TRANSPORTATION IMPACT STUDY

57 BATTEAUX ROAD

CLEARVIEW TOWNSHIP
SIMCOE COUNTY

PREPARED FOR:

NOTTAWA LIMITED PARTNERSHIP

PREPARED BY:

C.F. CROZIER & ASSOCIATES INC.
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1

FEBRUARY 2026

CFCA FILE NO. 1953-6180

CROZIER

Revision Number	Date	Comments
Rev.0	February 2026	First Submission

Executive Summary

Nottawa Limited Partnerships retained C.F. Crozier & Associates to complete a Transportation Impact Study to support the Zoning By-law Amendment and Draft Plan Application for the proposed residential development situated in the community of Nottawa, Clearview Township, Simcoe County. The development proposal consists of 47 single-family detached residential dwelling units. The site is proposed to be serviced by one full-moves access connection via the proposed Street "A".

Under 2025 existing traffic conditions, the two-way stop-controlled intersection of County Road 124 and Batteaux Road/Melville Street is operating at a level of service (LOS) "B" during the weekday a.m. and p.m. peak hours. All other study intersections are operating at a LOS "A" during the peak hours. The study intersections experience minimal delays on the minor street approaches.

Under 2034 future background traffic conditions, the intersection of County Road 124 and Batteaux Road/ Melville Street is forecasted to operate with a LOS "C" and LOS "D" in the a.m. and p.m. peak hours, respectively, with minimal delay. All other study intersections are expected to operate with a LOS "A" during the a.m. and p.m. peak hours.

The proposed development is forecast to generate a total of 37 and 49 two-way trips during the weekday a.m. and p.m. peak hours, respectively.

Under 2034 future total conditions the intersection of County Road 124 and Batteaux Road/ Melville Street is forecasted to operate with a LOS "C" and LOS "E" in the a.m. and p.m. peak hours, respectively, for the westbound movements. A maximum delay of 39 s is forecasted for the westbound movements, which reflects a delay of 3.6 s over the 2034 future background conditions. All other study intersections are operating at a LOS "B" or better during the a.m. and p.m. peak hours. The intersections experience minimal delays on the minor street approaches.

Under 2034 future total conditions, traffic signals are not warranted at the intersection of County Road 124 & Batteaux Road/Melville Street traffic signals. Additionally, a westbound left-turn lane was found not warranted at the proposed intersection of Batteaux Road and Street "A". Adequate sight distance is available that the Street "A" site access.

Based on the study findings, the proposed development can be supported from a transportation perspective.

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1.0 Introduction

Nottawa Limited Partnerships ("the proponent") retained C.F. Crozier & Associates Inc. (Crozier) to prepare a Transportation Impact Study (TIS) in support of the Zoning By-law Amendment and Draft Plan Application for the proposed residential subdivision development ("the subject lands/site") located in the Village of Nottawa, Clearview Township ("the Township"), Simcoe County ("the County").

1.1 Developments Lands

The site is bound by Batteaux Road to the north, residential homes to the east and west, and agricultural lands to the south. **Figure 1** includes the Site Location Plan.

1.2 Development Proposal

The Subject Lands are approximately 3.3 ha in size. The Draft Plan of Subdivision was prepared by celeste Phillips Planning Inc. and is dated January 20th, 2026. The Draft Plan illustrates 47 single-family detached residential dwelling units and dedicated open space. The proposed Street "A" connects the subdivision to Batteaux Road. **Figure 2** illustrates the Draft Plan (January 2026).

1.3 Study Purpose and Scope

The purpose of the study is to evaluate the transportation-related impacts of the proposed development on the study road network and to recommend or confirm any required mitigation measures, if warranted.

The study reviews the following main aspects of the proposed development from a transportation engineering perspective:

