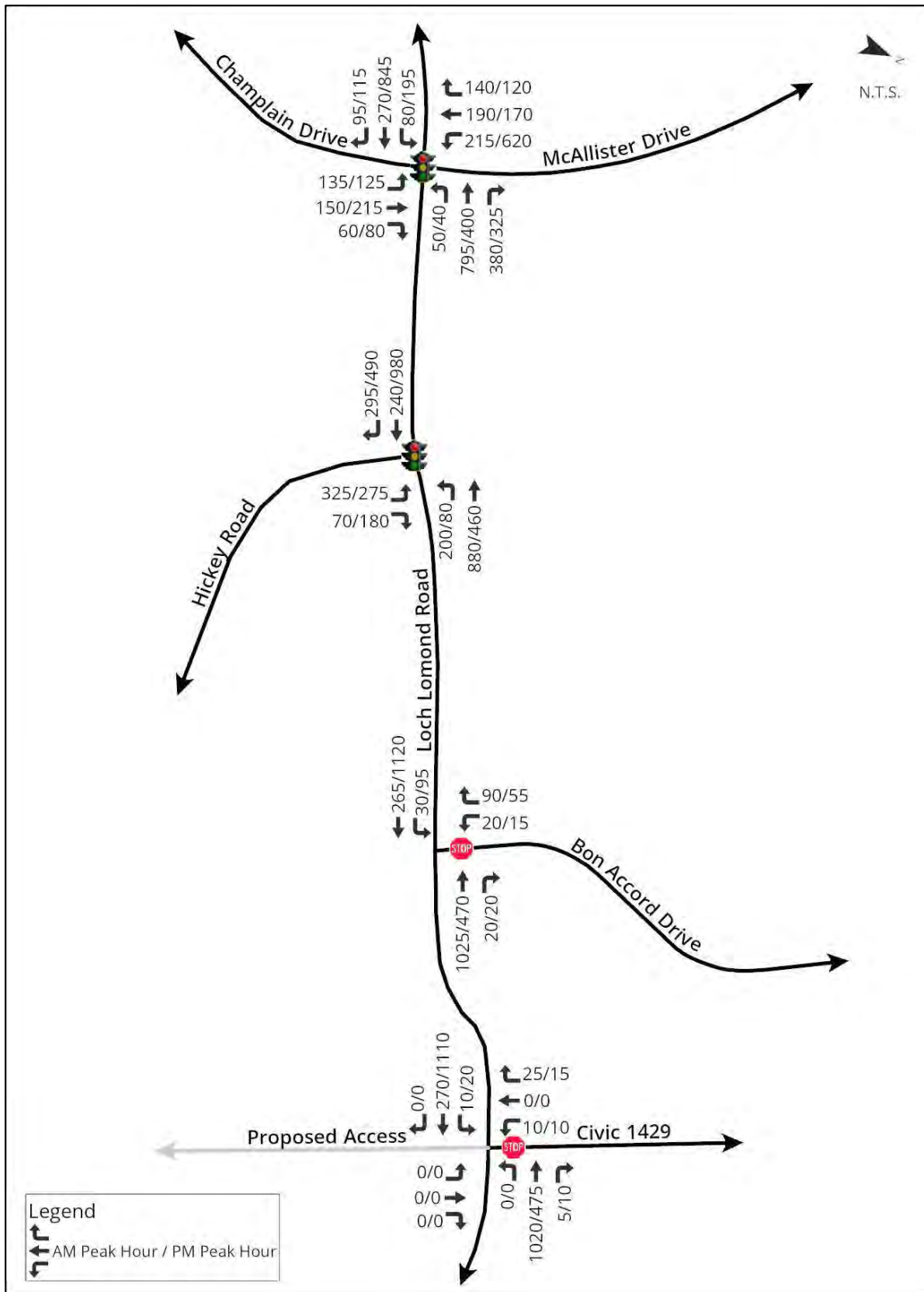


Figure 4.1: 2032 No Build Peak Hour Traffic Volumes

Table 4.2: Intersection Performance Results – 2032 No Build Traffic Volumes

Intersection [Synchro Node]	Lane Group [Queue Storage Length (m)]	AM Peak Hour				PM Peak Hour			
		95th % Queue (m)	V/C Ratio ²	Average Delay (sec) ³	LOS ⁴	95th % Queue (m)	V/C Ratio ²	Average Delay (sec) ³	LOS ⁴
Loch Lomond, McAllister Drive & Champlain Drive [1] (Traffic Signals)	EB Left (78m)	17.7	0.43	20.3	C	34.0	0.51	20.6	C
	EB Thru/Right	34.6	0.25	17.0	B	107.8	0.64	27.1	C
	WB Left (100m)	10.5	0.09	12.7	B	9.6	0.18	15.3	B
	WB Thru	243.7	0.90	43.9	D	99.2	0.62	32.8	C
	WB Right (160m)	16.3	0.41	3.6	A	16.4	0.45	4.3	A
	NB Left (70m)	36.3	0.91	77.3	E	28.8	0.54	30.9	C
	NB Thru	42.3	0.44	39.4	D	59.3	0.72	51.5	D
	NB Right (40m)	0.0	0.15	1.3	A	3.8	0.22	3.8	A
	SB Left	23.3	0.36	26.6	C	98.1	1.00	65.1	E
	SB Thru/Right	87.9	0.83	52.8	D	74.0	0.66	40.3	D
Overall			33.3	C			35.3	D	
Loch Lomond & Hickey Road [2] (Traffic Signals)	EB Thru	32.7	0.40	15.5	C	243.2	0.95	36.6	D
	EB Right	9.2	0.42	3.5	A	12.2	0.46	2.4	A
	WB Left (130m)	16.6	0.35	7.6	A	11.6	0.40	12.4	B
	WB Thru	140.3	0.84	20.3	C	40.6	0.37	6.4	A
	NB Left	65.8	0.79	35.8	E	89.3	0.97	80.7	F
	NB Right (120m)	7.3	0.16	6.0	A	13.4	0.44	7.8	A
Overall			17.8	C			26.6	C	
Loch Lomond & Bon Accord Drive [3] (Unsignalized)	EB Left (50m)	1.4	0.06	11.6	B	2.1	0.10	8.9	A
	SB Left/Right	35.0	0.75	64.4	F	14.0	0.43	35.5	E
	Overall			5.9	A			2.1	A
Loch Lomond & 1429 Driveway [4] (Unsignalized)	EB Left/Thru/Right	0.7	0.02	10.8	B	0.7	0.02	8.5	A
	SB Left/Thru/Right	4.9	0.21	29.3	D	4.9	0.20	38.9	E
	Overall			0.8	A			0.7	A

Notes:

Analysis by CBCL Limited using Synchro 11

1. 95% Queue - 95th percentile queue length [highlighted if >available storage or 100m]
2. V/C Ratio - Volume-to-Capacity ratio [highlighted if >0.85 for shared movements or >0.90 for exclusive turning movements]
3. Average Delay - average total delay per vehicle [highlighted for LOS E or F]
4. LOS - Level of Service [highlighted for LOS E or F]

The intersection of Loch Lomond Road, McAllister Drive and Champlain Drive continues to operate at LOS C during the AM peak hour, but now operates at LOS D during the PM peak hour. During the AM peak hour, the NB lefts now operate at LOS E with a V/C ratio of 0.91, and WB throughs experience 95th percentile queues upwards of 245m. During the PM peak hour, SB lefts now operate at LOS E and have a V/C ratio of 1.00, indicating it has reached its theoretical capacity. The 95th percentile queue length for EB through/rights has decreased slightly to 107.8m, thanks to the signal optimization.

The intersection of Loch Lomond and Hickey Road continues to operate at LOS C during the AM peak period, but now operates at LOS C during the PM peak period. NB lefts now operate at LOS E during the AM peak period, and LOS F in the PM peak period. V/C ratios remain within acceptable limits during the AM peak hour; however, V/C ratios for the EB through and NB lefts are approaching their capacity with V/C ratios of 0.95 and 0.97, respectively, during the PM peak hour. The 95th percentile queue length for WB throughs have increased to roughly 140m during the AM peak, and queuing for EB throughs are roughly 245m during the PM peak hour.

The intersection of Loch Lomond Road and Bon Accord Drive continues to operate at LOS A during both peak periods. The SB left/right lane group now operates at LOS F in the AM peak period, and LOS E in the PM peak period. The 95th percentile queue lengths and V/C ratios continue to fall within acceptable levels.

The intersection of Loch Lomond Road and the development at 1429 Loch Lomond Road (Civic 1429) operates at LOS A during both peak hours, but the SB approach operates at LOS E during the PM peak hour. The 95th percentile queue lengths and V/C ratios are all within acceptable limits.

5 Site Generated Traffic

To estimate the new morning (AM) and afternoon (PM) peak hour traffic generated by the proposed development, trip generation rates from the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition*, were used. Rates published in this manual are widely accepted by the traffic engineering community, as they are based on empirical data. This chapter outlines our methodology and findings.

5.1 Trip Generation Rates

Since the proposed development will include only residential land uses, the ITE Land Use (LU) Code 221 for “Multi-Family Housing (Mid-Rise)” was selected from ITE’s Trip Generation Manual and used to estimate the number of new vehicle trips generated by the development. Furthermore, the location setting for a “General Urban/Suburban” development was selected as it generally reflects the area context for the development site. This development is planned in six (6) phases, each including the construction of a 52-unit apartment building, for a total of 312 units. The estimated numbers of new trips based on the proposed number of residential units for each construction phase are summarized in Table 5.1. Each additional phase is expected to add roughly 20 new trips during the AM and PM peak hours.

Table 5.1: ITE Trip Generation for Residential Trips

ITE Land Use Code 221 (Multifamily Housing [Mid-Rise])								
PHASE 1	52	Total Units	Rate	Inbound	Outbound	Trips In	Trips Out	Total Trips
		AM Peak Hr of Adj. Street Traffic	0.37	23%	77%	5	15	20
		PM Peak Hr of Adj. Street Traffic	0.39	61%	39%	13	8	21
PHASE 2	52	Total Units	Rate	Inbound	Outbound	Trips In	Trips Out	Total Trips
		AM Peak Hr of Adj. Street Traffic	0.37	23%	77%	5	15	20
		PM Peak Hr of Adj. Street Traffic	0.39	61%	39%	13	8	21
PHASE 3	52	Total Units	Rate	Inbound	Outbound	Trips In	Trips Out	Total Trips
		AM Peak Hr of Adj. Street Traffic	0.37	23%	77%	5	15	20
		PM Peak Hr of Adj. Street Traffic	0.39	61%	39%	13	8	21
PHASE 4	52	Total Units	Rate	Inbound	Outbound	Trips In	Trips Out	Total Trips
		AM Peak Hr of Adj. Street Traffic	0.37	23%	77%	5	15	20
		PM Peak Hr of Adj. Street Traffic	0.39	61%	39%	13	8	21
PHASE 5	52	Total Units	Rate	Inbound	Outbound	Trips In	Trips Out	Total Trips
		AM Peak Hr of Adj. Street Traffic	0.37	23%	77%	5	15	20
		PM Peak Hr of Adj. Street Traffic	0.39	61%	39%	13	8	21
PHASE 6	52	Total Units	Rate	Inbound	Outbound	Trips In	Trips Out	Total Trips
		AM Peak Hr of Adj. Street Traffic	0.37	23%	77%	5	15	20
		PM Peak Hr of Adj. Street Traffic	0.39	61%	39%	13	8	21

5.2 Trip Reduction Considerations

Consideration was given to determine whether the trips would represent exclusively new traffic to the street network, or if any reductions may be appropriate based on the following factors:

- ▶ **On-site synergy:** If the proposed development were to have multiple land use types, some site trips may be internal to the site in which case a reduction would be appropriate. For example, this could include residents making trips to ground floor commercial businesses. However, as the proposed development will only include residential dwelling units, no reduction was applied for on-site synergy.
- ▶ **Pass-by and Diverted-Link trips:** The proposed development will be exclusively residential units, which is a land use that generally does not attract pass-by or diverted-link trips. Therefore, no reductions were applied for these trip types.
- ▶ **Active Transportation and Transit Trips:** Due to the presence of sidewalks and nearby transit routes, a nominal 5% reduction was applied for active transportation and transit trips.

The overall trips estimated to be generated by the site at full build-out are summarized in Table 5.2.

Table 5.2: Summary of New Site Trips

Time Period	Trips In	Trips Out	Total Trips
AM Peak Hour	30	90	120
PM Peak Hour	78	48	126

5.3 Distribution of Site Trips

Site trips were distributed to the study intersections based on the proportions of observed trips entering and exiting the study area boundaries for both the AM and PM peak periods. Movement proportions for both peak periods were averaged to estimate the trip distribution through the street network, as summarized in Table 5.3. It was assumed there would be no NB or SB through movements at the intersection with the proposed developments at 1440 and 1429 Loch Lomond Road.

The estimated total new site trips distributed through the study intersections are shown in Figure 5.1.

Table 5.3: Summary of Trip Distribution

Approach	Loch Lomond Road		McAllister Drive	Champlain Drive	Hickey Road	Bon Accord Drive
	West	East	North	South	South	North
AM Trip Dist. IN (%)	15%	36%	19%	12%	14%	4%
PM Trip Dist. IN (%)	33%	14%	26%	12%	13%	2%
AM Trip Dist. OUT (%)	38%	10%	21%	12%	17%	2%
PM Trip Dist. OUT (%)	18%	32%	21%	9%	17%	3%

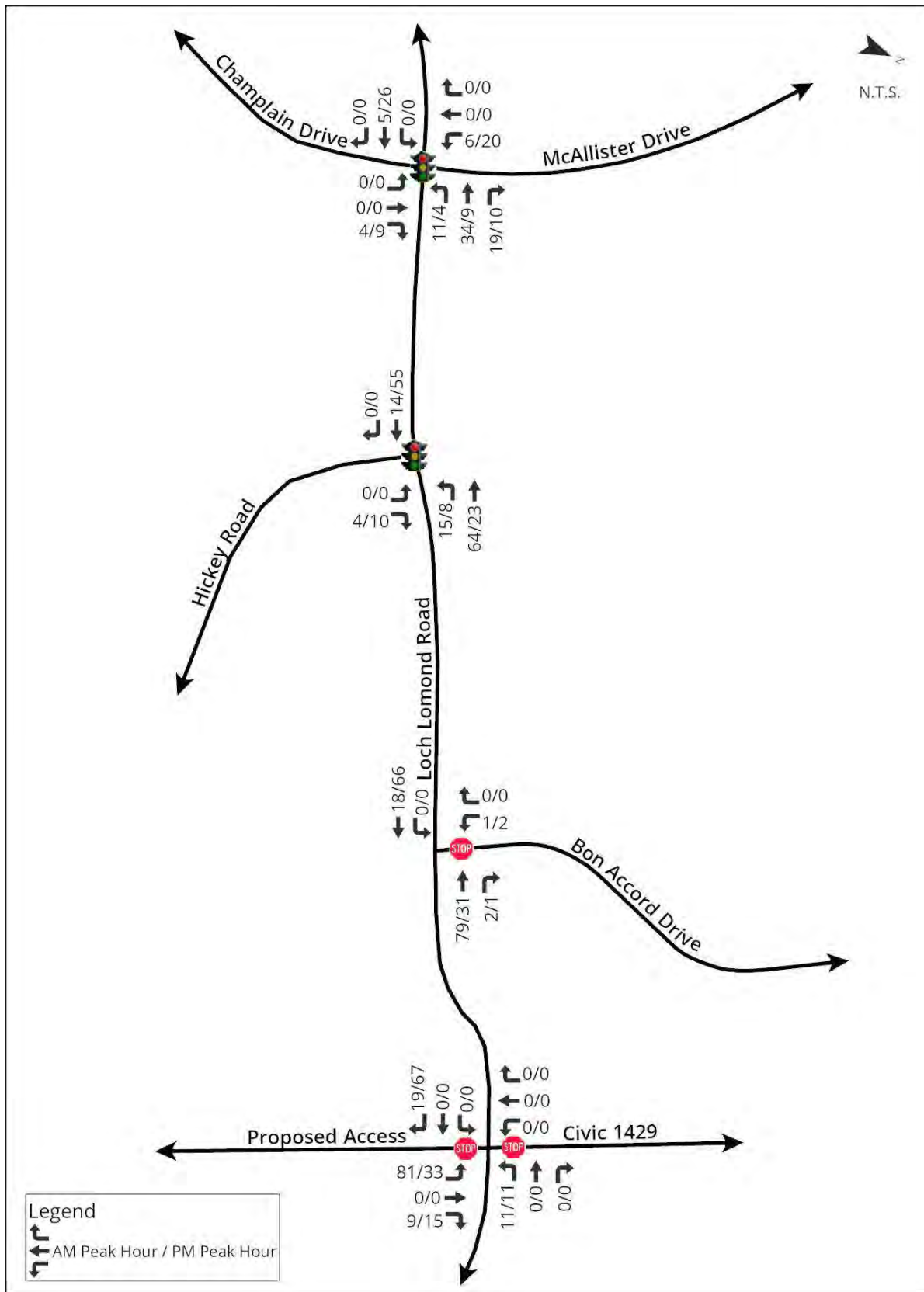


Figure 5.1: Estimated Peak Hour Site Traffic Volumes

6 Future 2032 Build Condition

6.1 2032 Build Traffic Volumes

The 2032 No Build volumes and the estimated site trips were summed to obtain the estimated 2032 Build volumes, which are summarized in Figure 6.1.

6.2 2032 Build Traffic Operations

The LOS analysis for the study intersections were performed using Synchro for the forecasted 2032 Build traffic volumes for the AM and PM peak hours. Splits and cycle lengths were optimized for both signalized intersections. The operational results for the 2032 Build condition are summarized in Table 6.1, and the corresponding analysis reports are provided in Appendix D.

The intersection of Loch Lomond Road, McAllister Drive and Champlain Drive continues to operate at LOS C during the AM peak hour, and LOS D during the PM peak hour. SB lefts now operate at LOS F with a V/C ratio of 1.07 during the PM peak hour. The WB throughs have increased 95th percentile queue length of roughly 260m (from ~245m in 2032 No Build) and V/C ratio of 0.94 (from 0.90 in 2032 No Build) during the AM peak hour. The 95th percentile queue lengths for EB through/rights, WB throughs, and SB lefts have all slightly increased to marginally exceed 100m.

The intersection of Loch Lomond Road and Hickey Road continues to operate at LOS C during both peak periods. Marginal increases to queueing, V/C ratios, and average delay are reported for most lane groups. NB lefts continue operate at LOS E and LOS F during the AM and PM peak hours, respectively. The 95th percentile queues have increased for WB throughs during the AM peak hour to roughly 150m (from ~140 in 2032 No Build), and EB throughs have increased to roughly 260m (from 245m in 2032 No Build) during the PM peak hour. The V/C ratios for both EB through and NB lefts have increased to 1.00 during the PM peak period.

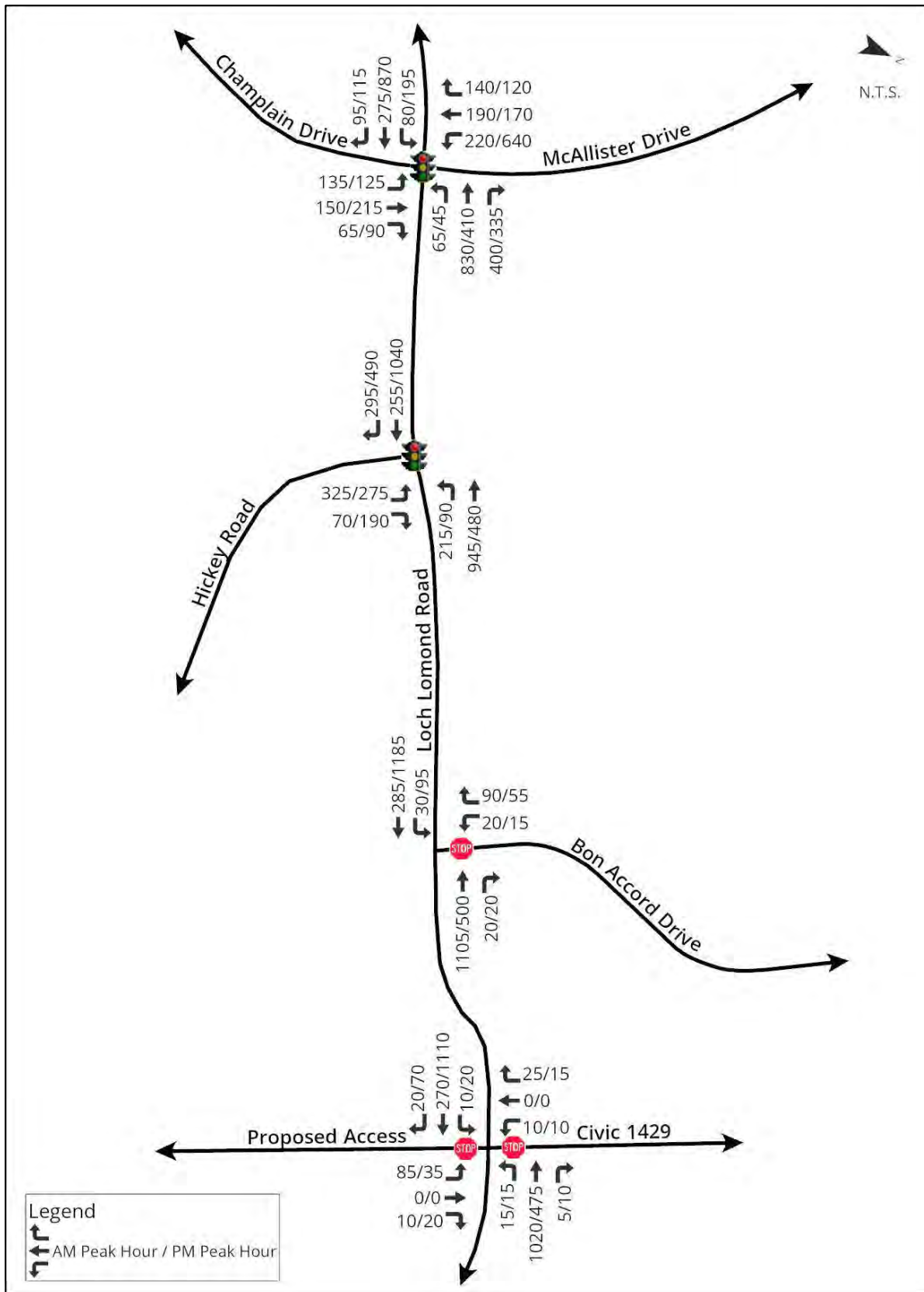


Figure 6.1: 2032 Build Peak Hour Traffic Volumes

Table 6.1: Intersection Performance Results – 2032 Build Traffic Volumes

Intersection [Synchro Node]	Lane Group [Queue Storage Length (m)]	AM Peak Hour				PM Peak Hour			
		95th % Queue (m)	V/C Ratio ²	Average Delay (sec) ³	LOS ⁴	95th % Queue (m)	V/C Ratio ²	Average Delay (sec) ³	LOS ⁴
Loch Lomond, McAllister Drive & Champlain Drive [1] (Traffic Signals)	EB Left (78m)	17.7	0.43	20.3	C	34.0	0.51	20.2	C
	EB Thru/Right	35.4	0.25	17.3	B	111.8	0.68	28.9	C
	WB Left (100m)	12.8	0.12	12.8	B	10.6	0.21	15.6	B
	WB Thru	259.3	0.94	49.4	D	102.3	0.62	32.3	C
	WB Right (160m)	16.7	0.43	3.7	A	16.4	0.44	4.2	A
	NB Left (70m)	36.3	0.91	77.3	E	28.8	0.56	32.0	C
	NB Thru	42.3	0.44	39.4	D	59.3	0.71	51.0	D
	NB Right (40m)	0.6	0.16	2.0	A	6.0	0.25	5.6	A
	SB Left	23.8	0.36	26.7	C	103.3	1.07	85.8	F
	SB Thru/Right	87.9	0.83	52.8	D	74.0	0.68	41.4	D
Overall			34.7	C			40.1	D	
Loch Lomond & Hickey Road [2] (Traffic Signals)	EB Thru	34.8	0.42	15.8	C	262.2	1.00	47.5	D
	EB Right	9.2	0.43	3.5	A	13.1	0.46	2.5	A
	WB Left (130m)	15.9	0.37	7.0	A	13.9	0.44	14.3	B
	WB Thru	149.5	0.88	21.7	C	41.0	0.39	6.2	A
	NB Left	72.3	0.85	44.4	E	92.6	1.00	90.1	F
	NB Right (120m)	7.7	0.17	6.6	A	17.3	0.48	10.5	B
	Overall			19.7	C			32.3	C
Loch Lomond & Bon Accord Drive [3] (Unsignalized)	EB Left (50m)	1.4	0.06	12.2	B	2.1	0.11	9.0	A
	SB Left/Right	42.7	0.86	91.1	F	16.8	0.49	43.0	E
	Overall			7.7	A			2.3	A
Loch Lomond, 1429 Driveway & Proposed Development [4] (Unsignalized)	EB Left/Thru/Right	0.7	0.02	10.8	B	0.7	0.02	8.5	A
	WB Left/Thru/Right	0.0	0.01	7.9	A	0.7	0.03	11.9	B
	NB Left/Thru/Right	46.2	1.07	190.8	F	29.4	0.87	172.9	F
	SB Left/Thru/Right	5.6	0.22	31.2	D	7.0	0.26	51.4	F
	Overall			13.2	B			6.2	A

Notes:

Analysis by CBCL Limited using Synchro 11

1. 95% Queue - 95th percentile queue length [highlighted if >available storage or 100m]
2. V/C Ratio - Volume-to-Capacity ratio [highlighted if >0.85 for shared movements or >0.90 for exclusive turning movements]
3. Average Delay - average total delay per vehicle [highlighted for LOS E or F]
4. LOS - Level of Service [highlighted for LOS E or F]

The intersection of Loch Lomond Road and Bon Accord Drive continue to operate at LOS A during both peak hours. SB left/rights still operate at LOS F and LOS E during the AM and PM peak hours, respectively. The V/C ratios and 95th percentile queue lengths remain all within acceptable limits.

The intersection of Loch Lomond Road, Civic 1429, and the proposed driveway operates at LOS A during the PM peak hour; however, with the addition of the proposed driveway, the intersection now operates as LOS B during the AM peak hour. SB left/thru/rights now operate at LOS F during the PM peak period, and NB left/thru/rights operate at LOS F during both peak hours. The V/C ratios are all within acceptable limits, except for the NB lane group which reports a value of 1.07, indicating it has exceeded its theoretical capacity. The 95th percentile queues are all within acceptable limits.

The addition of site trips to the study network has marginal impact to traffic operations at the study intersections, and existing operational issues appear to be exacerbated from the 2032 No Build scenario. It is suggested that traffic operations at the Loch Lomond Road intersections with McAllister Drive/Champlain Drive and Hickey Road be monitored into the future.

Furthermore, it appears there is limited capacity along Loch Lomond Road as there is a single through lane for each direction of travel. It is suggested that the City of Saint John conduct a holistic corridor analysis along Loch Lomond Road to investigate options to improve traffic flow and alleviate congestion.

6.3 Modified Driveway Alignment

Operations at the proposed driveway were analysed further assuming the proposed driveway and the driveway to Civic 1429 were separated (i.e., each driveway makes a separate 'T' intersection with Loch Lomond Road). The Synchro results for the 2032 Build condition with the proposed driveway separated are summarized in Table 6.2, and the corresponding analysis reports are provided in Appendix D.

Table 6.2: Intersection Performance Results – 2032 Build Traffic Volumes with Separated Driveways

Intersection [Synchro Node]	Lane Group [Queue Storage Length (m)]	AM Peak Hour				PM Peak Hour			
		95th % Queue (m)	V/C Ratio ²	Average Delay (sec) ³	LOS ⁴	95th % Queue (m)	V/C Ratio ²	Average Delay (sec) ³	LOS ⁴
Loch Lomond & Proposed Development [4] (Unsignalized)	WB Left/Thru	0.0	0.01	7.9	A	0.7	0.03	11.9	B
	NB Left /Right	28.0	0.70	72.0	F	18.2	0.55	72.3	F
	Overall			4.8	A			2.4	A

Notes:

Analysis by CBCL Limited using Synchro 11

1. 95% Queue - 95th percentile queue length [highlighted if >available storage or 100m]
2. V/C Ratio - Volume-to-Capacity ratio [highlighted if >0.85 for shared movements or >0.90 for exclusive turning movements]
3. Average Delay - average total delay per vehicle [highlighted for LOS E or F]
4. LOS - Level of Service [highlighted for LOS E or F]

Removing the north leg of the intersection (i.e., Civic 1429 driveway) greatly improves the average delay for the NB lane group during both the AM and PM peak hours, and marginally improves the average delay for the overall intersection. V/C ratios are no longer outside acceptable limits for the NB lane group, and 95th percentile queues have marginally improved as well.

The *Geometric Design Guide for Canadian Roads*, published by TAC, provides guidance to establish the minimum spacing between driveways. A multi-unit apartment building would be considered a 'commercial' land use for which TAC suggests a minimum driveway spacing of 3.0m. This distance is measured between start and end of the curb returns for the adjacent driveways.

Based on the improved traffic operations at this intersection, it is recommended that the driveways of the proposed development and Civic 1429 should be separated by at least 3.0m from their adjacent curb returns.

7 Warrant Analyses

Warrant analyses were completed to evaluate the need for traffic signals and a pedestrian crossing at the intersection of Loch Lomond Road and the proposed driveways at Civic 1429 and Civic 1440. The following sections outline the results of those analyses.

7.1 Traffic Signal Warrant

Significant delays for the proposed driveway (i.e., NB lane group) at its intersection with Loch Lomond Road and Civic 1429 under 2032 Build conditions, assuming both developments' driveways are aligned. Therefore, a Traffic Signal Warrant Analysis was carried out in accordance with the methodology outlined by the Transportation Association of Canada (TAC) to evaluate if traffic signals would be an appropriate mitigation measure.

Traffic volumes from the 2032 Build condition were applied for the morning (AM), mid-day (MD), and afternoon (PM) peak periods, as they would represent the typical highest 6-hour periods.

The Traffic Signal Warrant Analysis produced a score of 74 points; this compares to the 100 points normally required to warrant traffic signals. Therefore, this analysis suggests that traffic signals are not warranted at this intersection. The corresponding Traffic Signal Warrant Analysis worksheet is provided in Appendix E.

Given the conflicting results between the traffic model and the warrant analysis, it is suggested this intersection be closely monitored following construction and occupancy of the proposed development, as well as the planned development at Civic 1429.

7.2 Pedestrian Crosswalk Warrant Analysis

Since the proposed development is expected to create latent demand for pedestrians from the proposed development to cross Loch Lomond Road to reach the sidewalk, a crosswalk warrant analysis was carried out. Guidance was provided from the *Pedestrian Crossing Control Guide, Third Edition*, published by TAC.

The *Pedestrian Crossing Control Guide* provides a decision support tool to aide in selecting the appropriate crossing control system, which is based on the Average Daily Traffic (ADT), posted speed limit, and lane configuration of the proposed crossing location. The decision support tool from the guide is illustrated in Figure 7.1.

Average Daily Traffic	Speed Limit ² (km/h)	Total Number of Lanes ¹				
		1 or 2 lanes	3 lanes (two-way)	3 lanes (one-way)	2 or 3 lanes/direction w/ raised refuge	2 lanes/ direction w/o raised refuge
1,500 < ADT ≤ 4,500	≤ 50	GM	GM	GM	GM	GM+
	60	GM+	GM+	OF	RRFB or OF ³	RRFB
	70	RRFB	RRFB	OF	OF	OF
4,500 < ADT ≤ 9,000	≤ 50	GM	GM	GM	GM	RRFB
	60	GM+	GM+	OF	RRFB or OF ³	OF
	70	RRFB	OF	OF	OF	TS
9,000 < ADT ≤ 12,000	≤ 50	GM	RRFB	OF	RRFB or OF ³	OF
	60	RRFB	RRFB	OF	RRFB or OF ³	TS
	70	OF	OF	OF	TS	TS
12,000 < ADT ≤ 15,000	≤ 50	RRFB	RRFB	OF	RRFB or OF ³	OF
	60	RRFB	OF	OF	RRFB or OF ³	TS
	70	OF	TS	TS	TS	TS
> 15,000	≤ 50	RRFB	OF	OF	RRFB or OF ³	TS
	60	RRFB	TS	TS	TS	TS
	70	OF	TS	TS	TS	TS

Figure 7.1: Decision Support Tool – Treatment Selection Matrix

The speed limit along Loch Lomond Road is posted at 60 km/h near the proposed driveway, although it was noted that a short distance to the west the speed limit is posted at 50 km/h. The road cross-section is 2 lanes, with 1 lane for each EB and WB through traffic. While current ADT data is not available at this location, guidance provided by the Federal Highway Administration (FHWA) suggests the two-way Design Hour Volume (DHV) is typically 8-12% of the ADT. The estimated 2032 Build traffic volume at the proposed driveway indicates a DHV of 1,400 and 1,700 vehicles per hour during the AM and PM peak hours, respectively. Therefore, the corresponding ADT would range between roughly 12,000 to 18,000 for the AM peak hour and 14,000 to 21,000 for the PM peak hour.

Based on the road characteristics detailed above, the treatment selection matrix would indicate the installation of a crosswalk with Rectangular Rapid Flashing Beacons (RRFB) would be appropriate at this intersection.

8 Construction Phasing

The intersection of the proposed development driveway, Civic 1429, and Loch Lomond Road was analysed following each phase of the development to understand traffic operations as each phase comes online. The results of this analysis are summarized in Table 8.1, and the corresponding Synchro analysis reports are provided in Appendix F.

The NB lane group begins to operate at LOS F during the AM and PM peak hours following Phase 3 and Phase 2 for the site, respectively; V/C ratios for the NB lane group does not fall outside acceptable limits until Phase 6. The SB lane group begins to operate at LOS F during the PM peak hour following Phase 6, and no issues with its V/C ratios are reported.

8.1 Modified Driveway Alignment Phasing

As suggested in *Section 6.3 Modified Driveway Alignment*, if the driveways of the proposed development and Civic 1429 are to be separated, then traffic operations at the proposed driveway are expected to improve. Therefore, a subsequent traffic model was developed to evaluate this scenario across the proposed phasing; traffic operations are summarized in Table 8.2, and the corresponding Synchro analysis reports are provided in Appendix F.

In the scenario of the proposed driveway forming a "T" intersection with Loch Lomond Road, the NB lane group is not expected to operate at LOS F until Phase 6 and Phase 4 during the AM and PM peak hours, respectively. No issues with V/C ratios or 95th percentile queues are expected, and the overall intersection is expected to operate at LOS A during both peak hours for each of the phases.

This analysis further reinforces the operational benefits of separating the proposed driveway from the driveway at Civic 1429.

Table 8.1 Level of Service (LOS) – Construction Phasing at the Proposed Driveway, Civic 1429 and Loch Lomond Road

Phase (Year)	Lane Group [Queue Storage Length (m)]	AM Peak Hour				PM Peak Hour			
		95th % Q ¹ (m)	V/C Ratio ²	Average Delay ³ (s)	LOS ⁴	95th % Q ¹ (m)	V/C Ratio ²	Average Delay ³ (s)	LOS ⁴
Phase 1 (2024)	EB Left/Thru/Right	0.0	0.02	10.2	B	0.7	0.02	8.4	A
	WB Left/Thru/Right	0.0	0.00	7.8	A	0.0	0.01	10.7	B
	NB Left/Thru/Right	3.5	0.14	31.6	D	3.5	0.16	46.4	E
	SB Left/Thru/Right	4.2	0.17	24.2	C	4.2	0.16	30.7	D
	Overall			1.3	A			1.1	A
Phase 2 (2026)	EB Left/Thru/Right	0.0	0.20	10.4	B	0.7	0.02	8.4	A
	WB Left/Thru/Right	0.0	0.00	7.8	A	0.0	0.01	10.9	B
	NB Left/Thru/Right	7.7	0.29	42.6	E	7.0	0.27	52.6	F
	SB Left/Thru/Right	4.2	0.18	25.3	D	4.2	0.18	33.8	D
	Overall			1.9	A			1.6	A
Phase 3 (2027)	EB Left/Thru/Right	0.0	0.02	10.4	B	0.7	0.02	8.4	A
	WB Left/Thru/Right	0.0	0.01	7.8	A	0.7	0.02	11.1	B
	NB Left/Thru/Right	14.0	0.46	57.7	F	10.5	0.37	68.2	F
	SB Left/Thru/Right	4.9	0.19	26.4	D	4.9	0.20	37.1	E
	Overall			3.1	A			2.1	A
Phase 4 (2029)	EB Left/Thru/Right	0.7	0.02	10.6	B	0.7	0.02	8.5	A
	WB Left/Thru/Right	0.0	0.01	7.9	A	0.7	0.02	11.3	B
	NB Left/Thru/Right	21	0.60	74.3	F	15.4	0.51	83.6	F
	SB Left/Thru/Right	4.9	0.20	28.2	D	5.6	0.21	40.6	E
	Overall			4.4	A			2.8	A
Phase 5 (2030)	EB Left/Thru/Right	0.7	0.02	10.7	B	0.7	0.02	11.5	B
	WB Left/Thru/Right	0.0	0.01	7.9	A	0.7	0.02	11.5	B
	NB Left/Thru/Right	31.5	0.80	110.5	F	20.3	0.64	114.1	F
	SB Left/Thru/Right	4.9	0.20	28.9	D	5.6	0.23	44.4	E
	Overall			7.1	A			3.8	A
Phase 6 (2032)	EB Left/Thru/Right	0.7	0.02	10.8	B	0.7	0.02	8.5	A
	WB Left/Thru/Right	0.0	0.01	7.9	A	0.7	0.03	11.9	B
	NB Left/Thru/Right	46.2	1.07	190.8	F	29.4	0.87	172.9	F
	SB Left/Thru/Right	5.6	0.22	31.2	D	7.0	0.26	51.4	F
	Overall			13.2	B			6.2	A

Notes:

Analysis by CBCL Limited using Synchro 10

1. 95% Queue - 95th percentile queue length [highlighted if >available storage or 100m]
2. V/C Ratio - Volume-to-Capacity ratio [highlighted if >0.90]
3. Average Delay - average total delay per vehicle [highlighted for LOS E or F]
4. LOS - Level of Service [highlighted for LOS E or F]

Table 8.2 Level of Service (LOS) – Construction Phasing at the Proposed Driveway and Loch Lomond Road (Separated Driveways)

Phase (Year)	Lane Group [Queue Storage Length (m)]	AM Peak Hour				PM Peak Hour			
		95th % Q ¹ (m)	V/C Ratio ²	Average Delay ³ (s)	LOS ⁴	95th % Q ¹ (m)	V/C Ratio ²	Average Delay ³ (s)	LOS ⁴
Phase 1 (2024)	WB Left/Thru	0.0	0.00	7.8	A	0.0	0.01	10.8	B
	NB Left /Right	2.1	0.10	23.2	C	2.8	0.11	32.9	D
	Overall			0.4	A			0.4	A
Phase 2 (2026)	WB Left/Thru	0.0	0.00	7.8	A	0.0	0.01	11.0	B
	NB Left /Right	4.9	0.20	28.8	D	4.9	0.19	36.5	E
	Overall			0.8	A			0.6	A
Phase 3 (2027)	WB Left/Thru	0.0	0.01	7.9	A	0.7	0.02	11.2	B
	NB Left /Right	9.1	0.31	35.1	E	7.0	0.26	43.3	E
	Overall			1.4	A			0.9	A
Phase 4 (2029)	WB Left/Thru	0.0	0.01	7.9	A	0.7	0.02	11.4	B
	NB Left /Right	12.6	0.41	40.1	E	10.5	0.36	50.6	F
	Overall			2.0	A			1.3	A
Phase 5 (2030)	WB Left/Thru	0.0	0.01	7.9	A	0.7	0.02	11.7	B
	NB Left /Right	12.6	0.41	40.1	E	13.3	0.44	60.8	F
	Overall			2.0	A			1.7	A
Phase 6 (2032)	WB Left/Thru	0.0	0.01	7.9	A	0.0	0.03	11.9	B
	NB Left /Right	0.0	0.70	72.0	F	0.0	0.55	72.3	F
	Overall			4.8	A			2.4	A

Notes:

Analysis by CBCL Limited using Synchro 10

1. 95% Queue - 95th percentile queue length [highlighted if >available storage or 100m]
2. V/C Ratio - Volume-to-Capacity ratio [highlighted if >0.90]
3. Average Delay - average total delay per vehicle [highlighted for LOS E or F]
4. LOS - Level of Service [highlighted for LOS E or F]

9 Conclusion

This report outlines the detailed methodology undertaken to prepare a comprehensive Traffic Impact Study (TIS) for the proposed development at 1440 Loch Lomond Road in Saint John, NB.

It is CBCL's professional opinion that the study intersections have sufficient capacity to accommodate the new traffic generated by the proposed development, with the following caveats:

- ▶ While the traffic signal warrant analysis did not suggest signals would be warranted at the proposed driveway's intersection with Loch Lomond Road, traffic operations at this intersection should be monitored going forward.
- ▶ A new crosswalk is recommended on Loch Lomond Road at the proposed development's driveway, along with a Rectangular Rapid Flashing Beacon (RRFB) and the necessary traffic signage and pavement markings.
- ▶ It is suggested that the City of Saint John conduct a corridor analysis along Loch Lomond Road to investigate potential options to improve traffic flow and alleviate the existing congestion.

Thank you for the opportunity to complete this TIS for your proposed development. Please contact us if you have any questions or require further information.

Yours very truly,

CBCL Limited

DRAFT

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APPENDIX A

Traffic Count Reports

McAllister - Loch Lomond - TMC

Tue Nov 22, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017745, Location: 45.299912, -66.005608



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	McAllister Southbound						Loch Lomond Road Westbound						Champlain Northbound						Loch Lomond Road Eastbound						Int
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2022-11-22 7:00AM	19	29	15	0	63	0	59	148	28	0	235	0	4	11	18	0	33	0	13	26	7	0	46	0	377
7:15AM	19	48	20	0	87	1	58	181	27	0	266	0	6	11	15	0	32	0	19	28	13	0	60	0	445
7:30AM	31	46	38	0	115	1	72	188	15	0	275	0	3	20	30	0	53	0	11	36	7	0	54	0	497
7:45AM	23	37	28	0	88	0	76	175	7	0	258	0	14	22	24	0	60	0	14	53	14	0	81	0	487
Hourly Total	92	160	101	0	353	2	265	692	77	0	1034	0	27	64	87	0	178	0	57	143	41	0	241	0	1806
8:00AM	25	43	48	0	116	1	69	175	11	0	255	0	15	31	39	0	85	0	17	60	20	0	97	0	553
8:15AM	38	45	48	0	131	2	70	166	10	0	246	0	12	26	27	0	65	0	23	54	22	0	99	0	541
8:30AM	31	33	49	0	113	0	80	171	12	0	263	0	14	34	25	0	73	2	17	82	11	0	110	3	559
8:45AM	24	20	67	0	111	0	84	131	9	0	224	0	12	27	12	0	51	0	11	60	20	0	91	0	477
Hourly Total	118	141	212	0	471	3	303	643	42	0	988	0	53	118	103	0	274	2	68	256	73	0	397	3	2130
9:00AM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hourly Total	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00PM	17	25	123	0	165	0	60	81	11	0	152	0	16	48	24	0	88	2	23	122	24	0	169	0	574
4:15PM	16	18	101	0	135	0	71	74	8	0	153	0	23	45	30	0	98	0	28	166	33	0	227	0	613
4:30PM	21	34	123	0	178	0	79	94	6	0	179	0	16	55	25	0	96	0	31	167	50	0	248	0	701
4:45PM	24	35	113	0	172	0	74	74	5	0	153	0	10	30	17	0	57	0	20	172	46	0	238	1	620
Hourly Total	78	112	460	0	650	0	284	323	30	0	637	0	65	178	96	0	339	2	102	627	153	0	882	1	2508
5:00PM	26	52	153	0	231	0	68	73	12	0	153	0	21	61	28	0	110	0	25	188	35	0	248	0	742
5:15PM	25	31	131	0	187	0	64	96	3	0	163	0	18	47	25	0	90	0	28	191	39	0	258	0	698
5:30PM	25	19	106	0	150	0	70	90	9	0	169	0	20	57	35	0	112	0	19	176	33	0	228	0	659
5:45PM	14	37	99	0	150	0	59	70	9	0	138	0	12	38	14	0	64	0	15	121	23	0	159	1	511
Hourly Total	90	139	489	0	718	0	261	329	33	0	623	0	71	203	102	0	376	0	87	676	130	0	893	1	2610
6:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022-11-23 7:00AM	19	39	11	0	69	0	57	150	18	0	225	0	1	7	12	0	20	1	8	26	4	0	38	0	352
7:15AM	24	40	14	0	78	1	65	167	19	0	251	0	10	17	23	0	50	0	13	37	5	0	55	0	434
7:30AM	29	36	27	0	92	0	77	191	16	0	284	0	6	22	28	0	56	0	13	41	12	0	66	0	498
7:45AM	32	36	33	0	101	0	78	179	9	0	266	0	6	20	23	0	49	0	21	47	15	0	83	0	499
Hourly Total	104	151	85	0	340	1	277	687	62	0	1026	0	23	66	86	0	175	1	55	151	36	0	242	0	1783
8:00AM	27	47	38	0	112	0	90	168	10	0	268	0	11	41	37	0	89	0	25	52	16	0	93	0	562
8:15AM	32	40	54	0	126	0	78	163	12	0	253	0	13	35	35	0	83	0	21	43	13	0	77	0	539
8:30AM	27	30	58	0	115	0	99	150	9	0	258	0	14	32	16	0	62	0	16	67	11	0	94	0	529
8:45AM	22	17	56	0	95	0	89	113	9	0	211	0	14	20	12	0	46	0	9	73	20	0	102	0	454
Hourly Total	108	134	206	0	448	0	356	594	40	0	990	0	52	128	100	0	280	0	71	235	60	0	366	0	2084
4:00PM	18	33	96	0	147	0	58	63	10	0	131	0	16	49	24	0	89	0	24	160	32	0	216	0	583
4:15PM	18	27	83	0	128	0	55	83	10	0	148	0	19	43	15	0	77	0	18	145	39	0	202	0	555
4:30PM	30	27	104	0	161	0	64	93	8	0	165	0	11	51	29	0	91	0	19	186	37	0	242	1	659
4:45PM	24	32	129	0	185	0	51	70	13	0	134	0	14	34	16	0	64	1	19	183	37	0	239	0	622
Hourly Total	90	119	412	0	621	0	228	309	41	0	578	0	60	177	84	0	321	1	80	674	145	0	899	1	2419
5:00PM	25	40	158	0	223	0	74	95	6	0	175	0	15	55	40	0	110	0	22	182	42	0	246	0	754
5:15PM	16	32	137	0	185	0	70	82	3	0	155	0	24	37	23	0	84	1	24	169	44	0	237	0	661
5:30PM	32	20	114	0	166	0	54	89	8	0	151	0	19	50	37	0	106	0	17	162	34	0	213	0	636
5:45PM	21	29	97	0	147	0	81	77	6	0	164	0	12	23	17	0	52	0	17	100	18	0	135	0	498
Hourly Total	94	121	506	0	721	0	279	343	23	0	645	0	70	165	117	0	352	1	80	613	138	0	831	0	2549
Total	774	1077	2471	0	4322	6	2253	3921	348	0	6522	0	421	1099	775	0	2295	7	600	3375	776	0	4751	6	17890
% Approach	17.9%	24.9%	57.2%	0%	-	-	34.5%	60.1%	5.3%	0%	-	-	18.3%	47.9%	33.8%	0%	-	-	12.6%	71.0%	16.3%	0%	-	-	-
% Total	4.3%	6.0%	13.8%	0%	24.2%	-	12.6%	21.9%	1.9%	0%	36.5%	-	2.4%	6.1%	4.3%	0%	12.8%	-	3.4%	18.9%	4.3%	0%	26.6%	-	-
Lights	739	1060	2418	0	4217	-	2211	3841	332	0	6384	-	398	1084	745	0	2227	-	570	3300	738	0	4608	-	17436
% Lights	95.5%	98.4%	97.9%	0%	97.6%	-	98.1%	98.0%	95.4%	0%	97.9%	-	94.5%	98.6%	96.1%	0%	97.0%	-	95.0%	97.8%	95.1%	0%	97.0%	-	97.5%
Articulated Trucks	10	0	6	0	16	-	9	6	0	0	15	-	0	0	0	0	0	-	0	2	14	0	16	-	47
% Articulated Trucks	1.3%	0%	0.2%	0%	0.4%	-	0.4%	0.2%	0%	0%	0.2%	-	0%	0%	0%	0%	0%	-	0%	0.1%	1.8%	0%	0.3%	-	0.3%
Buses and Single-Unit Trucks	25	17	47	0	89	-	33	74	16	0	123	-	23	15	30	0	68	-	30	73	24	0	127	-	407
% Buses and Single-Unit Trucks	3.2%	1.6%	1.9%	0%	2.1%	-	1.5%	1.9%	4.6%	0%	1.9%	-	5.5%	1.4%	3.9%	0%	3.0%	-	5.0%	2.2%	3.1%	0%	2.7%	-	2.3%
Pedestrians	-	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	6	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	