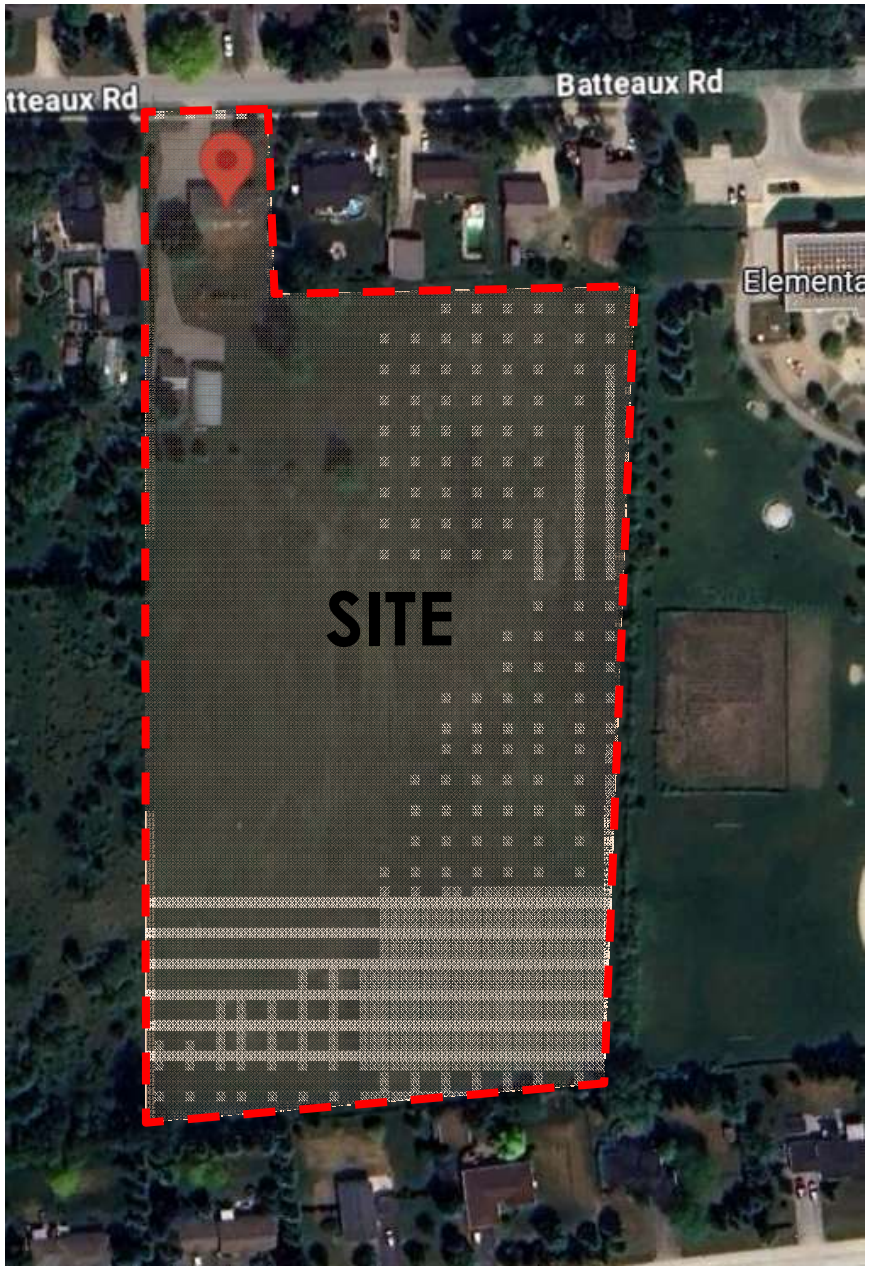
- Impacts of development traffic on the study road network through analyzing existing, future background, and future total traffic operations;
- Proposed Street "A" connection includes signal and auxiliary turn lane warrants, geometry, and available sight distance.
- Existing and proposed active transportation network and connections.

The Study was completed in accordance with the Terms of Reference (TOR) circulated to Clearview Township and Simcoe County in August 2025. **Appendix A** includes the Terms of Reference communications.

As confirmed in the Terms of Reference, this Transportation Impact Study considers the following study intersections:

- Batteaux Road /Melville Street and County Road 124 (Hurontario Street)
- Batteaux Road and Townley Street
- Batteaux Road and N Nottawasaga (Concession 6)
- Batteaux Road and Site Access (Street A)

For the purposes of this study, it has been assumed the development will be built out by the 2034 horizon. Therefore, the 2025 and 2034 horizon years were analyzed. These horizon years were confirmed through the Terms of Reference correspondence.



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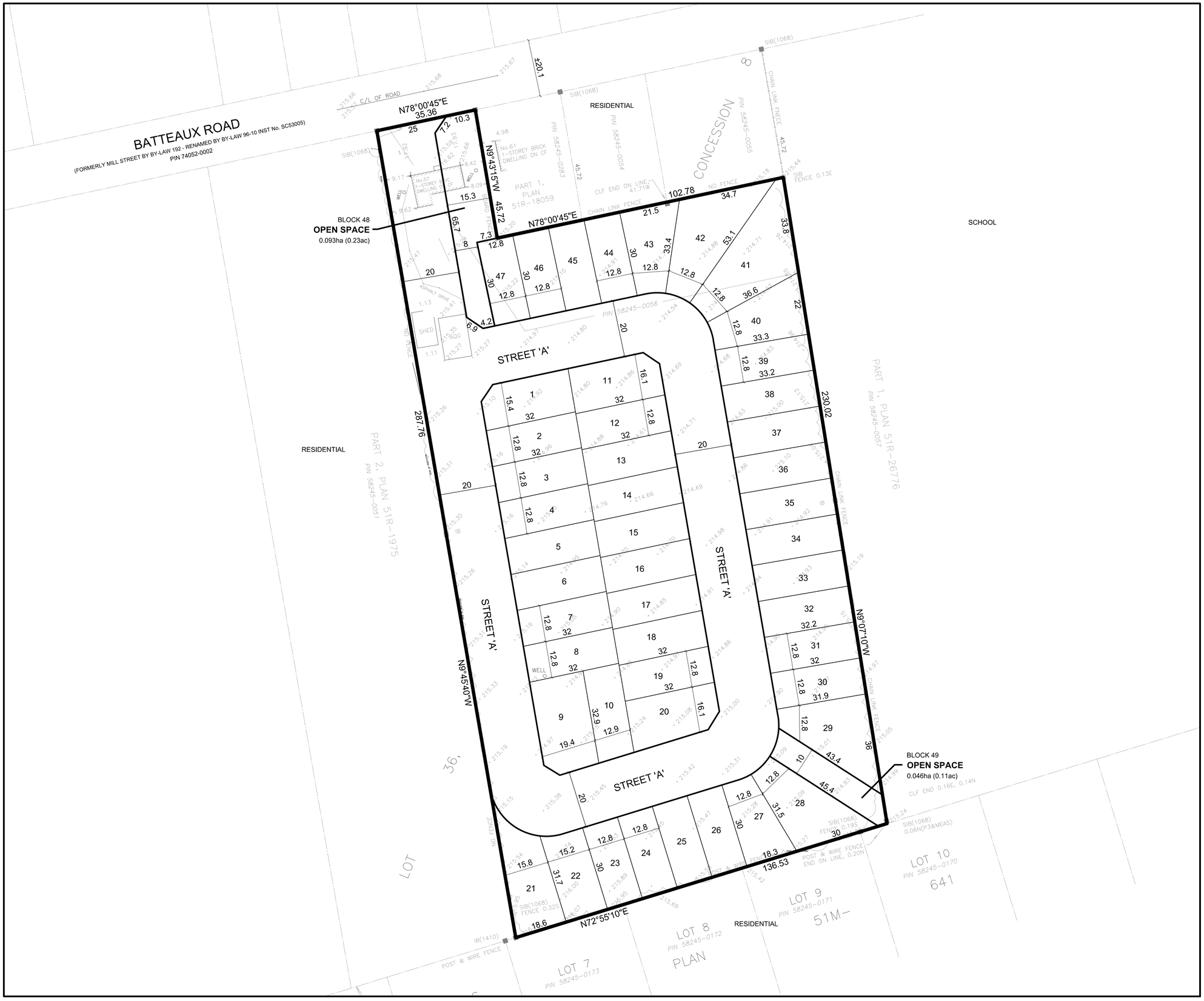
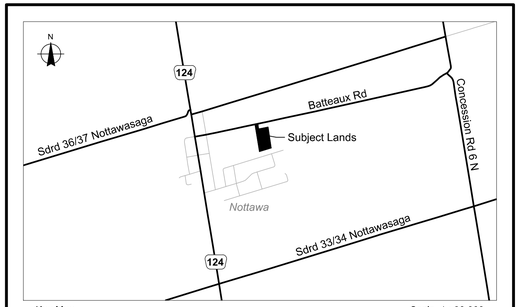
	57 Batteaux Road	CROZIER CONSULTING ENGINEERS	**Figure 1**
	Site Location		Project No. 1953-6180 Date. February 2026 Analyst. S.A