Leg Direction	McAllister Southbound	Loch Lomond Road Westbound	Champlain Northbound	Loch Lomond Road Eastbound	
Time	R T L U App Ped*	R T L U App Ped*	R T L U App Ped*	R T L U App Ped*	Int
% Bicycles on Crosswalk	- - - - - 0%	- - - - - -	- - - - - 0%	- - - - - 0%	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

McAllister - Loch Lomond - TMC

Tue Nov 22, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

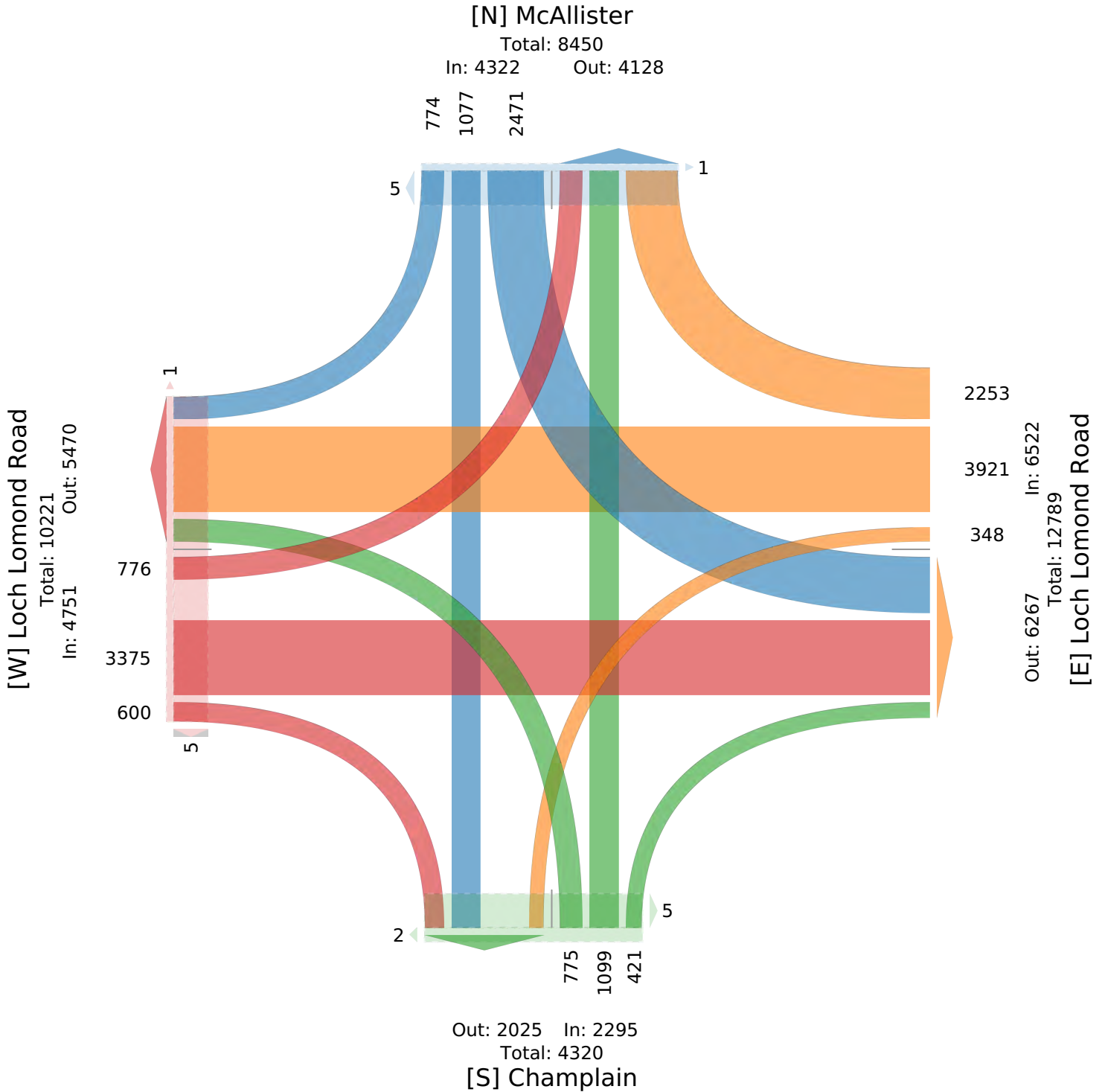
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017745, Location: 45.299912, -66.005608



Provided by: CBCL Limited
 135 St. Peters Road, Suite 201, PO Box 1659,
 Charlottetown, PE, C1A 7N4, CA



McAllister - Loch Lomond - TMC

Tue Nov 22, 2022

AM Peak (Nov 22 2022 7:45AM - 8:45 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017745, Location: 45.299912, -66.005608



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	McAllister Southbound						Loch Lomond Road Westbound						Champlain Northbound						Loch Lomond Road Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2022-11-22 7:45AM	23	37	28	0	88	0	76	175	7	0	258	0	14	22	24	0	60	0	14	53	14	0	81	0	487
8:00AM	25	43	48	0	116	1	69	175	11	0	255	0	15	31	39	0	85	0	17	60	20	0	97	0	553
8:15AM	38	45	48	0	131	2	70	166	10	0	246	0	12	26	27	0	65	0	23	54	22	0	99	0	541
8:30AM	31	33	49	0	113	0	80	171	12	0	263	0	14	34	25	0	73	2	17	82	11	0	110	3	559
Total	117	158	173	0	448	3	295	687	40	0	1022	0	55	113	115	0	283	2	71	249	67	0	387	3	2140
% Approach	26.1%	35.3%	38.6%	0%	-	-	28.9%	67.2%	3.9%	0%	-	-	19.4%	39.9%	40.6%	0%	-	-	18.3%	64.3%	17.3%	0%	-	-	-
% Total	5.5%	7.4%	8.1%	0%	20.9%	-	13.8%	32.1%	1.9%	0%	47.8%	-	2.6%	5.3%	5.4%	0%	13.2%	-	3.3%	11.6%	3.1%	0%	18.1%	-	-
PHF	0.770	0.878	0.883	-	0.855	-	0.922	0.981	0.833	-	0.971	-	0.917	0.831	0.737	-	0.832	-	0.772	0.759	0.761	-	0.880	-	0.957
Lights	106	153	163	0	422	-	288	669	40	0	997	-	52	110	106	0	268	-	65	236	60	0	361	-	2048
% Lights	90.6%	96.8%	94.2%	0%	94.2%	-	97.6%	97.4%	100%	0%	97.6%	-	94.5%	97.3%	92.2%	0%	94.7%	-	91.5%	94.8%	89.6%	0%	93.3%	-	95.7%
Articulated Trucks	3	0	3	0	6	-	1	1	0	0	2	-	0	0	0	0	0	-	0	0	1	0	1	-	9
% Articulated Trucks	2.6%	0%	1.7%	0%	1.3%	-	0.3%	0.1%	0%	0%	0.2%	-	0%	0%	0%	0%	0%	-	0%	0%	1.5%	0%	0.3%	-	0.4%
Buses and Single-Unit Trucks	8	5	7	0	20	-	6	17	0	0	23	-	3	3	9	0	15	-	6	13	6	0	25	-	83
% Buses and Single-Unit Trucks	6.8%	3.2%	4.0%	0%	4.5%	-	2.0%	2.5%	0%	0%	2.3%	-	5.5%	2.7%	7.8%	0%	5.3%	-	8.5%	5.2%	9.0%	0%	6.5%	-	3.9%
Pedestrians	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	3	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

McAllister - Loch Lomond - TMC

Tue Nov 22, 2022

AM Peak (Nov 22 2022 7:45AM - 8:45 AM)

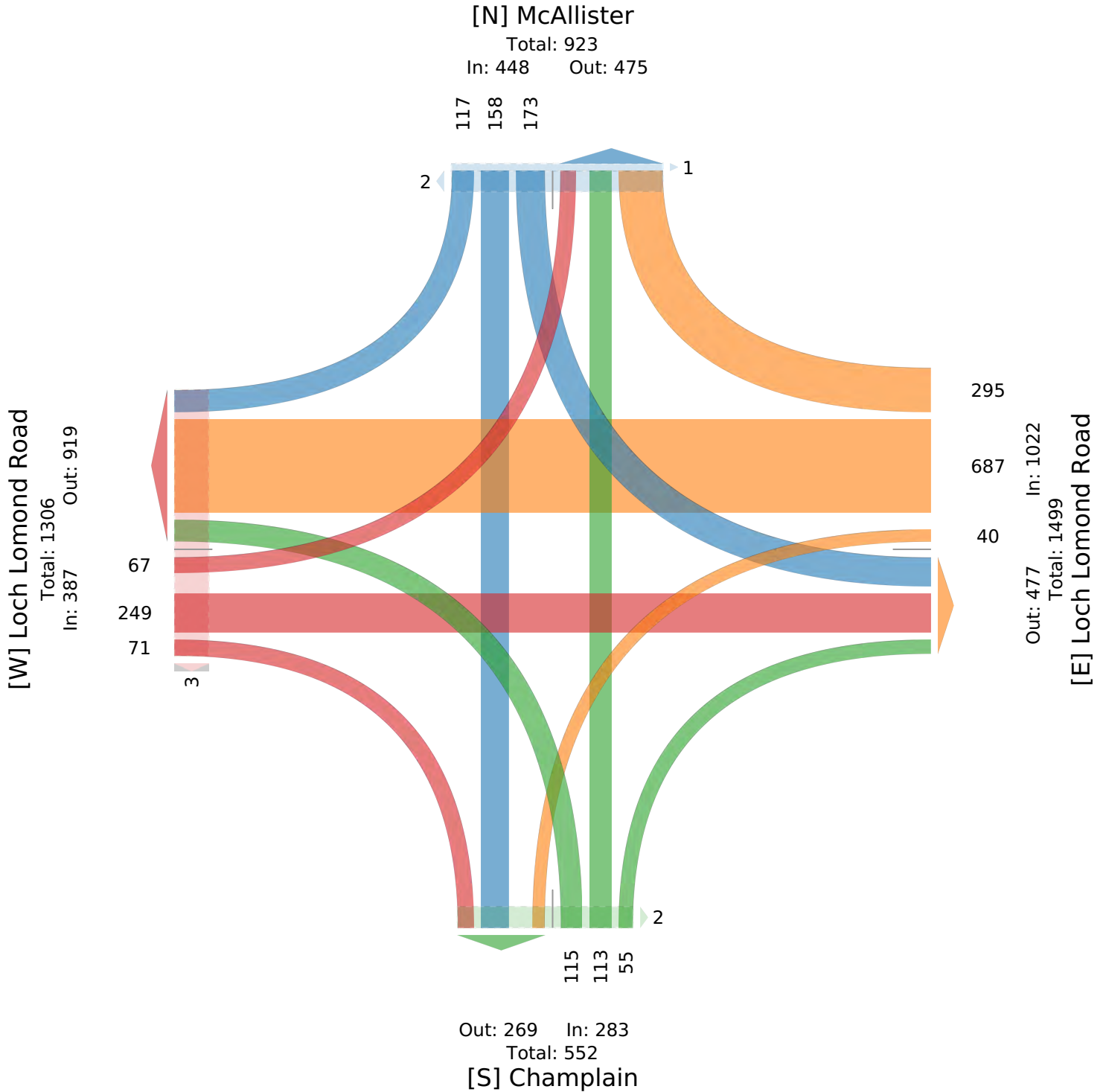
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017745, Location: 45.299912, -66.005608



Provided by: CBCL Limited
 135 St. Peters Road, Suite 201, PO Box 1659,
 Charlottetown, PE, C1A 7N4, CA



McAllister - Loch Lomond - TMC

Tue Nov 22, 2022

PM Peak (Nov 22 2022 4:30PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,

Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017745, Location: 45.299912, -66.005608



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	McAllister Southbound					Loch Lomond Road Westbound					Champlain Northbound					Loch Lomond Road Eastbound									
Time	R	T	L	U	App Ped*	R	T	L	U	App Ped*	R	T	L	U	App Ped*	R	T	L	U	App Ped*	Int				
2022-11-22 4:30PM	21	34	123	0	178	0	79	94	6	0	179	0	16	55	25	0	96	0	31	167	50	0	248	0	701
4:45PM	24	35	113	0	172	0	74	74	5	0	153	0	10	30	17	0	57	0	20	172	46	0	238	1	620
5:00PM	26	52	153	0	231	0	68	73	12	0	153	0	21	61	28	0	110	0	25	188	35	0	248	0	742
5:15PM	25	31	131	0	187	0	64	96	3	0	163	0	18	47	25	0	90	0	28	191	39	0	258	0	698
Total	96	152	520	0	768	0	285	337	26	0	648	0	65	193	95	0	353	0	104	718	170	0	992	1	2761
% Approach	12.5%	19.8%	67.7%	0%	-	-	44.0%	52.0%	4.0%	0%	-	-	18.4%	54.7%	26.9%	0%	-	-	10.5%	72.4%	17.1%	0%	-	-	-
% Total	3.5%	5.5%	18.8%	0%	27.8%	-	10.3%	12.2%	0.9%	0%	23.5%	-	2.4%	7.0%	3.4%	0%	12.8%	-	3.8%	26.0%	6.2%	0%	35.9%	-	-
PHF	0.923	0.731	0.850	-	0.831	-	0.902	0.878	0.542	-	0.905	-	0.774	0.791	0.848	-	0.802	-	0.839	0.940	0.850	-	0.961	-	0.930
Lights	95	150	515	0	760	-	280	335	24	0	639	-	65	192	92	0	349	-	102	715	167	0	984	-	2732
% Lights	99.0%	98.7%	99.0%	0%	99.0%	-	98.2%	99.4%	92.3%	0%	98.6%	-	100%	99.5%	96.8%	0%	98.9%	-	98.1%	99.6%	98.2%	0%	99.2%	-	98.9%
Articulated Trucks	1	0	1	0	2	-	2	0	0	0	2	-	0	0	0	0	0	-	0	0	1	0	1	-	5
% Articulated Trucks	1.0%	0%	0.2%	0%	0.3%	-	0.7%	0%	0%	0%	0.3%	-	0%	0%	0%	0%	0%	-	0%	0%	0.6%	0%	0.1%	-	0.2%
Buses and Single-Unit Trucks	0	2	4	0	6	-	3	2	2	0	7	-	0	1	3	0	4	-	2	3	2	0	7	-	24
% Buses and Single-Unit Trucks	0%	1.3%	0.8%	0%	0.8%	-	1.1%	0.6%	7.7%	0%	1.1%	-	0%	0.5%	3.2%	0%	1.1%	-	1.9%	0.4%	1.2%	0%	0.7%	-	0.9%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	1
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

McAllister - Loch Lomond - TMC

Tue Nov 22, 2022

PM Peak (Nov 22 2022 4:30PM - 5:30 PM) - Overall Peak Hour

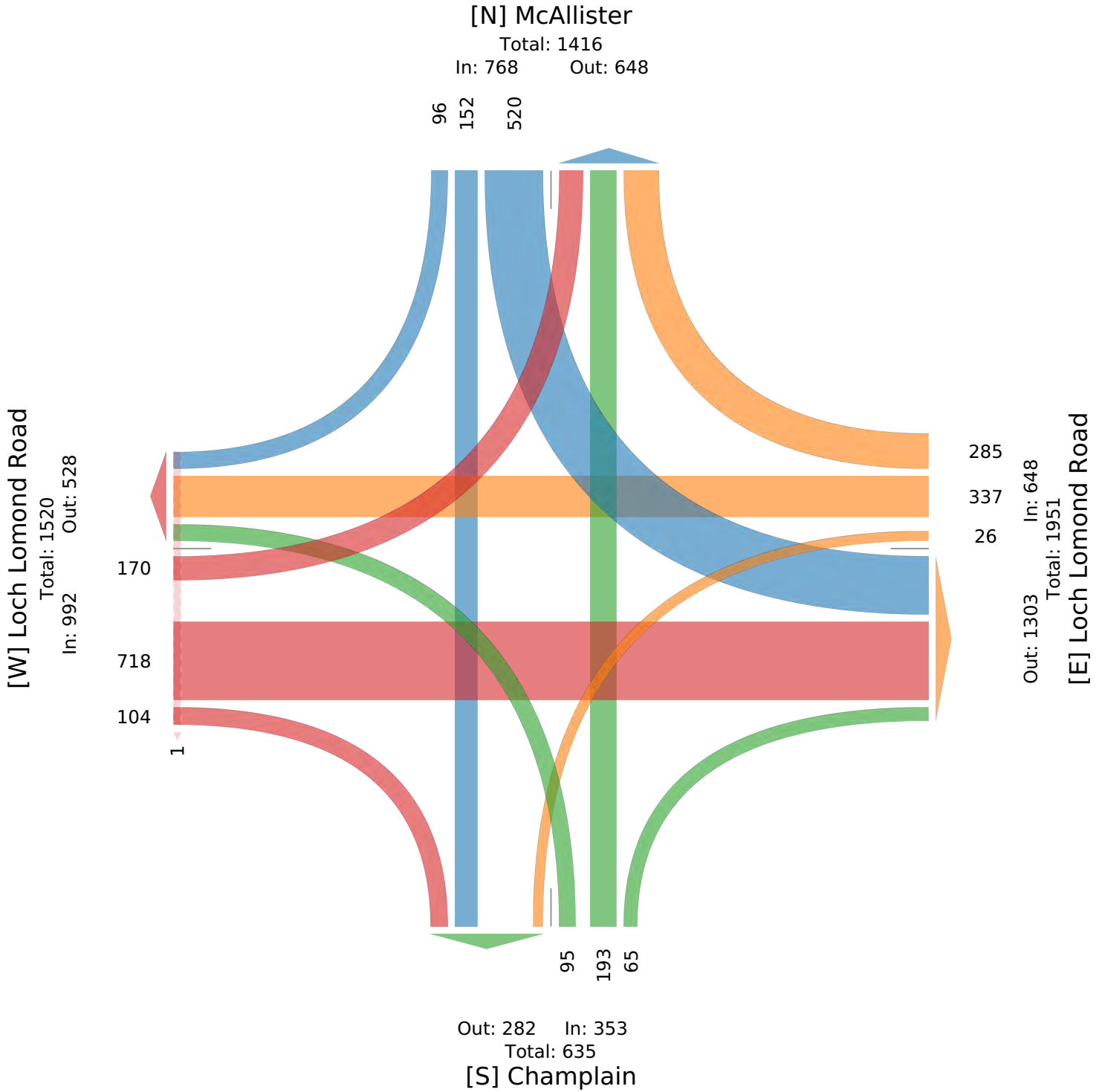
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017745, Location: 45.299912, -66.005608



Provided by: CBCL Limited
 135 St. Peters Road, Suite 201, PO Box 1659,
 Charlottetown, PE, C1A 7N4, CA



Hickey Road - Loch Lomond - TMC

Tue Nov 22, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017744, Location: 45.301848, -65.997826