Key Map — Scale 1 : 30,000

DRAFT PLAN OF SUBDIVISION

PART 1, PLAN 51R-1975
PART OF LOT 36, CONCESSION 8
(FORMER GEOGRAPHIC TOWNSHIP OF NOTTAWASAGA)
TOWNSHIP OF CLEARVIEW, COUNTY OF SIMCOE

LAND USE SCHEDULE

LAND USE	LOT/BLOCK	UNITS	AREA ha	AREA ac	%
RESIDENTIAL	1 - 47	47	2.148	5.31	63.5
OPEN SPACE	48 & 49		0.139	0.34	4.1
STREET 'A'			1.097	2.71	32.4
TOTAL	**49**	**47**	**3.384**	**8.36**	**100.0**

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

a) AS SHOWN
b) AS SHOWN
c) AS SHOWN
d) AS SHOWN
e) AS SHOWN
f) AS SHOWN
f1) NONE
g) AS SHOWN
h) MUNICIPAL WATER
i) TIOGA SANDY LOAM
j) AS SHOWN
f) AS SHOWN
k) FULL MUNICIPAL SERVICES
l) AS SHOWN

TOWNSHIP OF CLEARVIEW APPROVAL

APPROVED IN ACCORDANCE WITH SECTION 51(31) OF THE *PLANNING ACT*, RSO, 1990, CHAPTER P.13, AS AMENDED,

THIS _____ DAY OF _____, 20_____.

OWNER'S CERTIFICATE

NOTTAWA LIMITED PARTNERSHIP, BEING THE REGISTERED OWNER OF THE SUBJECT LANDS, HEREBY AUTHORIZES CELESTE PHILLIPS PLANNING INC. TO PREPARE AND SUBMIT A DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

DATE: _____

_____
DAVID BUNSTON, PRESIDENT
NOTTAWA LIMITED PARTNERSHIP

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN ON THIS PLAN.

DATE: JANUARY 20, 2026

PIER DE ROSA,O.L.S.
J.D. BARNES LIMITED

No.	DATE	REVISION	BY

STAMP

0 10 20 30 40 50m
Scale 1 : 600

Date: January 20, 2026
Drawn By: AM
Checked By: CP

N

celeste PHILLIPS PLANNING INC.
85 Bayfield Street, Suite 300
Barrie, ON L4M 3A7
T: 705 797 8977
C: 705 730 8850
celeste@cplan.ca

2.0 Existing Conditions

This section outlines the current conditions of the transportation network in the vicinity of the site. Details of the study road network, including traffic controls, lane configurations, speed limits, active transportation infrastructure and other relevant transportation elements are identified. The existing traffic operations are also summarized.

2.1 Study Road Network

The study road network consists of the existing road network near the site, which includes the study intersections and the adjoining roadway segments. **Table 1** delineates the study roadways.