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	Loch Lomond Road Westbound					Hickey Road Northbound					Loch Lomond Road Eastbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	Int
2022-11-22 7:00AM	161	26	0	187	0	9	69	0	78	0	17	29	0	46	0	311
7:15AM	210	14	0	224	0	7	58	0	65	0	21	35	0	56	0	345
7:30AM	205	22	0	227	0	17	70	0	87	1	29	46	1	76	0	390
7:45AM	214	28	0	242	0	15	59	0	74	0	43	49	0	92	0	408
Hourly Total	790	90	0	880	0	48	256	0	304	1	110	159	1	270	0	1454
8:00AM	183	39	0	222	0	19	68	0	87	0	74	46	0	120	0	429
8:15AM	176	52	0	228	0	15	71	0	86	0	67	50	0	117	0	431
8:30AM	186	49	0	235	0	12	67	0	79	0	69	69	0	138	0	452
8:45AM	118	31	0	149	0	21	94	0	115	0	73	66	0	139	0	403
Hourly Total	663	171	0	834	0	67	300	0	367	0	283	231	0	514	0	1715
4:00PM	87	15	0	102	0	33	61	0	94	0	81	166	0	247	0	443
4:15PM	95	15	0	110	0	41	60	0	101	0	84	188	0	272	0	483
4:30PM	101	13	0	114	0	41	60	0	101	0	88	175	0	263	0	478
4:45PM	83	13	0	96	0	29	53	0	82	0	88	211	0	299	0	477
Hourly Total	366	56	0	422	0	144	234	0	378	0	341	740	0	1081	0	1881
5:00PM	107	15	0	122	0	38	55	0	93	0	129	205	0	334	0	549
5:15PM	98	18	0	116	0	31	55	0	86	0	111	228	0	339	0	541
5:30PM	106	18	0	124	0	28	64	0	92	0	102	202	0	304	0	520
5:45PM	76	12	0	88	0	35	54	0	89	0	87	142	0	229	0	406
Hourly Total	387	63	0	450	0	132	228	0	360	0	429	777	0	1206	0	2016
6:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022-11-23 7:00AM	182	13	0	195	0	8	58	0	66	0	17	22	0	39	0	300
7:15AM	196	16	0	212	0	5	60	0	65	0	18	40	0	58	0	335
7:30AM	223	20	0	243	0	12	74	0	86	0	29	42	0	71	0	400
7:45AM	197	32	0	229	0	9	62	0	71	0	47	35	0	82	0	382
Hourly Total	798	81	0	879	0	34	254	0	288	0	111	139	0	250	0	1417
8:00AM	191	30	0	221	0	14	69	0	83	0	53	47	0	100	0	404
8:15AM	179	52	0	231	0	11	74	0	85	1	69	47	0	116	0	432
8:30AM	150	40	0	190	0	11	84	0	95	0	77	54	0	131	0	416
8:45AM	118	38	0	156	0	16	108	0	124	0	75	69	0	144	0	424
Hourly Total	638	160	0	798	0	52	335	0	387	1	274	217	0	491	0	1676
4:00PM	81	14	0	95	0	35	60	0	95	0	81	189	0	270	0	460
4:15PM	104	15	0	119	0	23	46	0	69	0	77	172	0	249	0	437
4:30PM	102	13	0	115	0	47	54	0	101	0	100	193	0	293	0	509
4:45PM	88	17	0	105	0	26	50	0	76	2	96	215	0	311	0	492
Hourly Total	375	59	0	434	0	131	210	0	341	2	354	769	0	1123	0	1898
5:00PM	101	17	0	118	0	40	82	0	122	0	101	212	0	313	0	553
5:15PM	86	19	0	105	0	44	52	0	96	0	119	215	0	334	0	535
5:30PM	94	18	0	112	0	35	54	0	89	0	95	188	0	283	0	484
5:45PM	109	16	0	125	0	30	57	0	87	1	66	143	0	209	0	421
Hourly Total	390	70	0	460	0	149	245	0	394	1	381	758	0	1139	0	1993
Total	4407	750	0	5157	0	757	2062	0	2819	5	2283	3790	1	6074	0	14050
% Approach	85.5%	14.5%	0%	-	-	26.9%	73.1%	0%	-	-	37.6%	62.4%	0%	-	-	-
% Total	31.4%	5.3%	0%	36.7%	-	5.4%	14.7%	0%	20.1%	-	16.2%	27.0%	0%	43.2%	-	-
Lights	4332	701	0	5033	-	721	1989	0	2710	-	2203	3719	1	5923	-	13666
% Lights	98.3%	93.5%	0%	97.6%	-	95.2%	96.5%	0%	96.1%	-	96.5%	98.1%	100%	97.5%	-	97.3%
Articulated Trucks	8	2	0	10	-	0	6	0	6	-	4	4	0	8	-	24
% Articulated Trucks	0.2%	0.3%	0%	0.2%	-	0%	0.3%	0%	0.2%	-	0.2%	0.1%	0%	0.1%	-	0.2%
Buses and Single-Unit Trucks	67	47	0	114	-	36	67	0	103	-	76	67	0	143	-	360
% Buses and Single-Unit Trucks	1.5%	6.3%	0%	2.2%	-	4.8%	3.2%	0%	3.7%	-	3.3%	1.8%	0%	2.4%	-	2.6%
Pedestrians	-	-	-	-	0	-	-	-	-	4	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	80.0%	-	-	-	-	-	-

Leg Direction	Loch Lomond Road Westbound					Hickey Road Northbound					Loch Lomond Road Eastbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	Int
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	1	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	20.0%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Hickey Road - Loch Lomond - TMC

Tue Nov 22, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

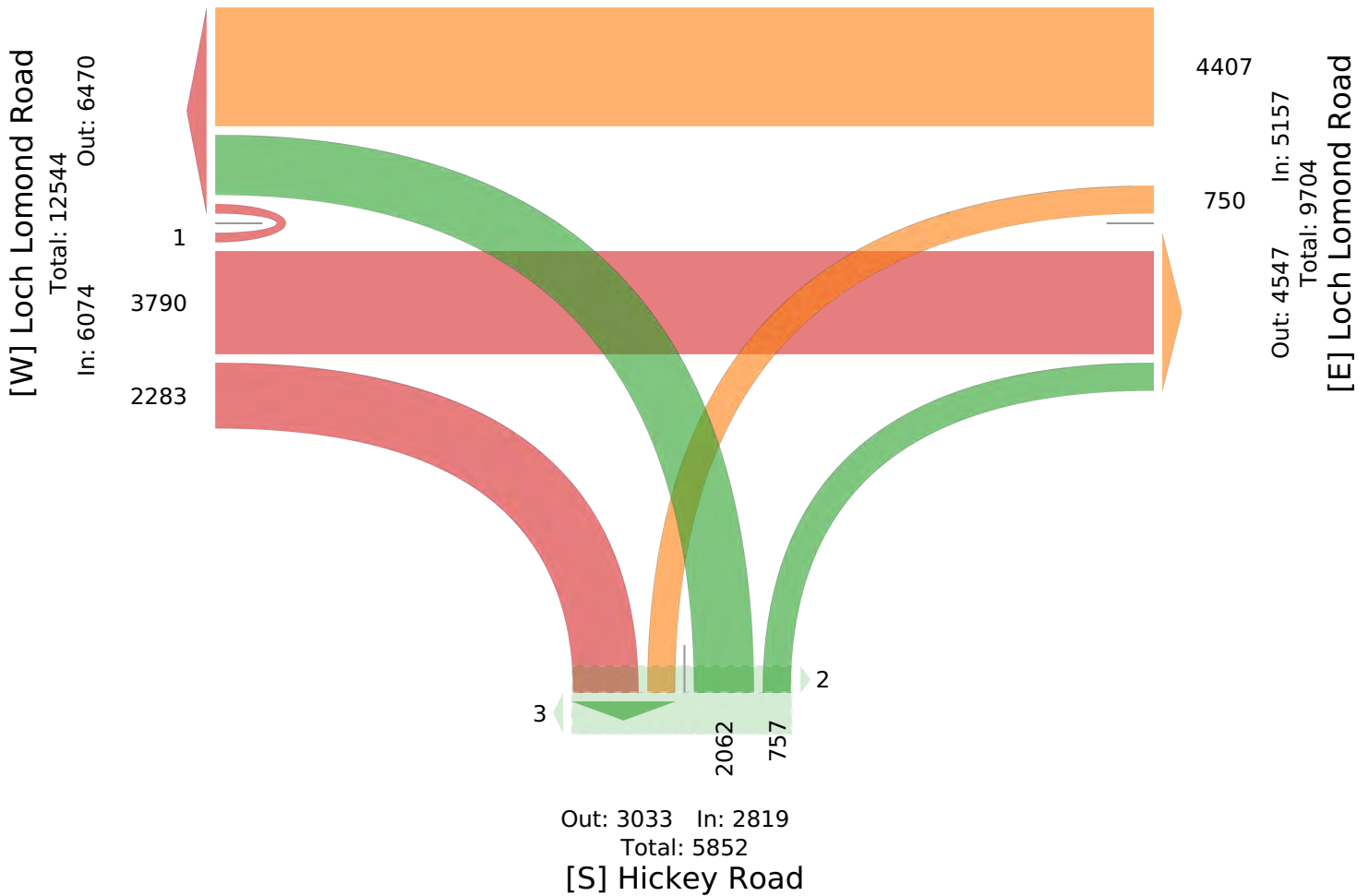
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017744, Location: 45.301848, -65.997826



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA



Hickey Road - Loch Lomond - TMC

Tue Nov 22, 2022

AM Peak (Nov 22 2022 7:45AM - 8:45 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017744, Location: 45.301848, -65.997826



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	Loch Lomond Road Westbound					Hickey Road Northbound					Loch Lomond Road Eastbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	Int
2022-11-22 7:45AM	214	28	0	242	0	15	59	0	74	0	43	49	0	92	0	408
8:00AM	183	39	0	222	0	19	68	0	87	0	74	46	0	120	0	429
8:15AM	176	52	0	228	0	15	71	0	86	0	67	50	0	117	0	431
8:30AM	186	49	0	235	0	12	67	0	79	0	69	69	0	138	0	452
Total	759	168	0	927	0	61	265	0	326	0	253	214	0	467	0	1720
% Approach	81.9%	18.1%	0%	-	-	18.7%	81.3%	0%	-	-	54.2%	45.8%	0%	-	-	-
% Total	44.1%	9.8%	0%	53.9%	-	3.5%	15.4%	0%	19.0%	-	14.7%	12.4%	0%	27.2%	-	-
PHF	0.887	0.808	-	0.958	-	0.803	0.933	-	0.937	-	0.855	0.775	-	0.846	-	0.951
Lights	745	152	0	897	-	51	249	0	300	-	237	206	0	443	-	1640
% Lights	98.2%	90.5%	0%	96.8%	-	83.6%	94.0%	0%	92.0%	-	93.7%	96.3%	0%	94.9%	-	95.3%
Articulated Trucks	2	0	0	2	-	0	0	0	0	-	1	2	0	3	-	5
% Articulated Trucks	0.3%	0%	0%	0.2%	-	0%	0%	0%	0%	-	0.4%	0.9%	0%	0.6%	-	0.3%
Buses and Single-Unit Trucks	12	16	0	28	-	10	16	0	26	-	15	6	0	21	-	75
% Buses and Single-Unit Trucks	1.6%	9.5%	0%	3.0%	-	16.4%	6.0%	0%	8.0%	-	5.9%	2.8%	0%	4.5%	-	4.4%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Hickey Road - Loch Lomond - TMC

Tue Nov 22, 2022

AM Peak (Nov 22 2022 7:45AM - 8:45 AM)

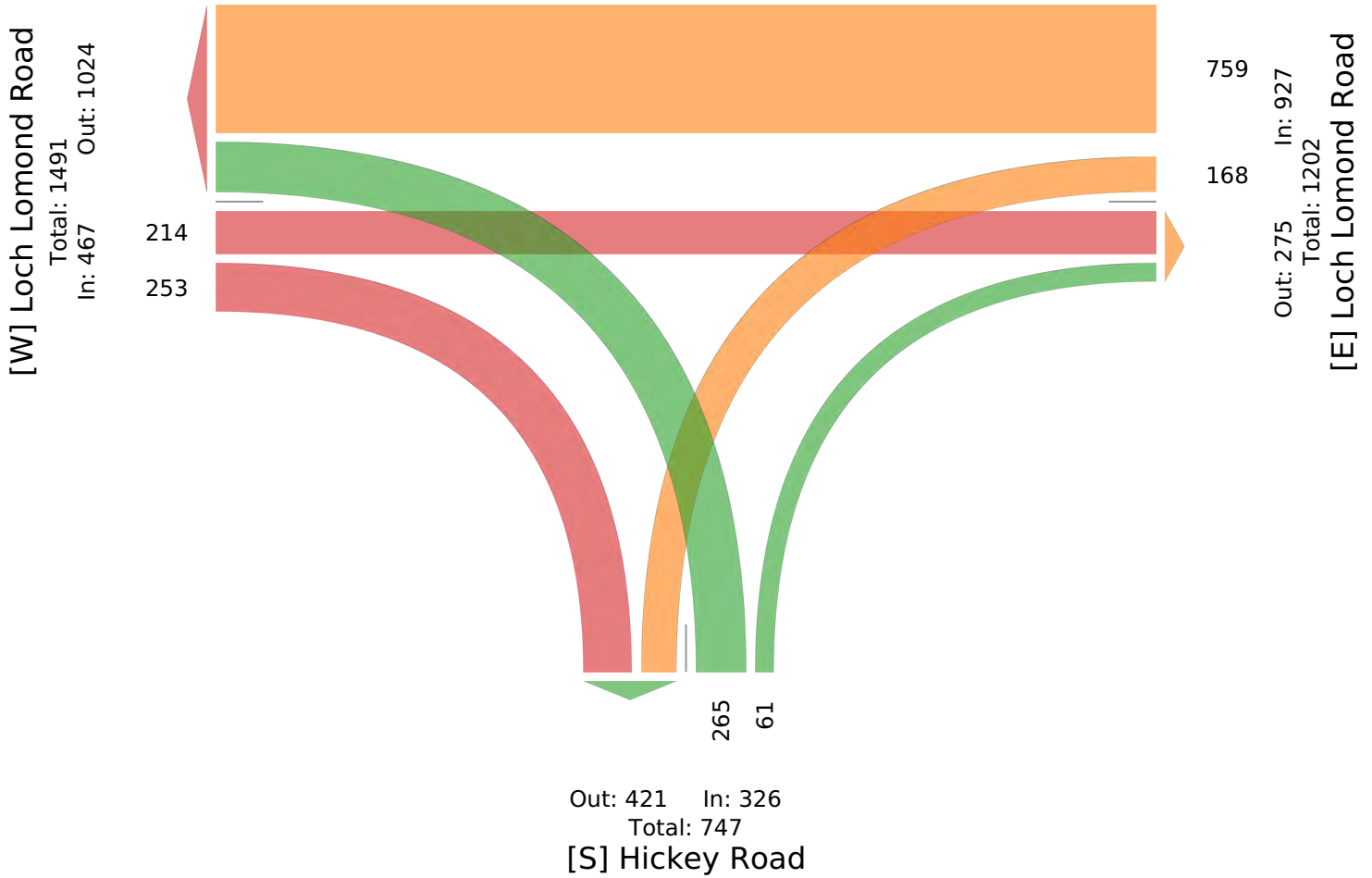
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017744, Location: 45.301848, -65.997826



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA



Hickey Road - Loch Lomond - TMC

Wed Nov 23, 2022

PM Peak (Nov 23 2022 4:30PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017744, Location: 45.301848, -65.997826



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	Loch Lomond Road Westbound					Hickey Road Northbound					Loch Lomond Road Eastbound					Int
	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	
2022-11-23 4:30PM	102	13	0	115	0	47	54	0	101	0	100	193	0	293	0	509
4:45PM	88	17	0	105	0	26	50	0	76	2	96	215	0	311	0	492
5:00PM	101	17	0	118	0	40	82	0	122	0	101	212	0	313	0	553
5:15PM	86	19	0	105	0	44	52	0	96	0	119	215	0	334	0	535
Total	377	66	0	443	0	157	238	0	395	2	416	835	0	1251	0	2089
% Approach	85.1%	14.9%	0%	-	-	39.7%	60.3%	0%	-	-	33.3%	66.7%	0%	-	-	-
% Total	18.0%	3.2%	0%	21.2%	-	7.5%	11.4%	0%	18.9%	-	19.9%	40.0%	0%	59.9%	-	-
PHF	0.924	0.868	-	0.939	-	0.835	0.726	-	0.809	-	0.874	0.971	-	0.936	-	0.944
Lights	372	64	0	436	-	154	234	0	388	-	412	830	0	1242	-	2066
% Lights	98.7%	97.0%	0%	98.4%	-	98.1%	98.3%	0%	98.2%	-	99.0%	99.4%	0%	99.3%	-	98.9%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	5	2	0	7	-	3	4	0	7	-	4	5	0	9	-	23
% Buses and Single-Unit Trucks	1.3%	3.0%	0%	1.6%	-	1.9%	1.7%	0%	1.8%	-	1.0%	0.6%	0%	0.7%	-	1.1%
Pedestrians	-	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Hickey Road - Loch Lomond - TMC

Wed Nov 23, 2022

PM Peak (Nov 23 2022 4:30PM - 5:30 PM) - Overall Peak Hour

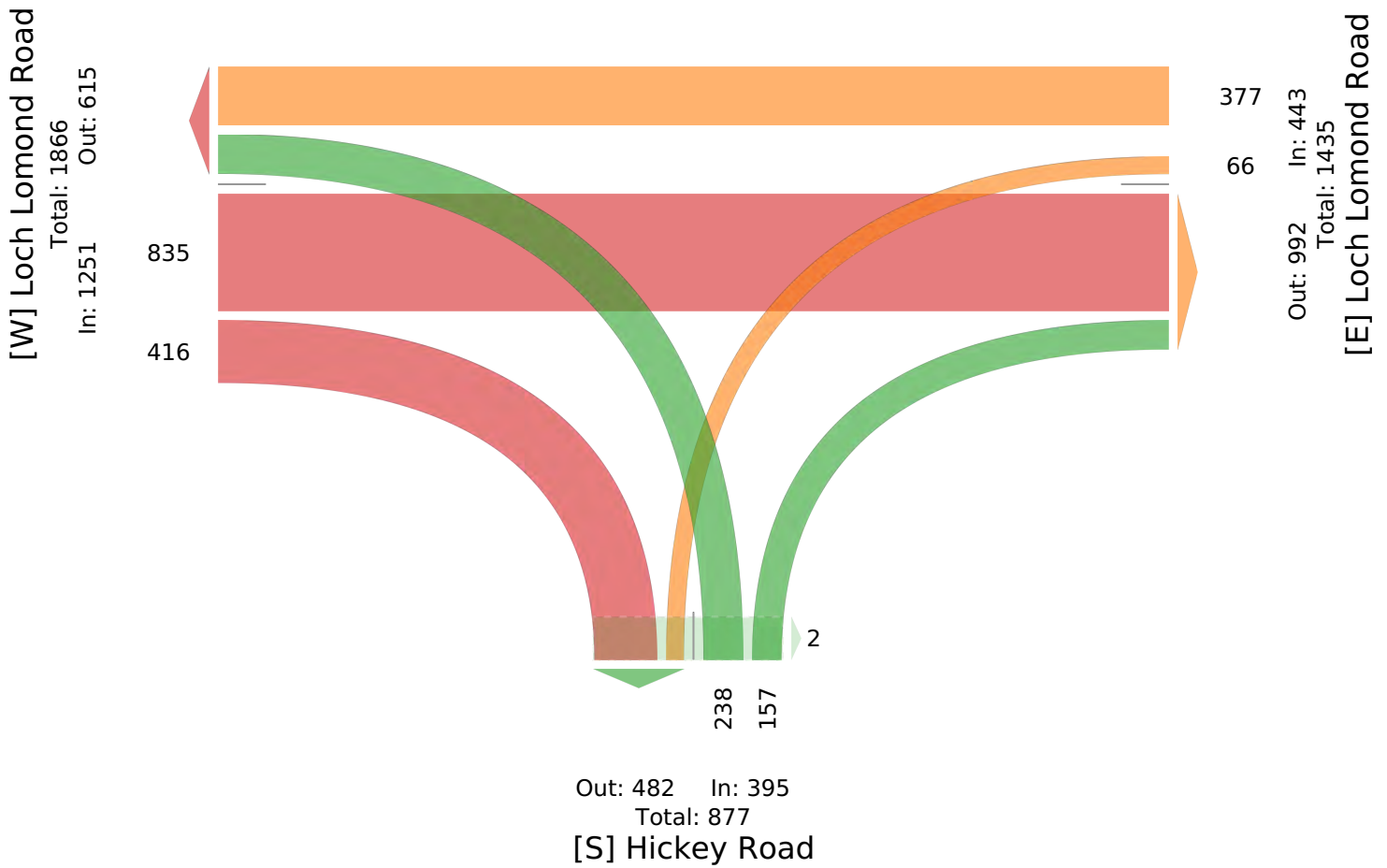
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017744, Location: 45.301848, -65.997826



Provided by: CBCL Limited
 135 St. Peters Road, Suite 201, PO Box 1659,
 Charlottetown, PE, C1A 7N4, CA



Bon Accord - Loch Lomond - TMC

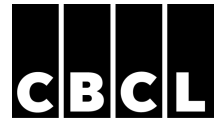
Tue Nov 22, 2022

Full Length (11:30 AM-1:30 PM, 7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017656, Location: 45.304705, -65.988913