Table 1: Study Roadways

Feature	Roadways			
	County Road 124 (Hurontario Street)	**Batteaux Road/ Melville Street**	**N Nottawasaga (Concession 6)**	**Townley Street**
Direction	Two-way (North-South)	Two-way (East-West)	Two-way (North-South)	Two-way (North-South)
Classification	County Road	Municipal Road	County Road	Municipal Road
Jurisdiction	Simcoe County	Clearview Township	Clearview Township	Clearview Township
Speed Limit	60 km/h south of the subject lands 50 km/h to the north	50 km/h	50 km/h	50 km/h (assumed)
Number of Travel Lanes	Two	Two	Two	Two
Active Transportation	1.5m sidewalk both sides [1]	1.5m sidewalk begins east of County Road 124 intersection	None	None

Note 1: Sidewalk ends on the east side after Queen Street. Sidewalk on the west side ends 65 meters north of Batteaux Road. The remaining sidewalk on the east side ends 150 meters north of Batteaux Road.

2.2 Transportation Data

Transportation data was collected by Spectrum Traffic Data Inc. on Tuesday August 19th, 2025, between the hours of 6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m. **Appendix B** contains all transportation data used in support of this study.

2.3 Seasonal Adjustment

Due to the close proximity of Nottawa Elementary School to the site, a seasonal adjustment was applied to account for the traffic generated during the school year. Counts were collected at the intersection of Batteaux Road /Melville Street and County Road 124 (Hurontario Street) in January 2024 during the school year and August 2025 during the summer. While volumes on County Road 124 were higher in August, volumes on Batteaux Road were lower, reflecting a reduction while the school is closed. An adjustment factor of 1.4 in the a.m. peak hour and 1.5 in the p.m. peak hour to volumes turning in and out of the east approach of the intersection was applied and carried through the intersection of Batteaux Road and Townley Street.

2.4 Traffic Modelling and Assumptions

Unless otherwise noted, the existing traffic conditions on the study road network were modelled in Synchro 11 based on "Highway Capacity Manual (HCM)" methodology and using the default Synchro parameters. Roadway geometrics were modelled based on the existing study road network description outlined in **Section 2.1**.

Existing pedestrian and traffic volumes were established from the collected traffic data. The heavy vehicle percentages and peak hour factors were also established from the collected data. **Table 2** outlines the calculated peak hour factors at each intersection.

Table 2: Peak Hour Factors

Intersection	Intersection Control[1]	Peak Hour	Peak Hour Factor
Batteaux Road /Melville Street and County Road 124 (Hurontario Street)	Minor Stop	8:00 a.m. to 9:00 a.m.	0.97
		4:30 p.m. – 5:30 p.m.	0.93
Batteaux Road and Townley Street	Minor Stop	8:00 a.m. to 9:00 a.m.	0.71
		4:00 p.m. – 5:00 p.m.	0.89
Batteaux Road and N Nottawasaga (Concession 6)	Minor Stop	8:00 a.m. to 9:00 a.m.	0.73
		4:15 p.m. – 5:15 p.m.	0.90

Note1: County Road 124 is considered the major roadway at all intersections.

It is noted that the intersections of Batteaux Road and Townley Street as well as Batteaux Road and N Nottawasaga (Concession 6) have a low peak hour factor compared to that of County Road 124 and Batteaux Road/Melville Street. Should the arrival of vehicles be more consistent across the peak hour, whether on another day or in a future horizon, the operations of the intersection may be improved over the a.m. operations outlined herein.

HCM methodology prescribes a method for estimating the Level of Service, control delay, and volume-to-capacity of an intersection along with the approaches and movements of the intersection. The Level of Service (LOS) metric provides a general performance measure of the quality of the service from a driver's perspective and ranges a letter from "A" to "F"; "A" representing best performance and "F" representing worst performance. **Appendix C** contains the Level of Service definitions. Control delay is the additional time added per vehicle as a result of the intersection and its associated control (i.e. Traffic Light / Stop Control) compared to the average speed on the adjoining roadway segments. Finally, volume-to-capacity ratio indicates the fraction of the capacity for a particular movement used by traffic volumes at an intersection.