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	Bon Accord Southbound					Loch Lomond Road Westbound					Loch Lomond Road Eastbound					Int
	R	L	U	App	Ped*	R	T	U	App	Ped*	T	L	U	App	Ped*	
2022-11-22 7:00AM	12	3	0	15	1	0	206	0	206	0	27	2	0	29	0	250
7:15AM	17	3	0	20	2	1	236	0	237	0	32	3	0	35	0	292
7:30AM	15	4	0	19	0	1	255	0	256	0	56	4	0	60	0	335
7:45AM	27	5	0	32	0	2	218	0	220	0	56	6	0	62	0	314
Hourly Total	71	15	0	86	3	4	915	0	919	0	171	15	0	186	0	1191
8:00AM	19	3	0	22	0	1	246	0	247	0	54	5	0	59	0	328
8:15AM	23	2	0	25	0	5	195	0	200	0	67	7	0	74	0	299
8:30AM	10	2	0	12	1	4	221	0	225	0	67	4	0	71	0	308
8:45AM	11	0	0	11	1	2	140	0	142	0	69	8	0	77	0	230
Hourly Total	63	7	0	70	2	12	802	0	814	0	257	24	0	281	0	1165
9:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30AM	5	2	0	7	0	2	81	0	83	0	97	6	0	103	0	193
11:45AM	10	3	0	13	0	1	79	0	80	0	90	6	0	96	0	189
Hourly Total	15	5	0	20	0	3	160	0	163	0	187	12	0	199	0	382
12:00PM	10	2	0	12	0	4	78	0	82	0	101	14	0	115	0	209
12:15PM	10	2	0	12	0	0	124	0	124	0	95	14	0	109	0	245
12:30PM	7	3	0	10	0	2	105	0	107	0	98	8	0	106	0	223
12:45PM	10	3	0	13	1	0	108	0	108	0	88	10	0	98	0	219
Hourly Total	37	10	0	47	1	6	415	0	421	0	382	46	0	428	0	896
1:00PM	7	2	0	9	1	5	94	0	99	0	92	7	0	99	0	207
1:15PM	9	4	0	13	0	4	113	0	117	0	124	10	0	134	0	264
Hourly Total	16	6	0	22	1	9	207	0	216	0	216	17	0	233	0	471
4:00PM	9	1	0	10	0	4	89	0	93	0	196	15	0	211	0	314
4:15PM	7	1	0	8	0	2	106	0	108	0	225	13	0	238	0	354
4:30PM	11	1	0	12	0	2	107	0	109	0	222	15	0	237	0	358
4:45PM	11	3	0	14	0	5	85	0	90	0	222	23	0	245	0	349
Hourly Total	38	6	0	44	0	13	387	0	400	0	865	66	0	931	0	1375
5:00PM	9	0	0	9	1	6	111	0	117	0	230	22	0	252	0	378
5:15PM	8	2	0	10	0	2	98	0	100	0	264	21	0	285	0	395
5:30PM	11	1	0	12	0	0	108	0	108	0	225	20	0	245	0	365
5:45PM	9	1	0	10	1	2	74	0	76	0	174	16	0	190	1	276
Hourly Total	37	4	0	41	2	10	391	0	401	0	893	79	0	972	1	1414
2022-11-23 7:00AM	10	4	0	14	0	0	202	0	202	0	27	2	0	29	0	245
7:15AM	16	3	0	19	0	1	233	0	234	0	29	5	0	34	0	287
7:30AM	15	2	0	17	1	0	249	0	249	0	58	5	0	63	0	329
7:45AM	19	7	0	26	0	5	249	0	254	0	34	3	0	37	0	317
Hourly Total	60	16	0	76	1	6	933	0	939	0	148	15	0	163	0	1178
8:00AM	18	5	0	23	0	2	204	0	206	0	53	3	0	56	0	285
8:15AM	14	3	0	17	1	7	219	0	226	0	51	6	0	57	0	300
8:30AM	15	1	0	16	0	2	166	0	168	0	50	9	0	59	0	243
8:45AM	13	2	0	15	0	1	143	0	144	0	78	9	0	87	0	246
Hourly Total	60	11	0	71	1	12	732	0	744	0	232	27	0	259	0	1074
11:30AM	6	2	0	8	0	0	102	0	102	0	79	13	0	92	0	202
11:45AM	12	1	0	13	0	1	89	0	90	0	80	7	0	87	0	190
Hourly Total	18	3	0	21	0	1	191	0	192	0	159	20	0	179	0	392
12:00PM	12	3	0	15	0	0	96	0	96	0	86	7	0	93	0	204
12:15PM	10	1	0	11	0	2	89	0	91	0	95	12	0	107	0	209
12:30PM	9	1	0	10	0	0	80	0	80	0	100	9	0	109	0	199
12:45PM	9	1	0	10	0	3	96	0	99	0	101	7	0	108	0	217
Hourly Total	40	6	0	46	0	5	361	0	366	0	382	35	0	417	0	829
1:00PM	13	1	0	14	1	3	90	0	93	0	113	8	0	121	0	228
1:15PM	14	3	0	17	0	6	84	0	90	0	91	10	0	101	0	208

Leg Direction	Bon Accord Southbound					Loch Lomond Road Westbound					Loch Lomond Road Eastbound					Int
	R	L	U	App	Ped*	R	T	U	App	Ped*	T	L	U	App	Ped*	
Hourly Total	27	4	0	31	1	9	174	0	183	0	204	18	0	222	0	436
4:00PM	10	3	0	13	0	3	84	0	87	0	200	16	0	216	0	316
4:15PM	10	1	0	11	1	1	102	0	103	0	186	15	0	201	0	315
4:30PM	14	2	0	16	1	2	91	0	93	0	209	21	0	230	0	339
4:45PM	8	1	0	9	0	4	99	0	103	0	238	12	0	250	0	362
Hourly Total	42	7	0	49	2	10	376	0	386	0	833	64	0	897	0	1332
5:00PM	15	4	0	19	0	4	95	0	99	0	239	21	0	260	0	378
5:15PM	12	4	0	16	0	2	93	0	95	0	260	24	0	284	0	395
5:30PM	9	3	0	12	1	3	90	0	93	0	230	15	0	245	0	350
5:45PM	12	2	0	14	1	3	107	0	110	0	177	11	0	188	0	312
Hourly Total	48	13	0	61	2	12	385	0	397	0	906	71	0	977	0	1435
6:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	572	113	0	685	16	112	6429	0	6541	0	5835	509	0	6344	1	13570
% Approach	83.5%	16.5%	0%	-	-	1.7%	98.3%	0%	-	-	92.0%	8.0%	0%	-	-	-
% Total	4.2%	0.8%	0%	5.0%	-	0.8%	47.4%	0%	48.2%	-	43.0%	3.8%	0%	46.8%	-	-
Lights	555	105	0	660	-	97	6277	0	6374	-	5695	500	0	6195	-	13229
% Lights	97.0%	92.9%	0%	96.4%	-	86.6%	97.6%	0%	97.4%	-	97.6%	98.2%	0%	97.7%	-	97.5%
Articulated Trucks	2	2	0	4	-	0	11	0	11	-	1	0	0	1	-	16
% Articulated Trucks	0.3%	1.8%	0%	0.6%	-	0%	0.2%	0%	0.2%	-	0%	0%	0%	0%	-	0.1%
Buses and Single-Unit Trucks	15	6	0	21	-	15	141	0	156	-	139	9	0	148	-	325
% Buses and Single-Unit Trucks	2.6%	5.3%	0%	3.1%	-	13.4%	2.2%	0%	2.4%	-	2.4%	1.8%	0%	2.3%	-	2.4%
Pedestrians	-	-	-	-	14	-	-	-	-	0	-	-	-	-	-	1
% Pedestrians	-	-	-	-	87.5%	-	-	-	-	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	0	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	12.5%	-	-	-	-	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Bon Accord - Loch Lomond - TMC

Tue Nov 22, 2022

Full Length (11:30 AM-1:30 PM, 7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017656, Location: 45.304705, -65.988913

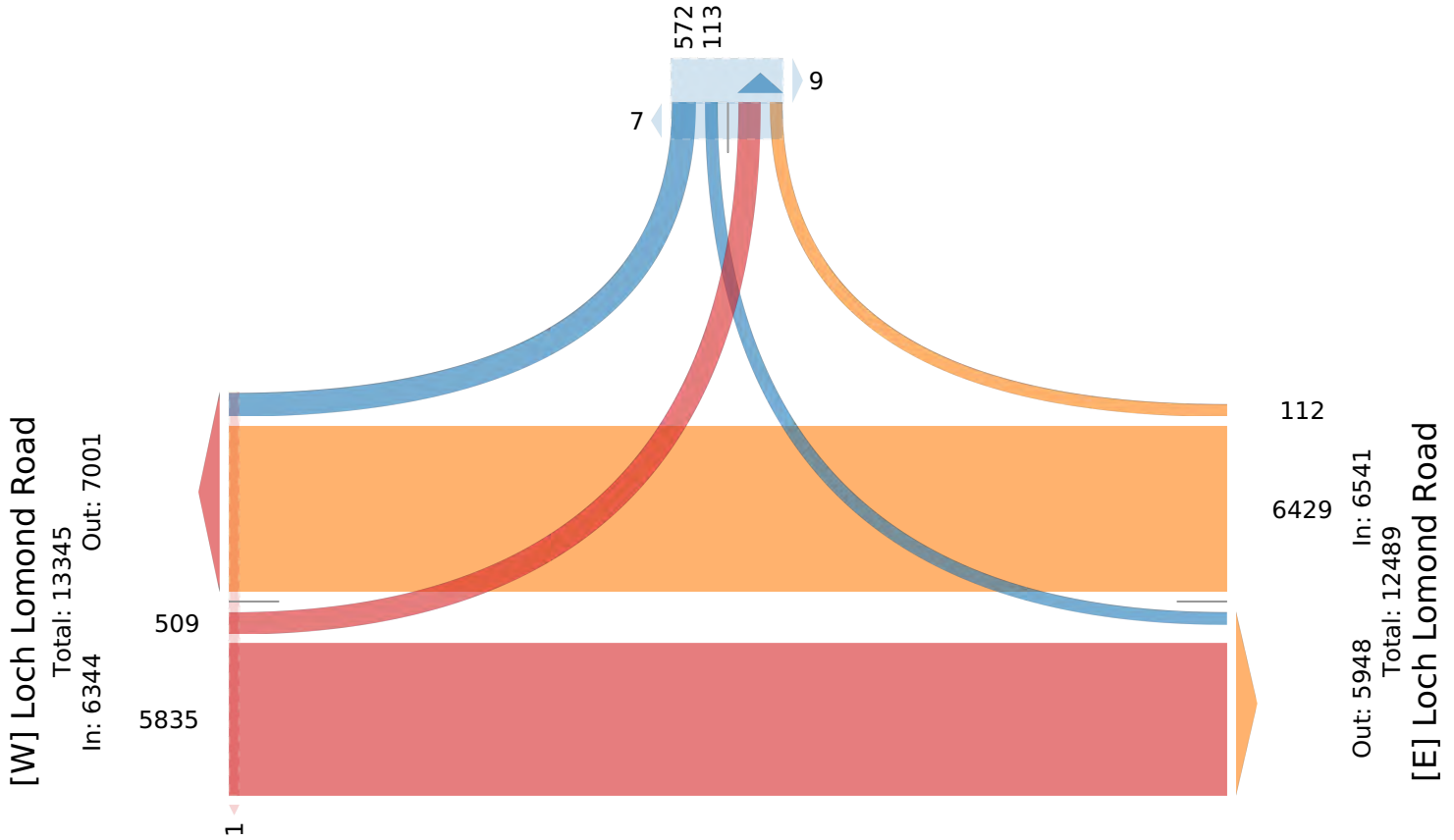


Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

[N] Bon Accord

Total: 1306

In: 685 Out: 621



Bon Accord - Loch Lomond - TMC

Tue Nov 22, 2022

AM Peak (Nov 22 2022 7:30AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017656, Location: 45.304705, -65.988913



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	Bon Accord Southbound					Loch Lomond Road Westbound					Loch Lomond Road Eastbound					Int
	R	L	U	App	Ped*	R	T	U	App	Ped*	T	L	U	App	Ped*	
Time																
2022-11-22 7:30AM	15	4	0	19	0	1	255	0	256	0	56	4	0	60	0	335
7:45AM	27	5	0	32	0	2	218	0	220	0	56	6	0	62	0	314
8:00AM	19	3	0	22	0	1	246	0	247	0	54	5	0	59	0	328
8:15AM	23	2	0	25	0	5	195	0	200	0	67	7	0	74	0	299
Total	84	14	0	98	0	9	914	0	923	0	233	22	0	255	0	1276
% Approach	85.7%	14.3%	0%	-	-	1.0%	99.0%	0%	-	-	91.4%	8.6%	0%	-	-	-
% Total	6.6%	1.1%	0%	7.7%	-	0.7%	71.6%	0%	72.3%	-	18.3%	1.7%	0%	20.0%	-	-
PHF	0.778	0.700	-	0.766	-	0.450	0.896	-	0.901	-	0.869	0.786	-	0.861	-	0.952
Lights	79	13	0	92	-	6	891	0	897	-	217	22	0	239	-	1228
% Lights	94.0%	92.9%	0%	93.9%	-	66.7%	97.5%	0%	97.2%	-	93.1%	100%	0%	93.7%	-	96.2%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	5	1	0	6	-	3	23	0	26	-	16	0	0	16	-	48
% Buses and Single-Unit Trucks	6.0%	7.1%	0%	6.1%	-	33.3%	2.5%	0%	2.8%	-	6.9%	0%	0%	6.3%	-	3.8%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Bon Accord - Loch Lomond - TMC

Tue Nov 22, 2022

AM Peak (Nov 22 2022 7:30AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017656, Location: 45.304705, -65.988913



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

[N] Bon Accord

Total: 129

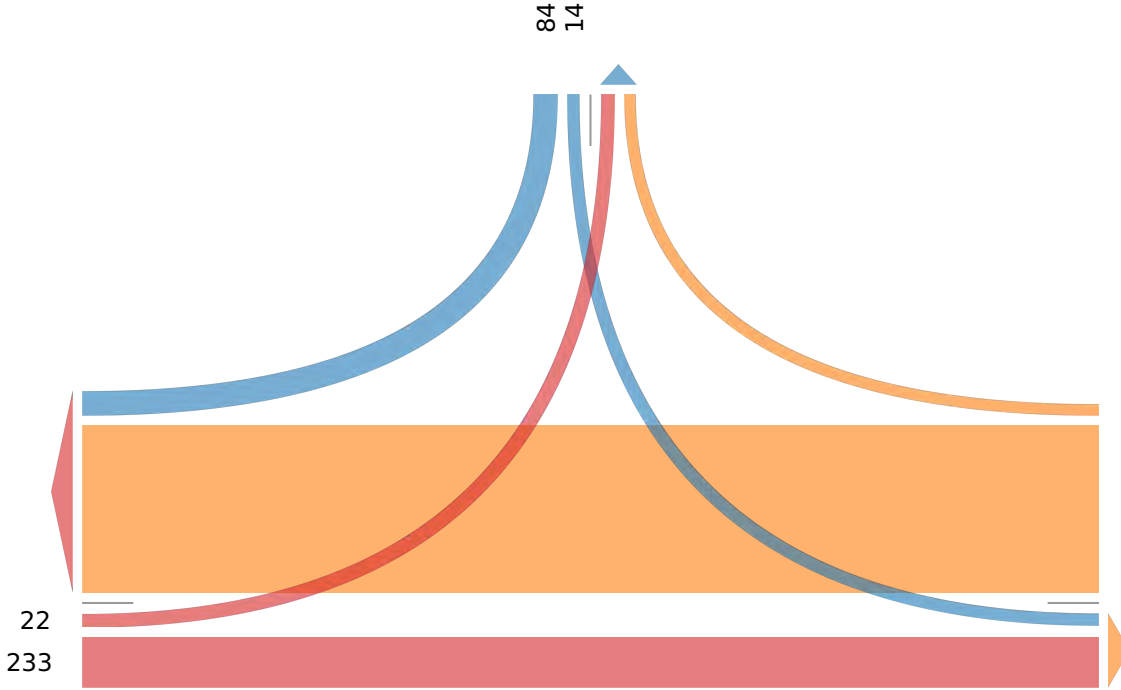
In: 98 Out: 31

84
14

[W] Loch Lomond Road

Total: 1253
In: 255 Out: 998

22
233



9
914

[E] Loch Lomond Road
Out: 247 In: 923
Total: 1170

Bon Accord - Loch Lomond - TMC

Tue Nov 22, 2022

Midday Peak (Nov 22 2022 12:30PM - 1:30 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017656, Location: 45.304705, -65.988913



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	Bon Accord Southbound					Loch Lomond Road Westbound					Loch Lomond Road Eastbound					Int
	R	L	U	App	Ped*	R	T	U	App	Ped*	T	L	U	App	Ped*	
2022-11-22 12:30PM	7	3	0	10	0	2	105	0	107	0	98	8	0	106	0	223
12:45PM	10	3	0	13	1	0	108	0	108	0	88	10	0	98	0	219
1:00PM	7	2	0	9	1	5	94	0	99	0	92	7	0	99	0	207
1:15PM	9	4	0	13	0	4	113	0	117	0	124	10	0	134	0	264
Total	33	12	0	45	2	11	420	0	431	0	402	35	0	437	0	913
% Approach	73.3%	26.7%	0%	-	-	2.6%	97.4%	0%	-	-	92.0%	8.0%	0%	-	-	-
% Total	3.6%	1.3%	0%	4.9%	-	1.2%	46.0%	0%	47.2%	-	44.0%	3.8%	0%	47.9%	-	-
PHF	0.825	0.750	-	0.865	-	0.550	0.929	-	0.921	-	0.810	0.875	-	0.815	-	0.865
Lights	31	12	0	43	-	11	406	0	417	-	392	35	0	427	-	887
% Lights	93.9%	100%	0%	95.6%	-	100%	96.7%	0%	96.8%	-	97.5%	100%	0%	97.7%	-	97.2%
Articulated Trucks	0	0	0	0	-	0	1	0	1	-	0	0	0	0	-	1
% Articulated Trucks	0%	0%	0%	0%	-	0%	0.2%	0%	0.2%	-	0%	0%	0%	0%	-	0.1%
Buses and Single-Unit Trucks	2	0	0	2	-	0	13	0	13	-	10	0	0	10	-	25
% Buses and Single-Unit Trucks	6.1%	0%	0%	4.4%	-	0%	3.1%	0%	3.0%	-	2.5%	0%	0%	2.3%	-	2.7%
Pedestrians	-	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Bon Accord - Loch Lomond - TMC

Tue Nov 22, 2022

Midday Peak (Nov 22 2022 12:30PM - 1:30 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017656, Location: 45.304705, -65.988913

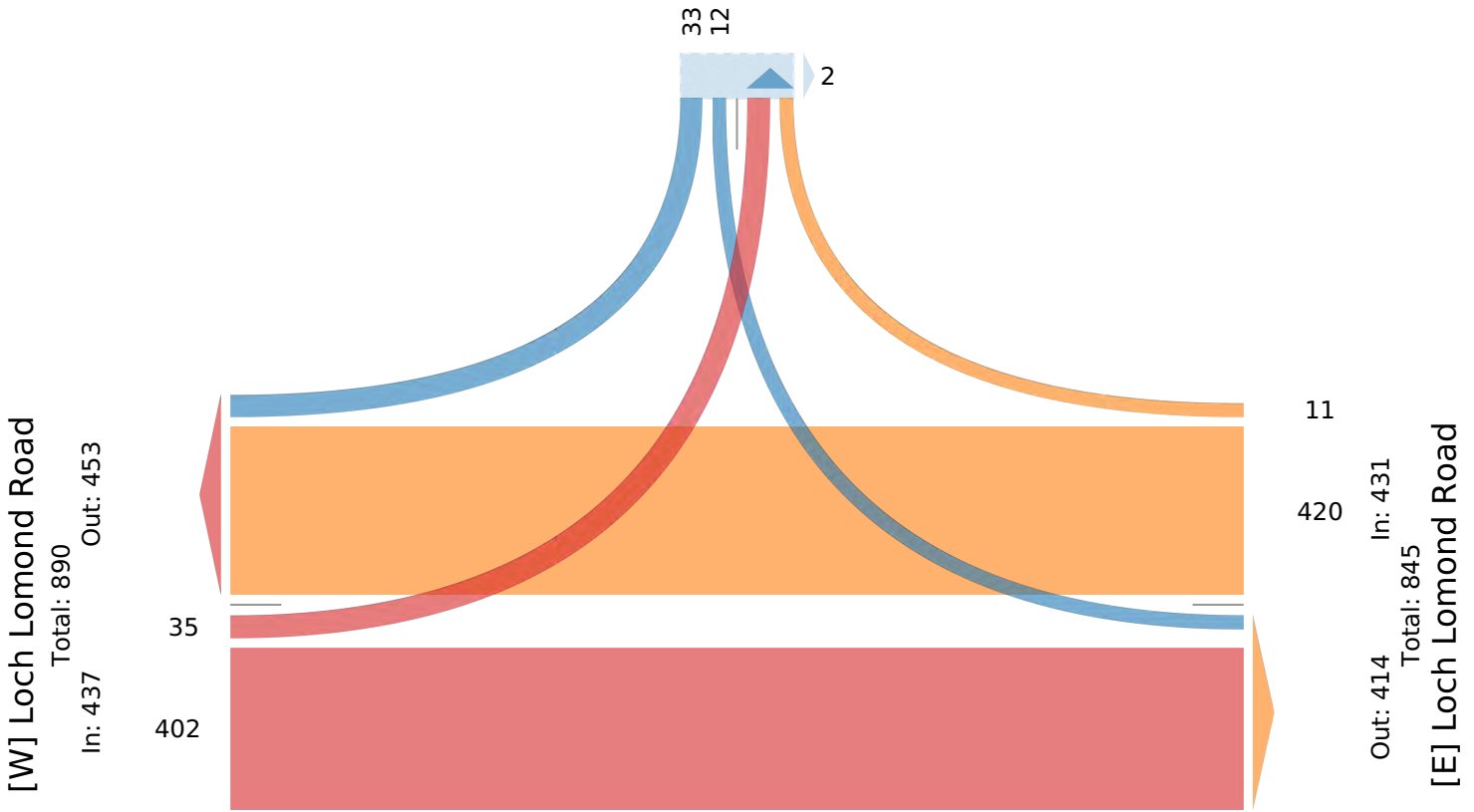


Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

[N] Bon Accord

Total: 91

In: 45 Out: 46



Bon Accord - Loch Lomond - TMC

Tue Nov 22, 2022

PM Peak (Nov 22 2022 4:45PM - 5:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017656, Location: 45.304705, -65.988913



Provided by: CBCL Limited
135 St. Peters Road, Suite 201, PO Box 1659,
Charlottetown, PE, C1A 7N4, CA

Leg Direction	Bon Accord Southbound					Loch Lomond Road Westbound					Loch Lomond Road Eastbound					Int
	R	L	U	App	Ped*	R	T	U	App	Ped*	T	L	U	App	Ped*	
2022-11-22 4:45PM	11	3	0	14	0	5	85	0	90	0	222	23	0	245	0	349
5:00PM	9	0	0	9	1	6	111	0	117	0	230	22	0	252	0	378
5:15PM	8	2	0	10	0	2	98	0	100	0	264	21	0	285	0	395
5:30PM	11	1	0	12	0	0	108	0	108	0	225	20	0	245	0	365
Total	39	6	0	45	1	13	402	0	415	0	941	86	0	1027	0	1487
% Approach	86.7%	13.3%	0%	-	-	3.1%	96.9%	0%	-	-	91.6%	8.4%	0%	-	-	-
% Total	2.6%	0.4%	0%	3.0%	-	0.9%	27.0%	0%	27.9%	-	63.3%	5.8%	0%	69.1%	-	-
PHF	0.886	0.500	-	0.804	-	0.542	0.905	-	0.887	-	0.891	0.935	-	0.901	-	0.941
Lights	39	6	0	45	-	13	394	0	407	-	936	86	0	1022	-	1474
% Lights	100%	100%	0%	100%	-	100%	98.0%	0%	98.1%	-	99.5%	100%	0%	99.5%	-	99.1%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	0	0	0	-	0	8	0	8	-	5	0	0	5	-	13
% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	0%	2.0%	0%	1.9%	-	0.5%	0%	0%	0.5%	-	0.9%
Pedestrians	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Bon Accord - Loch Lomond - TMC

Tue Nov 22, 2022

PM Peak (Nov 22 2022 4:45PM - 5:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1017656, Location: 45.304705, -65.988913



Provided by: CBCL Limited
 135 St. Peters Road, Suite 201, PO Box 1659,
 Charlottetown, PE, C1A 7N4, CA

[N] Bon Accord

Total: 144

In: 45 Out: 99

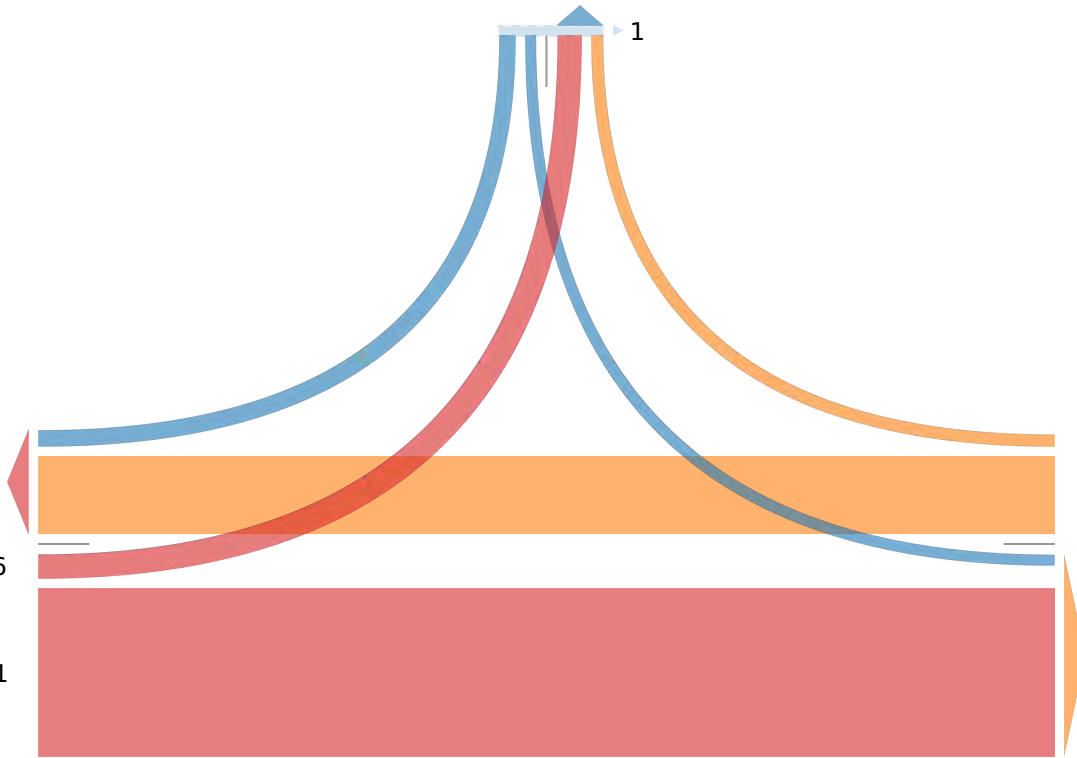
396

1

[W] Loch Lomond Road

Total: 1468
 In: 1027 Out: 441

86
 941



13
 402

[E] Loch Lomond Road
 Out: 947 In: 415
 Total: 1362

APPENDIX B

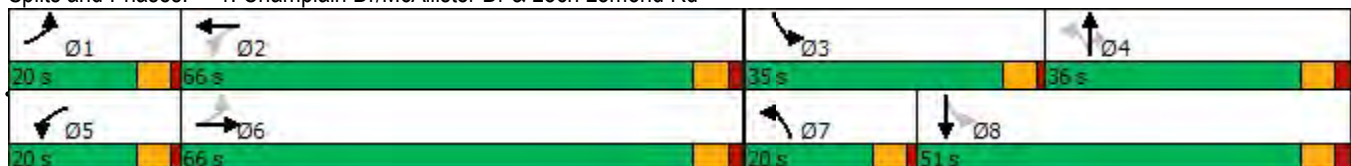
Synchro Analysis Reports – 2022 Baseline

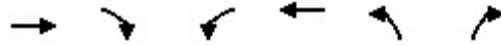
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	230	80	40	675	320	115	125	50	180	160	120
Future Volume (vph)	65	230	80	40	675	320	115	125	50	180	160	120
Satd. Flow (prot)	1927	3439	0	1789	1946	1583	1730	1883	1742	3509	1918	0
Flt Permitted	0.123			0.536			0.225			0.659		
Satd. Flow (perm)	249	3439	0	1010	1946	1583	410	1883	1742	2434	1918	0
Satd. Flow (RTOR)		36				259			125		24	
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.81	0.81	0.81	0.88	0.88	0.88
Adj. Flow (vph)	72	256	89	41	696	330	142	154	62	205	182	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	345	0	41	696	330	142	154	62	205	318	0
Turn Type	pm+pt	NA		pm+pt	NA	Free	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		Free	4		4	8		
Total Split (s)	20.0	66.0		20.0	66.0		20.0	36.0	36.0	35.0	51.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	
Act Effct Green (s)	59.4	52.2		58.3	51.6	117.3	41.9	27.7	27.7	36.2	24.8	
Actuated g/C Ratio	0.51	0.45		0.50	0.44	1.00	0.36	0.24	0.24	0.31	0.21	
v/c Ratio	0.30	0.22		0.07	0.81	0.21	0.48	0.35	0.12	0.24	0.75	
Control Delay	17.5	19.6		14.7	39.5	0.3	33.1	42.5	0.5	27.1	53.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.5	19.6		14.7	39.5	0.3	33.1	42.5	0.5	27.1	53.9	
LOS	B	B		B	D	A	C	D	A	C	D	
Approach Delay		19.2			26.4			31.5			43.4	
Approach LOS		B			C			C			D	
Queue Length 50th (m)	7.2	21.6		4.0	132.4	0.0	22.0	29.2	0.0	15.9	63.6	
Queue Length 95th (m)	16.1	36.1		10.5	#213.4	0.0	34.3	45.2	0.0	24.7	95.9	
Internal Link Dist (m)		217.2			620.4			296.1			157.8	
Turn Bay Length (m)	78.0			100.0		160.0	70.0		40.0			
Base Capacity (vph)	357	1877		643	1045	1583	328	531	581	1207	787	
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	0.20	0.18		0.06	0.67	0.21	0.43	0.29	0.11	0.17	0.40	

Intersection Summary

Cycle Length: 157
 Actuated Cycle Length: 117.3
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 29.7
 Intersection LOS: C
 Intersection Capacity Utilization 81.8%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Champlain Dr/McAllister Dr & Loch Lomond Rd



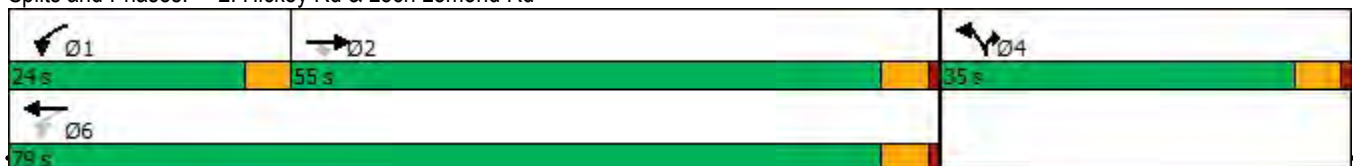


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	200	250	165	740	280	55
Future Volume (vph)	200	250	165	740	280	55
Satd. Flow (prot)	1863	1583	1730	1904	1770	1654
Flt Permitted			0.474		0.950	
Satd. Flow (perm)	1863	1583	863	1904	1770	1654
Satd. Flow (RTOR)		301				60
Peak Hour Factor	0.83	0.83	0.95	0.95	0.91	0.91
Adj. Flow (vph)	241	301	174	779	308	60
Shared Lane Traffic (%)						
Lane Group Flow (vph)	241	301	174	779	308	60
Turn Type	NA	Perm	pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2	6			
Total Split (s)	55.0	55.0	24.0	79.0	35.0	35.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0
Act Effct Green (s)	20.1	20.1	35.1	34.0	17.5	17.5
Actuated g/C Ratio	0.32	0.32	0.56	0.55	0.28	0.28
v/c Ratio	0.40	0.42	0.28	0.75	0.62	0.12
Control Delay	19.1	4.3	8.3	16.6	27.5	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	4.3	8.3	16.6	27.5	7.0
LOS	B	A	A	B	C	A
Approach Delay	10.9			15.1	24.2	
Approach LOS	B			B	C	
Queue Length 50th (m)	18.2	0.0	7.4	53.0	26.3	0.0
Queue Length 95th (m)	38.2	9.8	19.9	119.6	64.5	7.7
Internal Link Dist (m)	620.4			739.2	269.7	
Turn Bay Length (m)			130.0			120.0
Base Capacity (vph)	1533	1356	785	1836	915	884
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.22	0.22	0.42	0.34	0.07

Intersection Summary

Cycle Length: 114
 Actuated Cycle Length: 62.2
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 15.7
 Intersection LOS: B
 Intersection Capacity Utilization 62.8%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 2: Hickey Rd & Loch Lomond Rd



Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	220	860	15	15	75
Future Vol, veh/h	25	220	860	15	15	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	87	87	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	247	989	17	20	100

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1006	0	-	0	1301 998
Stage 1	-	-	-	-	998 -
Stage 2	-	-	-	-	303 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	689	-	-	-	178 296
Stage 1	-	-	-	-	357 -
Stage 2	-	-	-	-	749 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	689	-	-	-	171 296
Mov Cap-2 Maneuver	-	-	-	-	171 -
Stage 1	-	-	-	-	342 -
Stage 2	-	-	-	-	749 -

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	29.5
HCM LOS			D

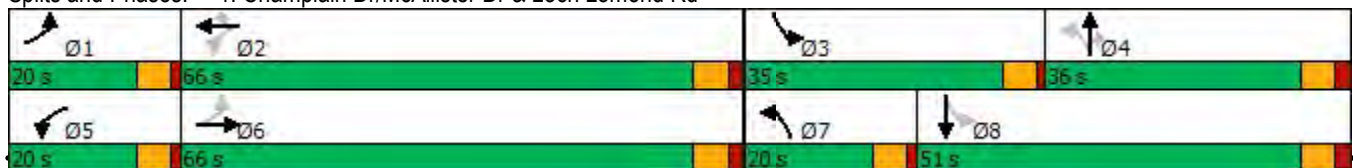
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	689	-	-	-	264
HCM Lane V/C Ratio	0.041	-	-	-	0.455
HCM Control Delay (s)	10.4	-	-	-	29.5
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	2.2

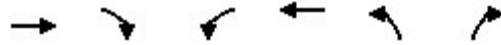
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	720	95	30	340	275	105	185	65	525	145	100
Future Volume (vph)	165	720	95	30	340	275	105	185	65	525	145	100
Satd. Flow (prot)	1927	3514	0	1789	1946	1583	1730	1883	1742	3509	1924	0
Flt Permitted	0.284			0.261			0.524			0.321		
Satd. Flow (perm)	576	3514	0	492	1946	1583	954	1883	1742	1186	1924	0
Satd. Flow (RTOR)		11				306			125		22	
Peak Hour Factor	0.97	0.97	0.97	0.90	0.90	0.90	0.80	0.80	0.80	0.84	0.84	0.84
Adj. Flow (vph)	170	742	98	33	378	306	131	231	81	625	173	119
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	840	0	33	378	306	131	231	81	625	292	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4		4	8		
Total Split (s)	20.0	66.0		20.0	66.0	66.0	20.0	36.0	36.0	35.0	51.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Act Effct Green (s)	47.5	40.0		38.7	30.0	30.0	31.3	18.9	18.9	43.5	26.0	
Actuated g/C Ratio	0.47	0.39		0.38	0.29	0.29	0.31	0.19	0.19	0.43	0.26	
v/c Ratio	0.41	0.61		0.12	0.66	0.45	0.35	0.66	0.19	0.68	0.58	
Control Delay	20.3	29.0		18.4	39.1	5.8	23.2	50.9	2.7	25.0	36.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.3	29.0		18.4	39.1	5.8	23.2	50.9	2.7	25.0	36.9	
LOS	C	C		B	D	A	C	D	A	C	D	
Approach Delay		27.5			23.9			33.9			28.8	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	16.8	66.1		3.0	58.0	0.0	14.2	38.7	0.0	39.3	42.4	
Queue Length 95th (m)	37.6	111.2		9.9	111.1	18.8	27.6	67.4	0.0	61.2	74.4	
Internal Link Dist (m)		217.2			620.4			296.1			157.8	
Turn Bay Length (m)	78.0			100.0		160.0	70.0		40.0			
Base Capacity (vph)	479	2188		424	1209	1099	456	584	627	1233	908	
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	0.38		0.08	0.31	0.28	0.29	0.40	0.13	0.51	0.32	

Intersection Summary

Cycle Length: 157
 Actuated Cycle Length: 101.8
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 28.0
 Intersection LOS: C
 Intersection Capacity Utilization 71.8%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Champlain Dr/McAllister Dr & Loch Lomond Rd



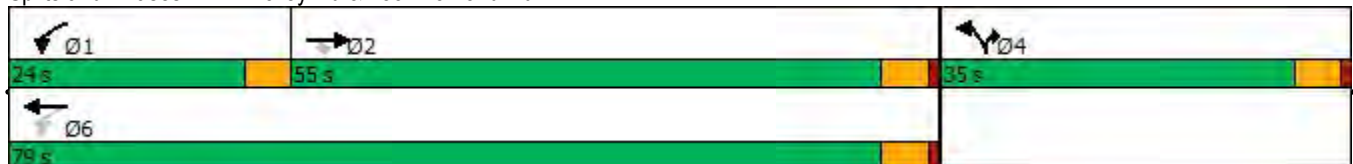


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	830	420	65	385	235	150
Future Volume (vph)	830	420	65	385	235	150
Satd. Flow (prot)	1863	1583	1730	1904	1770	1654
Flt Permitted			0.095		0.950	
Satd. Flow (perm)	1863	1583	173	1904	1770	1654
Satd. Flow (RTOR)		313				176
Peak Hour Factor	0.92	0.92	0.93	0.93	0.85	0.85
Adj. Flow (vph)	902	457	70	414	276	176
Shared Lane Traffic (%)						
Lane Group Flow (vph)	902	457	70	414	276	176
Turn Type	NA	Perm	pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2	6			
Total Split (s)	55.0	55.0	24.0	79.0	35.0	35.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0
Act Effct Green (s)	50.6	50.6	60.4	59.4	20.0	20.0
Actuated g/C Ratio	0.56	0.56	0.67	0.66	0.22	0.22
v/c Ratio	0.86	0.44	0.28	0.33	0.70	0.35
Control Delay	29.3	5.9	9.0	8.1	42.3	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	5.9	9.0	8.1	42.3	6.5
LOS	C	A	A	A	D	A
Approach Delay	21.4			8.2	28.4	
Approach LOS	C			A	C	
Queue Length 50th (m)	119.0	10.8	3.3	24.8	41.4	0.0
Queue Length 95th (m)	#234.9	35.1	9.3	50.1	61.2	11.5
Internal Link Dist (m)	620.4			739.2	269.7	
Turn Bay Length (m)			130.0			120.0
Base Capacity (vph)	1052	1030	468	1584	600	677
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	0.86	0.44	0.15	0.26	0.46	0.26

Intersection Summary

Cycle Length: 114
 Actuated Cycle Length: 89.6
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 20.0
 Intersection LOS: C
 Intersection Capacity Utilization 74.2%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Hickey Rd & Loch Lomond Rd



Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	80	945	390	15	10	45
Future Vol, veh/h	80	945	390	15	10	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	92	92	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	89	1050	424	16	13	56

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	440	0	-	0	1660 432
Stage 1	-	-	-	-	432 -
Stage 2	-	-	-	-	1228 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1120	-	-	-	107 624
Stage 1	-	-	-	-	655 -
Stage 2	-	-	-	-	277 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1120	-	-	-	99 624
Mov Cap-2 Maneuver	-	-	-	-	99 -
Stage 1	-	-	-	-	603 -
Stage 2	-	-	-	-	277 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1120	-	-	-	318
HCM Lane V/C Ratio	0.079	-	-	-	0.216
HCM Control Delay (s)	8.5	-	-	-	19.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.8

APPENDIX C

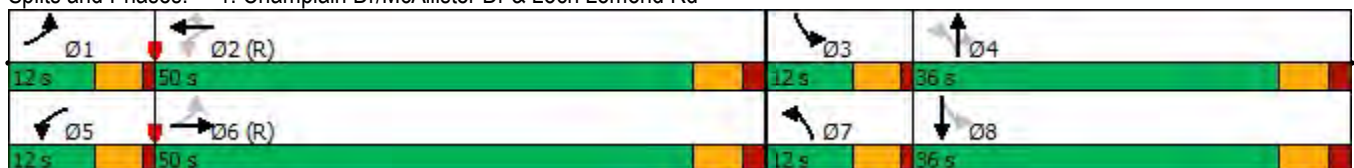
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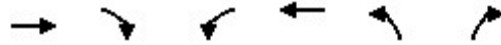
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	270	95	50	795	380	135	150	60	215	190	140
Future Volume (vph)	80	270	95	50	795	380	135	150	60	215	190	140
Satd. Flow (prot)	1927	3439	0	1789	1946	1583	1730	1883	1742	3509	1918	0
Flt Permitted	0.079			0.498			0.174			0.541		
Satd. Flow (perm)	160	3439	0	938	1946	1583	317	1883	1742	1998	1918	0
Satd. Flow (RTOR)		54				392			129		33	
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.81	0.81	0.81	0.88	0.88	0.88
Adj. Flow (vph)	89	300	106	52	820	392	167	185	74	244	216	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	406	0	52	820	392	167	185	74	244	375	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4		4	8		
Total Split (s)	12.0	50.0		12.0	50.0	50.0	12.0	36.0	36.0	12.0	36.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Act Effct Green (s)	58.9	51.8		58.2	51.5	51.5	32.4	24.4	24.4	32.4	24.4	
Actuated g/C Ratio	0.54	0.47		0.53	0.47	0.47	0.29	0.22	0.22	0.29	0.22	
v/c Ratio	0.43	0.25		0.09	0.90	0.41	0.91	0.44	0.15	0.36	0.83	
Control Delay	20.3	17.0		12.7	43.9	3.6	77.3	39.4	1.3	26.6	52.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.3	17.0		12.7	43.9	3.6	77.3	39.4	1.3	26.6	52.8	
LOS	C	B		B	D	A	E	D	A	C	D	
Approach Delay		17.6			30.1			47.6			42.4	
Approach LOS		B			C			D			D	
Queue Length 50th (m)	7.6	22.1		4.4	154.1	0.0	23.7	31.5	0.0	17.3	64.8	
Queue Length 95th (m)	17.7	34.6		10.5	#243.7	16.3	#36.3	42.3	0.0	23.3	87.9	
Internal Link Dist (m)		217.2			620.4			296.1			157.8	
Turn Bay Length (m)	78.0			100.0		160.0	70.0		40.0			
Base Capacity (vph)	206	1648		551	910	949	183	513	568	685	547	
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	0.43	0.25		0.09	0.90	0.41	0.91	0.36	0.13	0.36	0.69	

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 33.3
 Intersection LOS: C
 Intersection Capacity Utilization 92.0%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Champlain Dr/McAllister Dr & Loch Lomond Rd



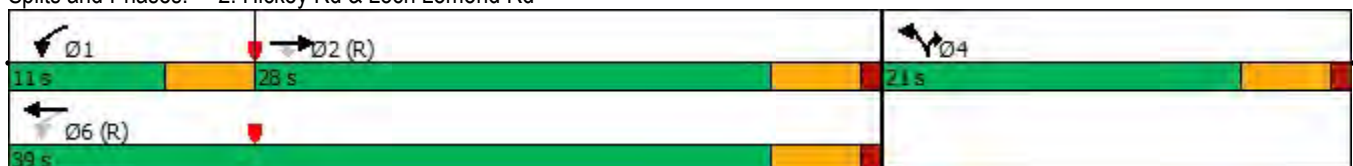


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	240	295	200	880	325	70
Future Volume (vph)	240	295	200	880	325	70
Satd. Flow (prot)	1863	1583	1730	1904	1770	1654
Flt Permitted			0.456		0.950	
Satd. Flow (perm)	1863	1583	831	1904	1770	1654
Satd. Flow (RTOR)		355				77
Peak Hour Factor	0.83	0.83	0.95	0.95	0.91	0.91
Adj. Flow (vph)	289	355	211	926	357	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	289	355	211	926	357	77
Turn Type	NA	Perm	pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2	6			
Total Split (s)	28.0	28.0	11.0	39.0	21.0	21.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0
Act Effct Green (s)	23.6	23.6	35.7	34.7	15.3	15.3
Actuated g/C Ratio	0.39	0.39	0.60	0.58	0.26	0.26
v/c Ratio	0.40	0.42	0.35	0.84	0.79	0.16
Control Delay	15.5	3.5	7.6	20.3	35.8	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	3.5	7.6	20.3	35.8	6.0
LOS	B	A	A	C	D	A
Approach Delay	8.9			18.0	30.5	
Approach LOS	A			B	C	
Queue Length 50th (m)	20.6	0.0	8.9	70.3	33.1	0.0
Queue Length 95th (m)	32.7	9.2	16.6	#140.3	#65.8	7.3
Internal Link Dist (m)	620.4			739.2	269.7	
Turn Bay Length (m)			130.0			120.0
Base Capacity (vph)	736	839	602	1101	472	497
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.42	0.35	0.84	0.76	0.15

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 17.8
 Intersection LOS: B
 Intersection Capacity Utilization 72.7%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Hickey Rd & Loch Lomond Rd



Intersection						
Int Delay, s/veh	5.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	265	1025	20	20	90
Future Vol, veh/h	30	265	1025	20	20	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	87	87	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	298	1178	23	27	120

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1201	0	-	0	1556 1190
Stage 1	-	-	-	-	1190 -
Stage 2	-	-	-	-	366 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	581	-	-	-	124 229
Stage 1	-	-	-	-	289 -
Stage 2	-	-	-	-	702 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	581	-	-	-	117 229
Mov Cap-2 Maneuver	-	-	-	-	117 -
Stage 1	-	-	-	-	272 -
Stage 2	-	-	-	-	702 -

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	64.4
HCM LOS			F

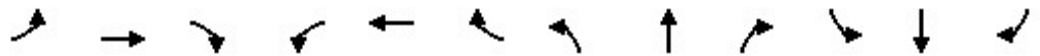
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	581	-	-	-	195
HCM Lane V/C Ratio	0.058	-	-	-	0.752
HCM Control Delay (s)	11.6	-	-	-	64.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	5

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	270	0	0	1020	5	0	0	0	10	0	25
Future Vol, veh/h	10	270	0	0	1020	5	0	0	0	10	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	293	0	0	1109	5	0	0	0	11	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1114	0	0	293	0	0	1440	1429	293	1427	1427	1112
Stage 1	-	-	-	-	-	-	315	315	-	1112	1112	-
Stage 2	-	-	-	-	-	-	1125	1114	-	315	315	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	627	-	-	1269	-	-	111	135	746	113	135	254
Stage 1	-	-	-	-	-	-	696	656	-	253	284	-
Stage 2	-	-	-	-	-	-	249	284	-	696	656	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	627	-	-	1269	-	-	98	132	746	111	132	254
Mov Cap-2 Maneuver	-	-	-	-	-	-	98	132	-	111	132	-
Stage 1	-	-	-	-	-	-	681	642	-	248	284	-
Stage 2	-	-	-	-	-	-	222	284	-	681	642	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			0			29.3		
HCM LOS							A			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	627	-	-	1269	-	-	186
HCM Lane V/C Ratio	-	0.017	-	-	-	-	-	0.205
HCM Control Delay (s)	0	10.8	0	-	0	-	-	29.3
HCM Lane LOS	A	B	A	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.7