2.5 Intersection Operations

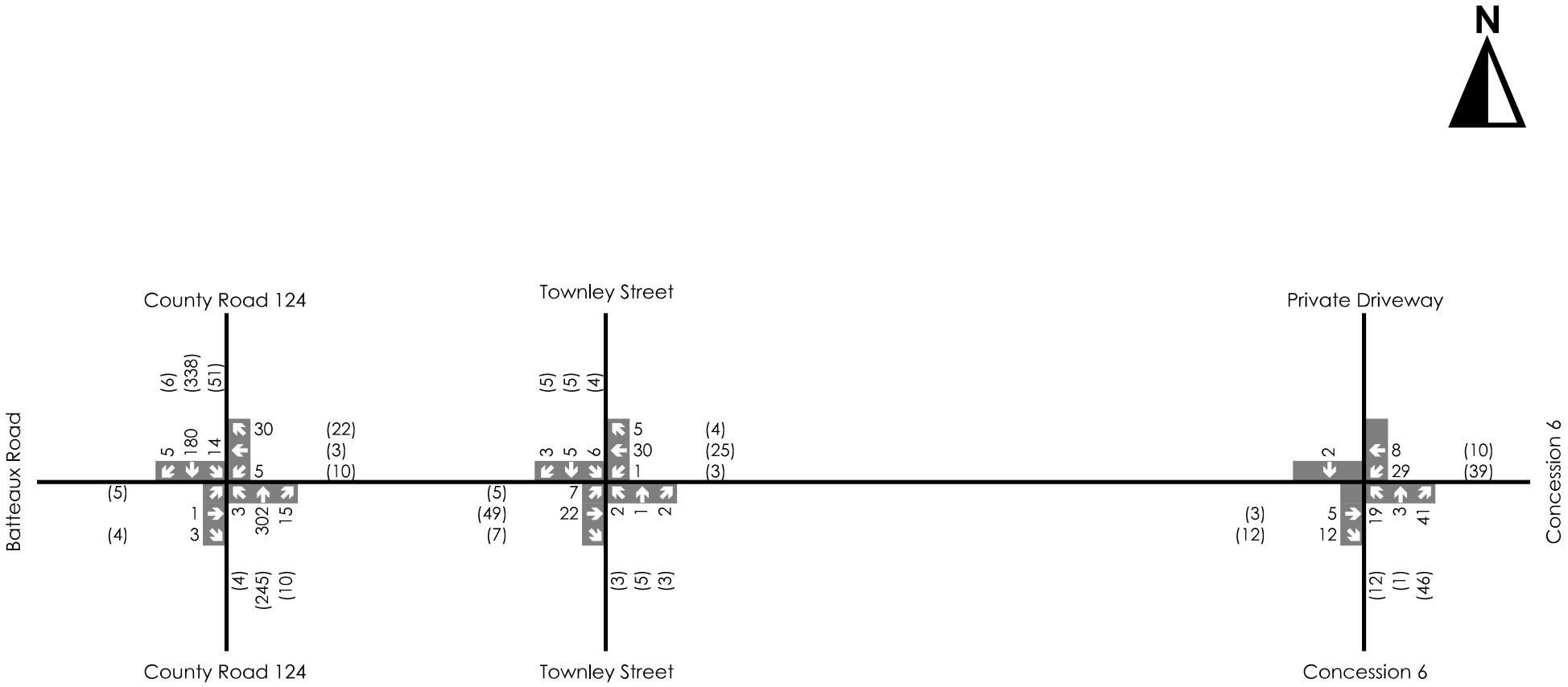
Table 3 outlines the 2025 existing conditions traffic operations at the unsignalized study intersections. **Figure 3** illustrates the 2025 existing conditions traffic volumes used in the operational analysis. **Appendix D** contains the detailed capacity analysis worksheets.

Table 3: 2025 Existing Conditions Traffic Operations

Intersection (control)	Movement	Performance Metrics					
		Weekday AM			Weekday PM		
		LOS	Delay (s)	v/c ratio	LOS	Delay (s)	v/c ratio
Batteaux Road and County Road 124 (minor stop)	**Overall[1]**	**B**	**-**	**-**	**B**	**-**	**-**
	EB	B	10.2	0.01	B	14.4	0.02
	WB	B	10.8	0.05	B	12.8	0.08
	NB	A	0.1	0.00	A	0.1	0.00
	SB	A	0.6	0.01	A	1.4	0.04
Batteaux Road and Townley Street (minor stop)	**Overall[1]**	**A**	**-**	**-**	**A**	**-**	**-**
	EB	A	1.8	0.01	A	0.7	0.00
	WB	A	0.2	0.00	A	0.6	0.00
	NB	A	9.0	0.01	A	9.3	0.01
	SB	A	9.3	0.02	A	9.2	0.02
Batteaux Road and Concession 6 (minor stop)	**Overall[1]**	**A**	**-**	**-**	**A**	**-**	**-**
	EB	-	0.0	0.01	-	0.0	0.01
	WB	A	5.8	0.03	A	5.9	0.03
	NB	A	9.0	0.08	A	8.7	0.06

Note 1: The overall Level of Service of a two-way stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000).

The two-way stop-controlled intersection of Batteaux Road/Melville Street and County Road 124 and Batteaux Road/Melville Street is operating at an LOS "B" during the weekday a.m. and p.m. peak hour. All other study intersections are operating at a LOS "A" during the peak hours. The intersections experience minimal delays on the minor street approaches under existing conditions.



Legend	57 Batteaux Road	CROZIER CONSULTING ENGINEERS	Figure 3
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2025 Existing Traffic Volumes		Project No. 1953-6180 Date. February 2026 Analyst. S.A

3.0 Future Background Conditions

This section summarizes the future background conditions of the study road network. As established in **Section 1.4** (per the Terms of Reference), this study considers the 2034 horizon year for the future background traffic analysis, the results of which are summarized in **Section 3.4**.

3.1 Future Transportation Network

No capacity improvements have been identified for the study roadways within the study horizons. Any external improvements triggered by the proposed development are discussed in **Section 5.0.**

3.2 Growth Rates

As outlined in the Term of Reference, the previous growth rate of 2.5% utilized in the TIS for the Georgian Communities Development (2024) has been applied.

3.3 Background Developments

The Georgian Communities Subdivision, Nottawa Development has forecasted trips travelling past the site on Batteaux Road. The forecasted volumes have been incorporated into the future background volumes for all horizon years. **Table 4** summarizes the background developments requested by the County.