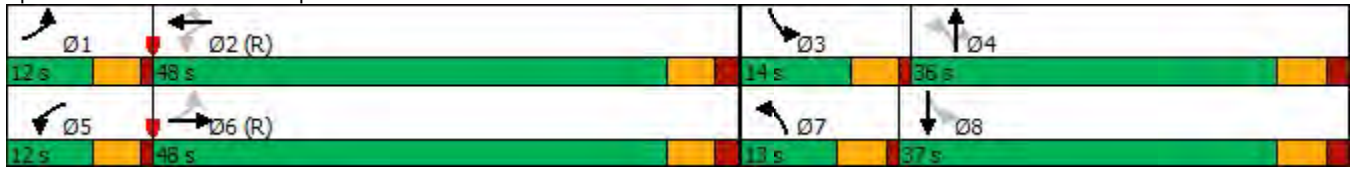


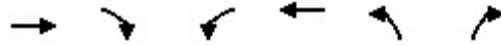
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕		↘	↕	↗	↘	↕	↗	↗	↗	↗
Traffic Volume (vph)	195	845	115	40	400	325	125	215	80	620	170	120
Future Volume (vph)	195	845	115	40	400	325	125	215	80	620	170	120
Satd. Flow (prot)	1927	3514	0	1789	1946	1583	1730	1883	1742	3509	1922	0
Flt Permitted	0.265			0.185			0.381			0.274		
Satd. Flow (perm)	538	3514	0	348	1946	1583	694	1883	1742	1012	1922	0
Satd. Flow (RTOR)		16				361			129		32	
Peak Hour Factor	0.97	0.97	0.97	0.90	0.90	0.90	0.80	0.80	0.80	0.84	0.84	0.84
Adj. Flow (vph)	201	871	119	44	444	361	156	269	100	738	202	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	201	990	0	44	444	361	156	269	100	738	345	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4		4	8		
Total Split (s)	12.0	48.0		12.0	48.0	48.0	13.0	36.0	36.0	14.0	37.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Act Effct Green (s)	55.0	48.1		48.6	40.6	40.6	32.2	21.9	21.9	41.4	28.4	
Actuated g/C Ratio	0.50	0.44		0.44	0.37	0.37	0.29	0.20	0.20	0.38	0.26	
v/c Ratio	0.51	0.64		0.18	0.62	0.45	0.54	0.72	0.22	1.00	0.66	
Control Delay	20.6	27.1		15.3	32.8	4.3	30.9	51.5	3.8	65.1	40.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.6	27.1		15.3	32.8	4.3	30.9	51.5	3.8	65.1	40.3	
LOS	C	C		B	C	A	C	D	A	E	D	
Approach Delay		26.0			19.7			36.3			57.2	
Approach LOS		C			B			D			E	
Queue Length 50th (m)	20.0	81.5		4.0	70.8	0.0	20.7	50.3	0.0	~60.4	59.3	
Queue Length 95th (m)	34.0	107.8		9.6	99.2	16.4	28.8	59.3	3.8	#98.1	74.0	
Internal Link Dist (m)		217.2			620.4			296.1			157.8	
Turn Bay Length (m)	78.0			100.0		160.0	70.0		40.0			
Base Capacity (vph)	392	1544		246	743	827	290	513	568	739	564	
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	0.64		0.18	0.60	0.44	0.54	0.52	0.18	1.00	0.61	

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 35.3
 Intersection LOS: D
 Intersection Capacity Utilization 80.2%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Champlain Dr/McAllister Dr & Loch Lomond Rd



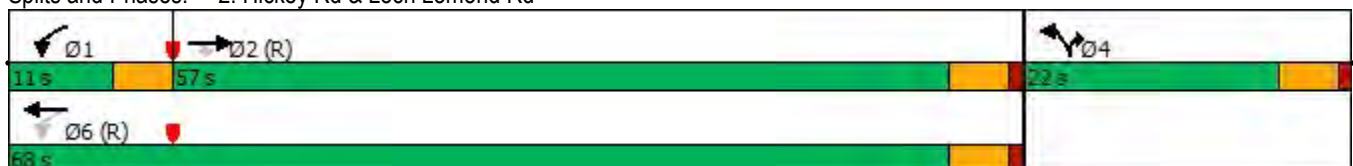


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	980	490	80	460	275	180
Future Volume (vph)	980	490	80	460	275	180
Satd. Flow (prot)	1863	1583	1730	1904	1770	1654
Flt Permitted			0.070		0.950	
Satd. Flow (perm)	1863	1583	127	1904	1770	1654
Satd. Flow (RTOR)		522				212
Peak Hour Factor	0.92	0.92	0.93	0.93	0.85	0.85
Adj. Flow (vph)	1065	533	86	495	324	212
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1065	533	86	495	324	212
Turn Type	NA	Perm	pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2	6			
Total Split (s)	57.0	57.0	11.0	68.0	22.0	22.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0
Act Effct Green (s)	54.2	54.2	64.0	63.0	17.0	17.0
Actuated g/C Ratio	0.60	0.60	0.71	0.70	0.19	0.19
v/c Ratio	0.95	0.46	0.40	0.37	0.97	0.44
Control Delay	36.6	2.4	12.4	6.4	80.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	2.4	12.4	6.4	80.7	7.8
LOS	D	A	B	A	F	A
Approach Delay	25.2			7.3	51.9	
Approach LOS	C			A	D	
Queue Length 50th (m)	155.0	0.7	3.5	27.3	51.7	0.0
Queue Length 95th (m)	#243.2	12.2	11.6	40.6	#89.3	13.4
Internal Link Dist (m)	620.4			739.2	269.7	
Turn Bay Length (m)			130.0			120.0
Base Capacity (vph)	1122	1161	214	1332	334	484
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	0.95	0.46	0.40	0.37	0.97	0.44

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 26.6
 Intersection LOS: C
 Intersection Capacity Utilization 84.3%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Hickey Rd & Loch Lomond Rd



Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	1120	470	20	15	55
Future Vol, veh/h	95	1120	470	20	15	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	92	92	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	106	1244	511	22	19	69

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	533	0	-	0	1978 522
Stage 1	-	-	-	-	522 -
Stage 2	-	-	-	-	1456 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1035	-	-	-	68 555
Stage 1	-	-	-	-	595 -
Stage 2	-	-	-	-	214 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1035	-	-	-	61 555
Mov Cap-2 Maneuver	-	-	-	-	61 -
Stage 1	-	-	-	-	534 -
Stage 2	-	-	-	-	214 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	35.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1035	-	-	-	203
HCM Lane V/C Ratio	0.102	-	-	-	0.431
HCM Control Delay (s)	8.9	-	-	-	35.5
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.3	-	-	-	2

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1110	0	0	475	10	0	0	0	10	0	15
Future Vol, veh/h	20	1110	0	0	475	10	0	0	0	10	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	1207	0	0	516	11	0	0	0	11	0	16

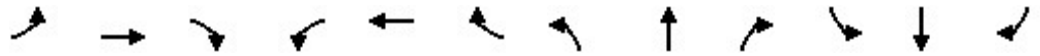
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	527	0	0	1207	0	0	1781	1778	1207	1773	1773	522
Stage 1	-	-	-	-	-	-	1251	1251	-	522	522	-
Stage 2	-	-	-	-	-	-	530	527	-	1251	1251	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1040	-	-	578	-	-	64	82	223	65	83	555
Stage 1	-	-	-	-	-	-	211	244	-	538	531	-
Stage 2	-	-	-	-	-	-	533	528	-	211	244	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1040	-	-	578	-	-	59	77	223	62	78	555
Mov Cap-2 Maneuver	-	-	-	-	-	-	59	77	-	62	78	-
Stage 1	-	-	-	-	-	-	197	228	-	504	531	-
Stage 2	-	-	-	-	-	-	517	528	-	197	228	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	38.9
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1040	-	-	578	-	-	133
HCM Lane V/C Ratio	-	0.021	-	-	-	-	-	0.204
HCM Control Delay (s)	0	8.5	0	-	0	-	-	38.9
HCM Lane LOS	A	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.7

APPENDIX D

Synchro Analysis Reports – 2032 Build



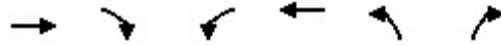
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	275	95	65	830	400	135	150	65	220	190	140
Future Volume (vph)	80	275	95	65	830	400	135	150	65	220	190	140
Satd. Flow (prot)	1927	3439	0	1789	1946	1583	1730	1883	1742	3509	1918	0
Flt Permitted	0.079			0.491			0.174			0.541		
Satd. Flow (perm)	160	3439	0	925	1946	1583	317	1883	1742	1998	1918	0
Satd. Flow (RTOR)		52				412			129		33	
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.81	0.81	0.81	0.88	0.88	0.88
Adj. Flow (vph)	89	306	106	67	856	412	167	185	80	250	216	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	412	0	67	856	412	167	185	80	250	375	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4		4	8		
Total Split (s)	12.0	50.0		12.0	50.0	50.0	12.0	36.0	36.0	12.0	36.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Act Effct Green (s)	58.8	51.7		58.4	51.5	51.5	32.4	24.4	24.4	32.4	24.4	
Actuated g/C Ratio	0.53	0.47		0.53	0.47	0.47	0.29	0.22	0.22	0.29	0.22	
v/c Ratio	0.43	0.25		0.12	0.94	0.43	0.91	0.44	0.16	0.36	0.83	
Control Delay	20.3	17.3		12.8	49.4	3.7	77.3	39.4	2.0	26.7	52.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.3	17.3		12.8	49.4	3.7	77.3	39.4	2.0	26.7	52.8	
LOS	C	B		B	D	A	E	D	A	C	D	
Approach Delay		17.8			33.4			47.1			42.3	
Approach LOS		B			C			D			D	
Queue Length 50th (m)	7.6	22.8		5.7	~168.0	0.0	23.7	31.5	0.0	17.7	64.8	
Queue Length 95th (m)	17.7	35.4		12.8	#259.3	16.7	#36.3	42.3	0.6	23.8	87.9	
Internal Link Dist (m)		217.2			620.4			296.1			157.8	
Turn Bay Length (m)	78.0			100.0		160.0	70.0		40.0			
Base Capacity (vph)	206	1642		548	910	959	183	513	568	685	547	
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	0.43	0.25		0.12	0.94	0.43	0.91	0.36	0.14	0.36	0.69	

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 34.7
 Intersection LOS: C
 Intersection Capacity Utilization 93.9%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Champlain Dr/McAllister Dr & Loch Lomond Rd



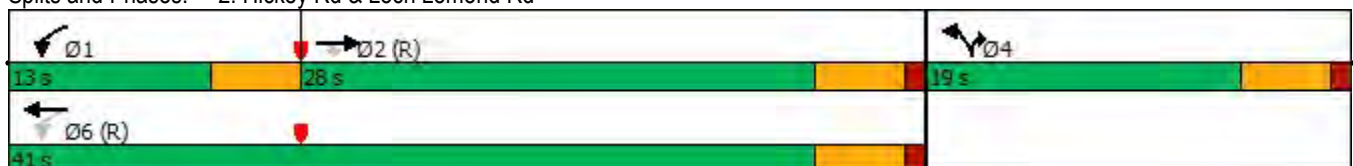


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	255	295	215	945	325	70
Future Volume (vph)	255	295	215	945	325	70
Satd. Flow (prot)	1863	1583	1730	1904	1770	1654
Flt Permitted			0.437		0.950	
Satd. Flow (perm)	1863	1583	796	1904	1770	1654
Satd. Flow (RTOR)		355				77
Peak Hour Factor	0.83	0.83	0.95	0.95	0.91	0.91
Adj. Flow (vph)	307	355	226	995	357	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	307	355	226	995	357	77
Turn Type	NA	Perm	pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2	6			
Total Split (s)	28.0	28.0	13.0	41.0	19.0	19.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0
Act Effct Green (s)	23.4	23.4	36.8	35.8	14.2	14.2
Actuated g/C Ratio	0.39	0.39	0.61	0.60	0.24	0.24
v/c Ratio	0.42	0.43	0.37	0.88	0.85	0.17
Control Delay	15.8	3.5	7.0	21.7	44.4	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	3.5	7.0	21.7	44.4	6.6
LOS	B	A	A	C	D	A
Approach Delay	9.2			19.0	37.7	
Approach LOS	A			B	D	
Queue Length 50th (m)	22.1	0.0	8.6	73.1	34.8	0.0
Queue Length 95th (m)	34.8	9.2	15.9	#149.5	#72.3	7.7
Internal Link Dist (m)	620.4			739.2	269.7	
Turn Bay Length (m)			130.0			120.0
Base Capacity (vph)	730	836	628	1145	422	452
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	0.42	0.42	0.36	0.87	0.85	0.17

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 19.7
 Intersection LOS: B
 Intersection Capacity Utilization 76.1%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Hickey Rd & Loch Lomond Rd



Intersection						
Int Delay, s/veh	7.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↗		↘	↗
Traffic Vol, veh/h	30	285	1105	20	20	90
Future Vol, veh/h	30	285	1105	20	20	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	87	87	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	320	1270	23	27	120

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1293	0	-	0	1670 1282
Stage 1	-	-	-	-	1282 -
Stage 2	-	-	-	-	388 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	536	-	-	-	106 202
Stage 1	-	-	-	-	260 -
Stage 2	-	-	-	-	686 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	536	-	-	-	99 202
Mov Cap-2 Maneuver	-	-	-	-	99 -
Stage 1	-	-	-	-	244 -
Stage 2	-	-	-	-	686 -

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	91.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	536	-	-	-	170
HCM Lane V/C Ratio	0.063	-	-	-	0.863
HCM Control Delay (s)	12.2	-	-	-	91.1
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	6.1

Intersection

Int Delay, s/veh 13.2

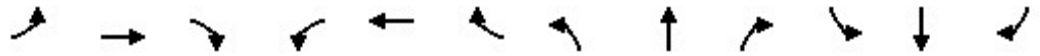
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	270	20	15	1020	5	85	0	10	10	0	25
Future Vol, veh/h	10	270	20	15	1020	5	85	0	10	10	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	293	22	16	1109	5	92	0	11	11	0	27

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1114	0	0	315	0	0	1483	1472	304	1476	1481	1112
Stage 1	-	-	-	-	-	-	326	326	-	1144	1144	-
Stage 2	-	-	-	-	-	-	1157	1146	-	332	337	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	627	-	-	1245	-	-	103	127	736	104	125	254
Stage 1	-	-	-	-	-	-	687	648	-	243	275	-
Stage 2	-	-	-	-	-	-	239	274	-	681	641	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	627	-	-	1245	-	-	~ 88	120	736	98	118	254
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 88	120	-	98	118	-
Stage 1	-	-	-	-	-	-	673	634	-	238	266	-
Stage 2	-	-	-	-	-	-	206	265	-	657	628	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.1	190.8	31.2
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	97	627	-	-	1245	-	-	175
HCM Lane V/C Ratio	1.065	0.017	-	-	0.013	-	-	0.217
HCM Control Delay (s)	190.8	10.8	0	-	7.9	0	-	31.2
HCM Lane LOS	F	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	6.6	0.1	-	-	0	-	-	0.8

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon











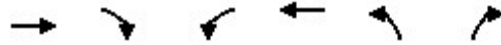
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↗	↗	↘	↗	↗	↗	↗	↗
Traffic Volume (vph)	195	870	115	45	410	325	125	215	90	640	170	120
Future Volume (vph)	195	870	115	45	410	325	125	215	90	640	170	120
Satd. Flow (prot)	1927	3514	0	1789	1946	1583	1730	1883	1742	3509	1922	0
Flt Permitted	0.266			0.164			0.355			0.277		
Satd. Flow (perm)	540	3514	0	309	1946	1583	647	1883	1742	1023	1922	0
Satd. Flow (RTOR)		15				361			129		32	
Peak Hour Factor	0.97	0.97	0.97	0.90	0.90	0.90	0.80	0.80	0.80	0.84	0.84	0.84
Adj. Flow (vph)	201	897	119	50	456	361	156	269	113	762	202	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	201	1016	0	50	456	361	156	269	113	762	345	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4		4	8		
Total Split (s)	12.0	48.0		12.0	48.0	48.0	13.0	36.0	36.0	14.0	37.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Act Effct Green (s)	55.4	46.4		49.5	41.4	41.4	32.3	22.1	22.1	40.5	27.7	
Actuated g/C Ratio	0.50	0.42		0.45	0.38	0.38	0.29	0.20	0.20	0.37	0.25	
v/c Ratio	0.51	0.68		0.21	0.62	0.44	0.56	0.71	0.25	1.07	0.68	
Control Delay	20.2	28.9		15.6	32.3	4.2	32.0	51.0	5.6	85.8	41.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.2	28.9		15.6	32.3	4.2	32.0	51.0	5.6	85.8	41.4	
LOS	C	C		B	C	A	C	D	A	F	D	
Approach Delay		27.5			19.7			36.0			72.0	
Approach LOS		C			B			D			E	
Queue Length 50th (m)	19.8	84.1		4.6	72.8	0.0	20.9	49.7	0.0	~68.9	59.3	
Queue Length 95th (m)	34.0	111.8		10.6	102.3	16.4	28.8	59.3	6.0	#103.3	74.0	
Internal Link Dist (m)		217.2			620.4			296.1			157.8	
Turn Bay Length (m)	78.0			100.0		160.0	70.0		40.0			
Base Capacity (vph)	393	1490		234	743	827	281	513	568	711	567	
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	0.68		0.21	0.61	0.44	0.56	0.52	0.20	1.07	0.61	

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 40.1
 Intersection LOS: D
 Intersection Capacity Utilization 81.5%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Champlain Dr/McAllister Dr & Loch Lomond Rd

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	48 s	14 s	36 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
12 s	48 s	13 s	37 s



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	1040	490	90	480	275	190
Future Volume (vph)	1040	490	90	480	275	190
Satd. Flow (prot)	1863	1583	1730	1904	1770	1654
Flt Permitted			0.070		0.950	
Satd. Flow (perm)	1863	1583	127	1904	1770	1654
Satd. Flow (RTOR)		505				202
Peak Hour Factor	0.92	0.92	0.93	0.93	0.85	0.85
Adj. Flow (vph)	1130	533	97	516	324	224
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1130	533	97	516	324	224
Turn Type	NA	Perm	pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2	6			
Total Split (s)	58.0	58.0	11.0	69.0	21.0	21.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0
Act Effct Green (s)	53.1	53.1	62.7	61.7	16.0	16.0
Actuated g/C Ratio	0.60	0.60	0.71	0.70	0.18	0.18
v/c Ratio	1.00	0.46	0.44	0.39	1.00	0.48
Control Delay	47.5	2.5	14.3	6.2	90.1	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	2.5	14.3	6.2	90.1	10.5
LOS	D	A	B	A	F	B
Approach Delay	33.0			7.5	57.5	
Approach LOS	C			A	E	
Queue Length 50th (m)	~194.6	1.7	3.8	27.6	~55.8	3.0
Queue Length 95th (m)	#262.2	13.1	13.9	41.0	#92.6	17.3
Internal Link Dist (m)	620.4			739.2	269.7	
Turn Bay Length (m)			130.0			120.0
Base Capacity (vph)	1127	1157	218	1391	323	467
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	1.00	0.46	0.44	0.37	1.00	0.48

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 87.8
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 32.3
 Intersection LOS: C
 Intersection Capacity Utilization 87.5%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Hickey Rd & Loch Lomond Rd

Ø1 11 s	Ø2 58 s	Ø4 21 s
Ø6 69 s		

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	1185	500	20	15	55
Future Vol, veh/h	95	1185	500	20	15	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	92	92	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	106	1317	543	22	19	69

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	565	0	-	0	2083 554
Stage 1	-	-	-	-	554 -
Stage 2	-	-	-	-	1529 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1007	-	-	-	58 532
Stage 1	-	-	-	-	575 -
Stage 2	-	-	-	-	197 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1007	-	-	-	52 532
Mov Cap-2 Maneuver	-	-	-	-	52 -
Stage 1	-	-	-	-	515 -
Stage 2	-	-	-	-	197 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	43
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1007	-	-	-	179
HCM Lane V/C Ratio	0.105	-	-	-	0.489
HCM Control Delay (s)	9	-	-	-	43
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.3	-	-	-	2.4

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1110	70	15	475	10	35	0	20	10	0	15
Future Vol, veh/h	20	1110	70	15	475	10	35	0	20	10	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	1207	76	16	516	11	38	0	22	11	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	527	0	0	1283	0	0	1851	1848	1245	1854	1881	522
Stage 1	-	-	-	-	-	-	1289	1289	-	554	554	-
Stage 2	-	-	-	-	-	-	562	559	-	1300	1327	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1040	-	-	541	-	-	57	75	212	57	71	555
Stage 1	-	-	-	-	-	-	201	234	-	517	514	-
Stage 2	-	-	-	-	-	-	512	511	-	198	225	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1040	-	-	541	-	-	50	66	212	47	63	555
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	66	-	47	63	-
Stage 1	-	-	-	-	-	-	186	216	-	478	492	-
Stage 2	-	-	-	-	-	-	476	490	-	164	208	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.4			172.9			51.4		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	69	1040	-	-	541	-	-	104
HCM Lane V/C Ratio	0.866	0.021	-	-	0.03	-	-	0.261
HCM Control Delay (s)	172.9	8.5	0	-	11.9	0	-	51.4
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	4.2	0.1	-	-	0.1	-	-	1

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	270	20	15	1045	85	10
Future Vol, veh/h	270	20	15	1045	85	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	22	16	1136	92	11

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	315	0	1472
Stage 1	-	-	-	-	304
Stage 2	-	-	-	-	1168
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1245	-	140
Stage 1	-	-	-	-	748
Stage 2	-	-	-	-	296
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1245	-	135
Mov Cap-2 Maneuver	-	-	-	-	135
Stage 1	-	-	-	-	748
Stage 2	-	-	-	-	286

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	72
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	148	-	-	1245	-
HCM Lane V/C Ratio	0.698	-	-	0.013	-
HCM Control Delay (s)	72	-	-	7.9	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	4	-	-	0	-

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1110	70	15	475	35	20
Future Vol, veh/h	1110	70	15	475	35	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1207	76	16	516	38	22

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1283	0	1793
Stage 1	-	-	-	-	1245
Stage 2	-	-	-	-	548
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	541	-	89
Stage 1	-	-	-	-	271
Stage 2	-	-	-	-	579
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	541	-	85
Mov Cap-2 Maneuver	-	-	-	-	85
Stage 1	-	-	-	-	271
Stage 2	-	-	-	-	555

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	72.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	109	-	-	541	-
HCM Lane V/C Ratio	0.548	-	-	0.03	-
HCM Control Delay (s)	72.3	-	-	11.9	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	2.6	-	-	0.1	-

APPENDIX E

Traffic Signal Warrant Analysis

City of Saint John - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Loch Lomond Road	Direction (EW or NS)	EW	Road Authority:	City of Saint John	
Side Street (name)	Proposed Driveways	Direction (EW or NS)	NS	City:	Saint John	
Quadrant / Int #	4	Comments	2032 Build Conditions	Analysis Date:	2022 Dec 09, Fri	
CHECK SHEET				Count Date:	2022 Nov 22, Tue	
for Warrant Calculation Results, please hit 'Page Down'				Date Entry Format:	(yyyy-mm-dd)	

Lane Configuration	Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	Upstream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase	Saturation Flow Rates (if not default) (vphpl)	Default Saturation Flow Rates (vphpl)
Loch Lomond Road WB				1			n	920	1				Left Turn	1,650
Loch Lomond Road EB				1			n		1				Through	1,800
Proposed Driveways NB				1			n		1				Right Turn	1,500
Proposed Driveways SB				1			n		1					

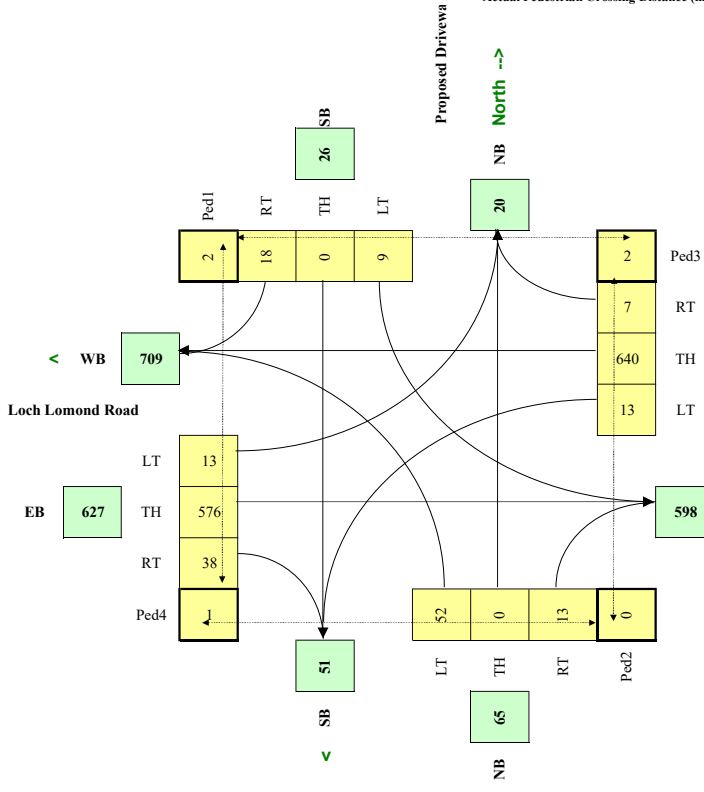
Are the Proposed Driveways NB right turns significantly impeded by through movements? (y/n)	n
Are the Proposed Driveways SB right turns significantly impeded by through movements? (y/n)	n
Are the Loch Lomond Road WB right turns significantly impeded by through movements? (y/n)	n
Are the Loch Lomond Road EB right turns significantly impeded by through movements? (y/n)	n

Other input	Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Loch Lomond Road EW	60	2.5%	y	0.0
Proposed Driveways NS		1.0%	y	0.0

Demographics	
Elem. School/Mobility Challenged	(y/n) n
Senior's Complex	(y/n) n
Pathway to School	(y/n) y
Metro Area Population	(#) 130,613
Central Business District	(y/n) n

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	85	0	10	10	0	25	15	1009	5	10	267	20	2	0	2	1
	80	0	10	10	0	24	15	954	5	10	253	19	2	0	2	1
	59	0	7	7	0	18	11	699	4	7	185	14	2	0	1	1
	21	0	12	6	0	9	9	284	6	12	663	42	2	0	2	1
	33	0	19	10	0	14	14	435	10	19	1016	65	2	0	1	1
	34	0	20	10	0	15	15	458	10	20	1070	68	2	0	2	1
Total (6-hour peak)	312	0	78	53	0	105	79	3,839	40	78	3,454	228	12	0	10	6
Average (6-hour peak)	52	0	13	9	0	18	13	640	7	13	576	38	2	0	2	1

Average 6-hour Peak Turning Movements



$$W_{SIG} = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p})L) / K_2] \times C_i$$

W =	74	71	3
		Veh	Ped

Not Warranted - $V_s < 75$

$$W_{PED} = [F((X_{ped,m})d_m/K_2) + (X_{ped,d})d_s/K_3]$$

W =	1.92
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Warranted - Complex Intersection

APPENDIX F

Synchro Analysis Reports – Construction Phasing

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	240	5	5	905	5	15	0	5	10	0	25
Future Vol, veh/h	10	240	5	5	905	5	15	0	5	10	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	261	5	5	984	5	16	0	5	11	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	989	0	0	266	0	0	1296	1285	264	1285	1285	987
Stage 1	-	-	-	-	-	-	286	286	-	997	997	-
Stage 2	-	-	-	-	-	-	1010	999	-	288	288	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	699	-	-	1298	-	-	139	165	775	142	165	300
Stage 1	-	-	-	-	-	-	721	675	-	294	322	-
Stage 2	-	-	-	-	-	-	289	321	-	720	674	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	699	-	-	1298	-	-	124	161	775	138	161	300
Mov Cap-2 Maneuver	-	-	-	-	-	-	124	161	-	138	161	-
Stage 1	-	-	-	-	-	-	708	663	-	289	319	-
Stage 2	-	-	-	-	-	-	260	318	-	702	662	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			31.6			24.2		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	157	699	-	-	1298	-	-	225
HCM Lane V/C Ratio	0.138	0.016	-	-	0.004	-	-	0.169
HCM Control Delay (s)	31.6	10.2	0	-	7.8	0	-	24.2
HCM Lane LOS	D	B	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.6

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	985	15	5	420	10	10	0	5	10	0	15
Future Vol, veh/h	20	985	15	5	420	10	10	0	5	10	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	1071	16	5	457	11	11	0	5	11	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	468	0	0	1087	0	0	1604	1601	1079	1599	1604	463
Stage 1	-	-	-	-	-	-	1123	1123	-	473	473	-
Stage 2	-	-	-	-	-	-	481	478	-	1126	1131	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1094	-	-	642	-	-	85	106	265	86	105	599
Stage 1	-	-	-	-	-	-	250	281	-	572	558	-
Stage 2	-	-	-	-	-	-	566	556	-	249	278	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1094	-	-	642	-	-	79	100	265	80	99	599
Mov Cap-2 Maneuver	-	-	-	-	-	-	79	100	-	80	99	-
Stage 1	-	-	-	-	-	-	237	267	-	543	552	-
Stage 2	-	-	-	-	-	-	545	550	-	231	264	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			46.4			30.7		
HCM LOS							E			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	103	1094	-	-	642	-	-	167
HCM Lane V/C Ratio	0.158	0.02	-	-	0.008	-	-	0.163
HCM Control Delay (s)	46.4	8.4	0	-	10.7	0	-	30.7
HCM Lane LOS	E	A	A	-	B	A	-	D
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.6

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	245	10	5	930	5	30	0	5	10	0	25
Future Vol, veh/h	10	245	10	5	930	5	30	0	5	10	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	266	11	5	1011	5	33	0	5	11	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1016	0	0	277	0	0	1331	1320	272	1320	1323	1014
Stage 1	-	-	-	-	-	-	294	294	-	1024	1024	-
Stage 2	-	-	-	-	-	-	1037	1026	-	296	299	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	683	-	-	1286	-	-	132	157	767	134	156	290
Stage 1	-	-	-	-	-	-	714	670	-	284	313	-
Stage 2	-	-	-	-	-	-	279	312	-	712	666	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	683	-	-	1286	-	-	117	153	767	130	152	290
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	153	-	130	152	-
Stage 1	-	-	-	-	-	-	700	657	-	279	310	-
Stage 2	-	-	-	-	-	-	251	309	-	694	653	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			42.6			25.3		
HCM LOS							E			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	133	683	-	-	1286	-	-	215
HCM Lane V/C Ratio	0.286	0.016	-	-	0.004	-	-	0.177
HCM Control Delay (s)	42.6	10.4	0	-	7.8	0	-	25.3
HCM Lane LOS	E	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	0.6

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1015	25	5	430	10	15	0	10	10	0	15
Future Vol, veh/h	20	1015	25	5	430	10	15	0	10	10	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	1103	27	5	467	11	16	0	11	11	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	478	0	0	1130	0	0	1652	1649	1117	1649	1657	473
Stage 1	-	-	-	-	-	-	1161	1161	-	483	483	-
Stage 2	-	-	-	-	-	-	491	488	-	1166	1174	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1084	-	-	618	-	-	79	99	252	79	98	591
Stage 1	-	-	-	-	-	-	238	270	-	565	553	-
Stage 2	-	-	-	-	-	-	559	550	-	236	266	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1084	-	-	618	-	-	73	93	252	72	92	591
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	93	-	72	92	-
Stage 1	-	-	-	-	-	-	225	255	-	534	547	-
Stage 2	-	-	-	-	-	-	538	544	-	213	251	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			52.6			33.8		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	102	1084	-	-	618	-	-	152
HCM Lane V/C Ratio	0.266	0.02	-	-	0.009	-	-	0.179
HCM Control Delay (s)	52.6	8.4	0	-	10.9	0	-	33.8
HCM Lane LOS	F	A	A	-	B	A	-	D
HCM 95th %tile Q(veh)	1	0.1	-	-	0	-	-	0.6

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	250	10	10	945	5	45	0	5	10	0	25
Future Vol, veh/h	10	250	10	10	945	5	45	0	5	10	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	272	11	11	1027	5	49	0	5	11	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1032	0	0	283	0	0	1365	1354	278	1354	1357	1030
Stage 1	-	-	-	-	-	-	300	300	-	1052	1052	-
Stage 2	-	-	-	-	-	-	1065	1054	-	302	305	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	673	-	-	1279	-	-	125	150	761	127	149	283
Stage 1	-	-	-	-	-	-	709	666	-	274	303	-
Stage 2	-	-	-	-	-	-	269	303	-	707	662	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	673	-	-	1279	-	-	110	144	761	122	143	283
Mov Cap-2 Maneuver	-	-	-	-	-	-	110	144	-	122	143	-
Stage 1	-	-	-	-	-	-	696	653	-	269	297	-
Stage 2	-	-	-	-	-	-	238	297	-	689	649	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.1			57.7			26.4		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	120	673	-	-	1279	-	-	206
HCM Lane V/C Ratio	0.453	0.016	-	-	0.008	-	-	0.185
HCM Control Delay (s)	57.7	10.4	0	-	7.8	0	-	26.4
HCM Lane LOS	F	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	2	0	-	-	0	-	-	0.7

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1030	35	10	440	10	20	0	10	10	0	15
Future Vol, veh/h	20	1030	35	10	440	10	20	0	10	10	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	1120	38	11	478	11	22	0	11	11	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	489	0	0	1158	0	0	1697	1694	1139	1695	1708	484
Stage 1	-	-	-	-	-	-	1183	1183	-	506	506	-
Stage 2	-	-	-	-	-	-	514	511	-	1189	1202	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1074	-	-	603	-	-	73	93	245	73	91	583
Stage 1	-	-	-	-	-	-	231	263	-	549	540	-
Stage 2	-	-	-	-	-	-	543	537	-	229	258	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1074	-	-	603	-	-	67	85	245	65	84	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	67	85	-	65	84	-
Stage 1	-	-	-	-	-	-	218	248	-	517	527	-
Stage 2	-	-	-	-	-	-	515	524	-	206	243	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			68.2			37.1		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	88	1074	-	-	603	-	-	139
HCM Lane V/C Ratio	0.371	0.02	-	-	0.018	-	-	0.195
HCM Control Delay (s)	68.2	8.4	0	-	11.1	0	-	37.1
HCM Lane LOS	F	A	A	-	B	A	-	E
HCM 95th %tile Q(veh)	1.5	0.1	-	-	0.1	-	-	0.7

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	260	15	10	975	5	55	0	10	10	0	25
Future Vol, veh/h	10	260	15	10	975	5	55	0	10	10	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	283	16	11	1060	5	60	0	11	11	0	27

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1065	0	0	299	0	0	1411	1400	291	1404	1406	1063
Stage 1	-	-	-	-	-	-	313	313	-	1085	1085	-
Stage 2	-	-	-	-	-	-	1098	1087	-	319	321	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	654	-	-	1262	-	-	116	140	748	117	139	271
Stage 1	-	-	-	-	-	-	698	657	-	262	293	-
Stage 2	-	-	-	-	-	-	258	292	-	693	652	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	654	-	-	1262	-	-	101	134	748	112	133	271
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	134	-	112	133	-
Stage 1	-	-	-	-	-	-	684	644	-	257	287	-
Stage 2	-	-	-	-	-	-	227	286	-	669	639	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.4		0.1		74.3		28.2	
HCM LOS					F		D	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	117	654	-	-	1262	-	-	193
HCM Lane V/C Ratio	0.604	0.017	-	-	0.009	-	-	0.197
HCM Control Delay (s)	74.3	10.6	0	-	7.9	0	-	28.2
HCM Lane LOS	F	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	3	0.1	-	-	0	-	-	0.7

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1060	45	10	450	10	25	0	15	10	0	15
Future Vol, veh/h	20	1060	45	10	450	10	25	0	15	10	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	1152	49	11	489	11	27	0	16	11	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	500	0	0	1201	0	0	1746	1743	1177	1746	1762	495
Stage 1	-	-	-	-	-	-	1221	1221	-	517	517	-
Stage 2	-	-	-	-	-	-	525	522	-	1229	1245	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1064	-	-	581	-	-	68	87	233	68	84	575
Stage 1	-	-	-	-	-	-	220	252	-	541	534	-
Stage 2	-	-	-	-	-	-	536	531	-	218	246	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1064	-	-	581	-	-	62	79	233	59	77	575
Mov Cap-2 Maneuver	-	-	-	-	-	-	62	79	-	59	77	-
Stage 1	-	-	-	-	-	-	206	236	-	507	520	-
Stage 2	-	-	-	-	-	-	507	517	-	190	231	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			83.6			40.6		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	86	1064	-	-	581	-	-	128
HCM Lane V/C Ratio	0.506	0.02	-	-	0.019	-	-	0.212
HCM Control Delay (s)	83.6	8.5	0	-	11.3	0	-	40.6
HCM Lane LOS	F	A	A	-	B	A	-	E
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0.1	-	-	0.8

Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	260	20	10	990	5	70	0	10	10	0	25
Future Vol, veh/h	10	260	20	10	990	5	70	0	10	10	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	283	22	11	1076	5	76	0	11	11	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1081	0	0	305	0	0	1430	1419	294	1423	1428	1079
Stage 1	-	-	-	-	-	-	316	316	-	1101	1101	-
Stage 2	-	-	-	-	-	-	1114	1103	-	322	327	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	645	-	-	1256	-	-	112	137	745	114	135	265
Stage 1	-	-	-	-	-	-	695	655	-	257	288	-
Stage 2	-	-	-	-	-	-	253	287	-	690	648	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	645	-	-	1256	-	-	97	131	745	109	129	265
Mov Cap-2 Maneuver	-	-	-	-	-	-	97	131	-	109	129	-
Stage 1	-	-	-	-	-	-	680	641	-	252	282	-
Stage 2	-	-	-	-	-	-	222	281	-	666	634	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.1			110.5			28.9		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	109	645	-	-	1256	-	-	188
HCM Lane V/C Ratio	0.798	0.017	-	-	0.009	-	-	0.202
HCM Control Delay (s)	110.5	10.7	0	-	7.9	0	-	28.9
HCM Lane LOS	F	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	4.5	0.1	-	-	0	-	-	0.7

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1080	60	10	460	10	30	0	15	10	0	15
Future Vol, veh/h	20	1080	60	10	460	10	30	0	15	10	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	1174	65	11	500	11	33	0	16	11	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	511	0	0	1239	0	0	1787	1784	1207	1787	1811	506
Stage 1	-	-	-	-	-	-	1251	1251	-	528	528	-
Stage 2	-	-	-	-	-	-	536	533	-	1259	1283	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1054	-	-	562	-	-	63	82	223	63	79	566
Stage 1	-	-	-	-	-	-	211	244	-	534	528	-
Stage 2	-	-	-	-	-	-	529	525	-	209	236	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1054	-	-	562	-	-	57	74	223	54	72	566
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	74	-	54	72	-
Stage 1	-	-	-	-	-	-	196	227	-	497	514	-
Stage 2	-	-	-	-	-	-	500	511	-	180	220	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			114.1			44.4		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	76	1054	-	-	562	-	-	118
HCM Lane V/C Ratio	0.644	0.021	-	-	0.019	-	-	0.23
HCM Control Delay (s)	114.1	8.5	0	-	11.5	0	-	44.4
HCM Lane LOS	F	A	A	-	B	A	-	E
HCM 95th %tile Q(veh)	2.9	0.1	-	-	0.1	-	-	0.8

Intersection

Int Delay, s/veh 0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	250	5	5	930	15	5
Future Vol, veh/h	250	5	5	930	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	272	5	5	1011	16	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	277	0	1296 275
Stage 1	-	-	-	-	275 -
Stage 2	-	-	-	-	1021 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1286	-	179 764
Stage 1	-	-	-	-	771 -
Stage 2	-	-	-	-	348 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1286	-	177 764
Mov Cap-2 Maneuver	-	-	-	-	177 -
Stage 1	-	-	-	-	771 -
Stage 2	-	-	-	-	345 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	23.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	219	-	-	1286	-
HCM Lane V/C Ratio	0.099	-	-	0.004	-
HCM Control Delay (s)	23.2	-	-	7.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1005	15	5	435	10	5
Future Vol, veh/h	1005	15	5	435	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1092	16	5	473	11	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1108	0	1583
Stage 1	-	-	-	-	1100
Stage 2	-	-	-	-	483
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	630	-	120
Stage 1	-	-	-	-	319
Stage 2	-	-	-	-	620
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	630	-	119
Mov Cap-2 Maneuver	-	-	-	-	119
Stage 1	-	-	-	-	319
Stage 2	-	-	-	-	613

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	32.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	145	-	-	630	-
HCM Lane V/C Ratio	0.112	-	-	0.009	-
HCM Control Delay (s)	32.9	-	-	10.8	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	255	10	5	955	30	5
Future Vol, veh/h	255	10	5	955	30	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	277	11	5	1038	33	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	288	0	1331
Stage 1	-	-	-	-	283
Stage 2	-	-	-	-	1048
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1274	-	170
Stage 1	-	-	-	-	765
Stage 2	-	-	-	-	338
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1274	-	168
Mov Cap-2 Maneuver	-	-	-	-	168
Stage 1	-	-	-	-	765
Stage 2	-	-	-	-	335

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	189	-	-	1274	-
HCM Lane V/C Ratio	0.201	-	-	0.004	-
HCM Control Delay (s)	28.8	-	-	7.8	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1035	25	5	445	15	10
Future Vol, veh/h	1035	25	5	445	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1125	27	5	484	16	11

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1152	0	1633
Stage 1	-	-	-	-	1139
Stage 2	-	-	-	-	494
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	606	-	111
Stage 1	-	-	-	-	305
Stage 2	-	-	-	-	613
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	606	-	110
Mov Cap-2 Maneuver	-	-	-	-	110
Stage 1	-	-	-	-	305
Stage 2	-	-	-	-	606

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	36.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	141	-	-	606	-
HCM Lane V/C Ratio	0.193	-	-	0.009	-
HCM Control Delay (s)	36.5	-	-	11	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	260	10	10	970	45	5
Future Vol, veh/h	260	10	10	970	45	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	283	11	11	1054	49	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	294	0	1365
Stage 1	-	-	-	-	289
Stage 2	-	-	-	-	1076
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1268	-	162
Stage 1	-	-	-	-	760
Stage 2	-	-	-	-	327
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1268	-	159
Mov Cap-2 Maneuver	-	-	-	-	159
Stage 1	-	-	-	-	760
Stage 2	-	-	-	-	320

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	35.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	173	-	-	1268	-
HCM Lane V/C Ratio	0.314	-	-	0.009	-
HCM Control Delay (s)	35.1	-	-	7.9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0	-

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		↔
Traffic Vol, veh/h	1050	35	10	455	20	10
Future Vol, veh/h	1050	35	10	455	20	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1141	38	11	495	22	11

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1179	0	1677
Stage 1	-	-	-	-	1160
Stage 2	-	-	-	-	517
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	592	-	105
Stage 1	-	-	-	-	298
Stage 2	-	-	-	-	598
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	592	-	102
Mov Cap-2 Maneuver	-	-	-	-	102
Stage 1	-	-	-	-	298
Stage 2	-	-	-	-	582

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	43.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	126	-	-	592	-
HCM Lane V/C Ratio	0.259	-	-	0.018	-
HCM Control Delay (s)	43.3	-	-	11.2	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	1	-	-	0.1	-

Intersection

Int Delay, s/veh 2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	270	15	10	1000	55	10
Future Vol, veh/h	270	15	10	1000	55	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	16	11	1087	60	11

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	309
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1252
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1252
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	40.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	-	-	1252	-
HCM Lane V/C Ratio	0.413	-	-	0.009	-
HCM Control Delay (s)	40.1	-	-	7.9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	1080	45	10	465	25	15
Future Vol, veh/h	1080	45	10	465	25	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1174	49	11	505	27	16

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1223	0	1726
Stage 1	-	-	-	-	1199
Stage 2	-	-	-	-	527
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	570	-	98
Stage 1	-	-	-	-	286
Stage 2	-	-	-	-	592
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	570	-	95
Mov Cap-2 Maneuver	-	-	-	-	95
Stage 1	-	-	-	-	286
Stage 2	-	-	-	-	576

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	50.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	121	-	-	570	-
HCM Lane V/C Ratio	0.359	-	-	0.019	-
HCM Control Delay (s)	50.6	-	-	11.4	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	270	15	10	1000	55	10
Future Vol, veh/h	270	15	10	1000	55	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	16	11	1087	60	11

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	309	0	1410
Stage 1	-	-	-	-	301
Stage 2	-	-	-	-	1109
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1252	-	153
Stage 1	-	-	-	-	751
Stage 2	-	-	-	-	316
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1252	-	150
Mov Cap-2 Maneuver	-	-	-	-	150
Stage 1	-	-	-	-	751
Stage 2	-	-	-	-	309

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	40.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	-	-	1252	-
HCM Lane V/C Ratio	0.413	-	-	0.009	-
HCM Control Delay (s)	40.1	-	-	7.9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	1100	60	10	475	30	15
Future Vol, veh/h	1100	60	10	475	30	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1196	65	11	516	33	16

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1261	0	1767 1229
Stage 1	-	-	-	-	1229 -
Stage 2	-	-	-	-	538 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	551	-	92 217
Stage 1	-	-	-	-	276 -
Stage 2	-	-	-	-	585 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	551	-	89 217
Mov Cap-2 Maneuver	-	-	-	-	89 -
Stage 1	-	-	-	-	276 -
Stage 2	-	-	-	-	569 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	60.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	111	-	-	551	-
HCM Lane V/C Ratio	0.441	-	-	0.02	-
HCM Control Delay (s)	60.8	-	-	11.7	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-