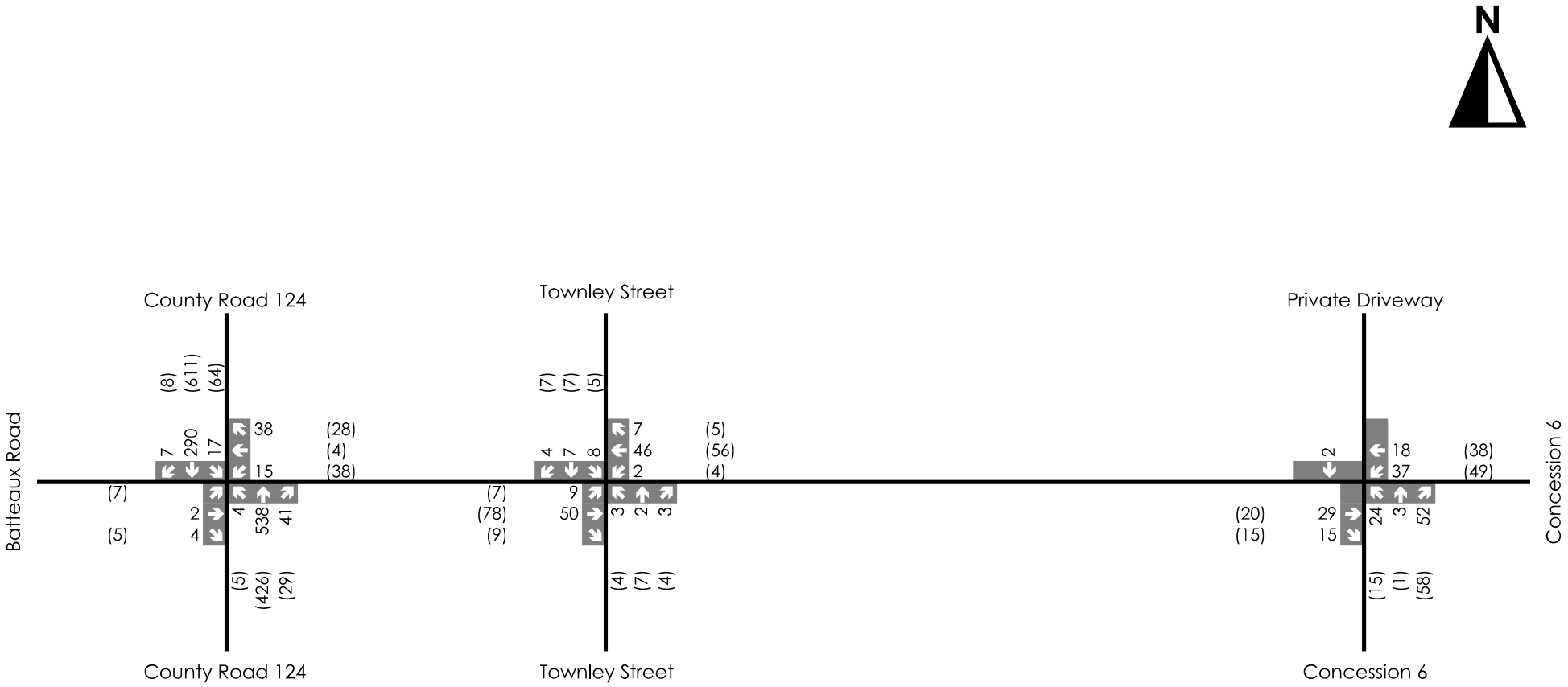
Table 4: Summary of Background Development

Development	Land Use & Site Statistics	Build-out Horizons	Background Report/Reference
Georgian Communities Subdivision - Nottawa Development	• 308 residential condominiums units • 192 residential units • Mixed use space (5.6 ha) • Industrial/open space (19.8 ha) • Stormwater management facility • Park space	Phase 1 - 2026 FBO - 2034	TIS (Crozier, April 2024)

Appendix B contains background development excerpts.

3.4 Intersection Operations

Table 5 outlines the 2034 future background traffic operations for the stop-controlled study intersections. **Appendix D** contains the detailed capacity analysis worksheets. The 2034 future background traffic volumes are illustrated in **Figure 4.**



Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

57 Batteaux Road

2034 Future Background Traffic Volumes

CROZIER CONSULTING ENGINEERS

Figure 4

Project No. 1953-6180
Date. February 2026
Analyst. S.A

Table 5: 2034 Future Background Traffic Operations

Intersection (control)	Movement	Performance Metrics					
		Weekday AM			Weekday PM		
		LOS	Delay (s)	v/c ratio	LOS	Delay (s)	v/c ratio
Batteaux Road and County Road 124 (minor stop)	**Overall[1]**	**C**	**-**	**-**	**D**	**-**	**-**
	EB	B	13.0	0.01	D	28.5	0.08
	WB	C	15.6	0.14	D	34.9	0.39
	NB	A	0.1	0.00	A	0.2	0.01
	SB	A	0.7	0.02	A	1.6	0.06
Batteaux Road and Townley Street (minor stop)	**Overall[1]**	**A**	**-**	**-**	**A**	**-**	**-**
	EB	A	1.2	0.01	A	0.6	0.01
	WB	A	0.3	0.00	A	0.4	0.00
	NB	A	9.5	0.01	A	9.8	0.02
	SB	A	9.7	0.03	A	9.6	0.03
Batteaux Road and Concession 6 (minor stop)	**Overall[1]**	**A**	**-**	**-**	**A**	**-**	**-**
	EB	-	0.0	0.04	-	0.0	0.02
	WB	A	5.1	0.03	A	4.3	0.03
	NB	A	9.4	0.11	A	9.0	0.08

Note 1: The overall Level of Service of a two-way stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000).

Under the 2034 future background horizon the intersection of Batteaux Road/ Melville Street and County Road 124 is forecasted to operate with a LOS "C" (WB) and LOS "D" (EB/WB) in the a.m. and p.m. peak hours, respectively, with minimal delay.

The intersections of both Batteaux Road and Townley Street and Batteaux Road and Concession 6 are both expected to operate with a LOS "A" or better in the 2034 future background horizon.

4.0 Site Generated Traffic

The proposed development will result in additional turning movements at the study intersections. Therefore, this section describes the trip forecasting methodology and results of forecast for the development proposal.

The site generated traffic forecasting methodology for this study consists of two steps. The first step, trip generation, projects the number of trips that originate or are destined for the proposed development, while the second step, trip distribution and assignment, assigns trips to the study road network based on the expected distribution of trips to catchment areas and expected shortest paths for trips destined for particular locations.

4.1 Trip Generation

As noted, the development is proposed to consist 47 single-detached residential dwelling units. The trip generation was forecasted using published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. The fitted curve equations for Land Use Category (LUC) 210 "Single Family Detached Housing" was applied to the proposed residential dwelling units.

The forecasted trip generation of the proposed mixed-use development is summarized in **Table 6**.

Table 6: Trip Generation

Land Use Category	Units/GFA	Equation/Rate	Weekday Peak Hour	Trips Generated		
				In	Out	Total
LUC 210: Single Family Dwelling	47	Ln(T)=0.91Ln(X)+0.12	A.M.	9	28	**37**
		Ln(T)=0.94Ln(X)+0.27	P.M.	31	18	**49**

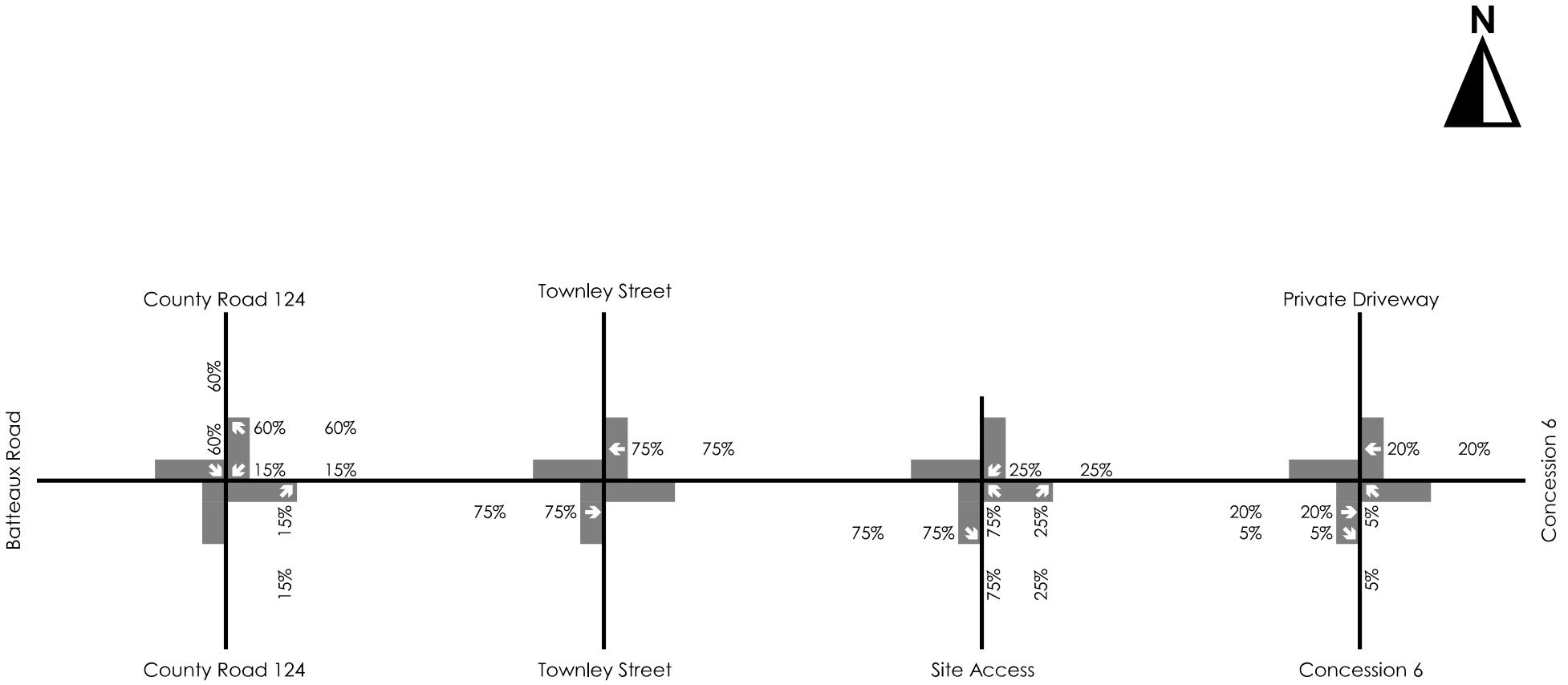
Therefore, the full build-out of the proposed development is expected to generate a total of 37 and 49 two-way trips during the weekday a.m. and p.m. peak hours, respectively.

4.2 Trip Distribution and Assignment

The trips generated by the proposed development were distributed to the study road network based on the existing distribution of trips to and from the surrounding residential areas. The residential trips were distributed as follows:

- 15% to and from the south via County Road 124
- 5% to/from the south via Concession 6
- 60% to and from the north via County Road 124
- 20% to/from the north via Concession 6

Figure 9 and **Figure 10** outline the trip distribution and assignment, respectively.



Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

57 Batteaux Road

Trip Distribution

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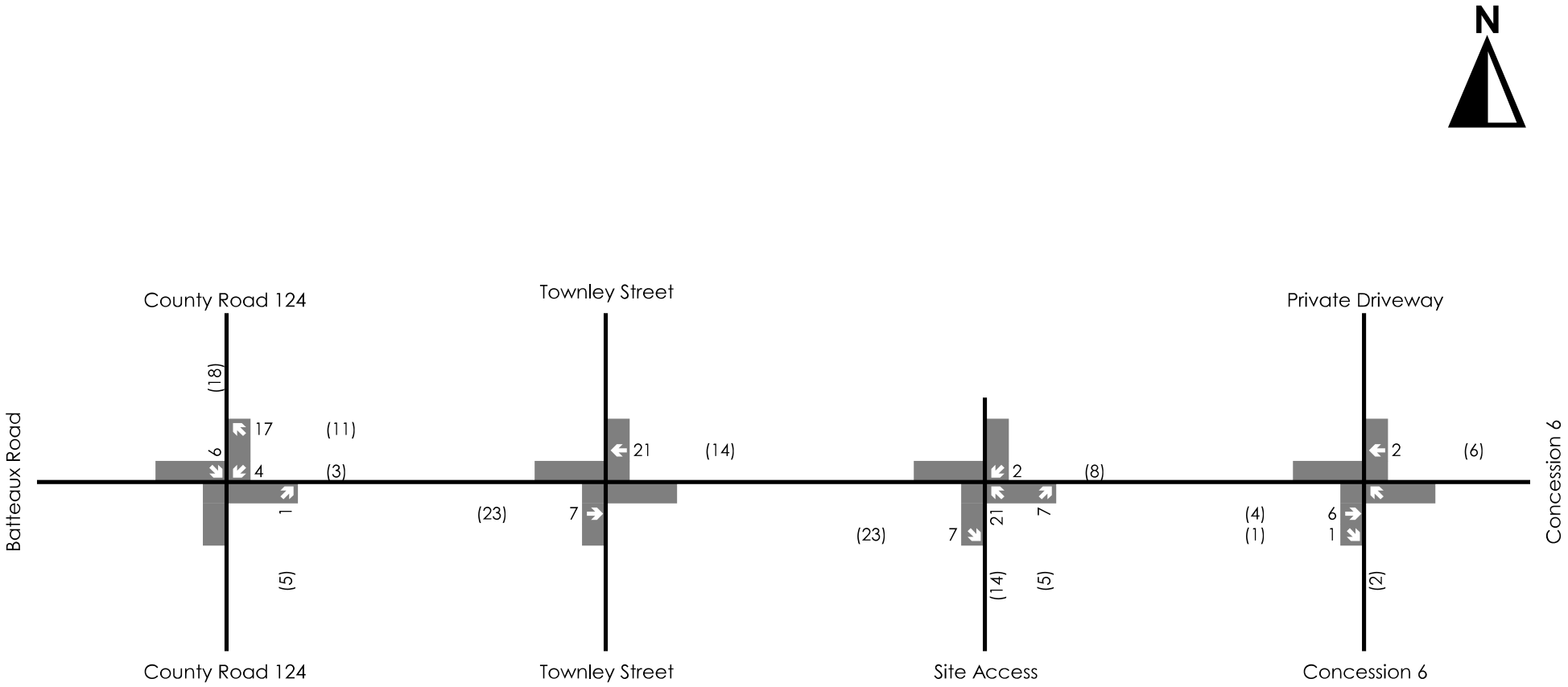
Figure 5

Project No. 1953-6180
Date. February 2026
Analyst. S.A



Legend	57 Batteaux Road	CROZIER CONSULTING ENGINEERS	Figure 6
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Trip Assignment		Project No. 1953-6180 Date. February 2026 Analyst. S.A

5.0 Future Total Conditions

This section will summarize the future total conditions of the study road network. The future total traffic volumes for the horizon years consist of the following components:

- Future background traffic volumes from the corresponding horizon year.
- Proposed development site generated traffic volumes.

The resulting total volumes in the horizon years 2034 is presented in **Figure 7**.

5.1 Signal Warrant Assessment

Based on the forecasted future total operations outlined in **Section 5.3**, a signal warrant was conducted for the intersection of County Road 124 & Batteaux Road/Melville Street. Adjacent intersections and the proposed site accesses are expected to operate acceptably under the final horizon year and as such no signal warrant was conducted at those locations.

As consistent with comments provided for the Georgian Communities Nottawa Development, "free flow" conditions under Justification 1, 2, and 3 from Book 12 of OTM have been conservatively assessed. To complete the warrant, the projected future traffic volumes at the intersection were used.

Table 7: Justification 1, 2, 3 Signal Warrants (2034 Future Total)

Intersection	Justification	Compliance A	Compliance B	Signal Justified
County Road 124 & Batteaux Road/ Melville Street	1	96%	54%	No
	2	95%	53%	
	3	54%	53%	

As presented in **Table 7,** signals are not justified under 2034 future total conditions at the intersection of County Road 124 & Batteaux Road/Melville Street. It is noted that under urban "non-free flow" conditions a traffic signal remains unwarranted. The signal warrant has been included in **Appendix E**.

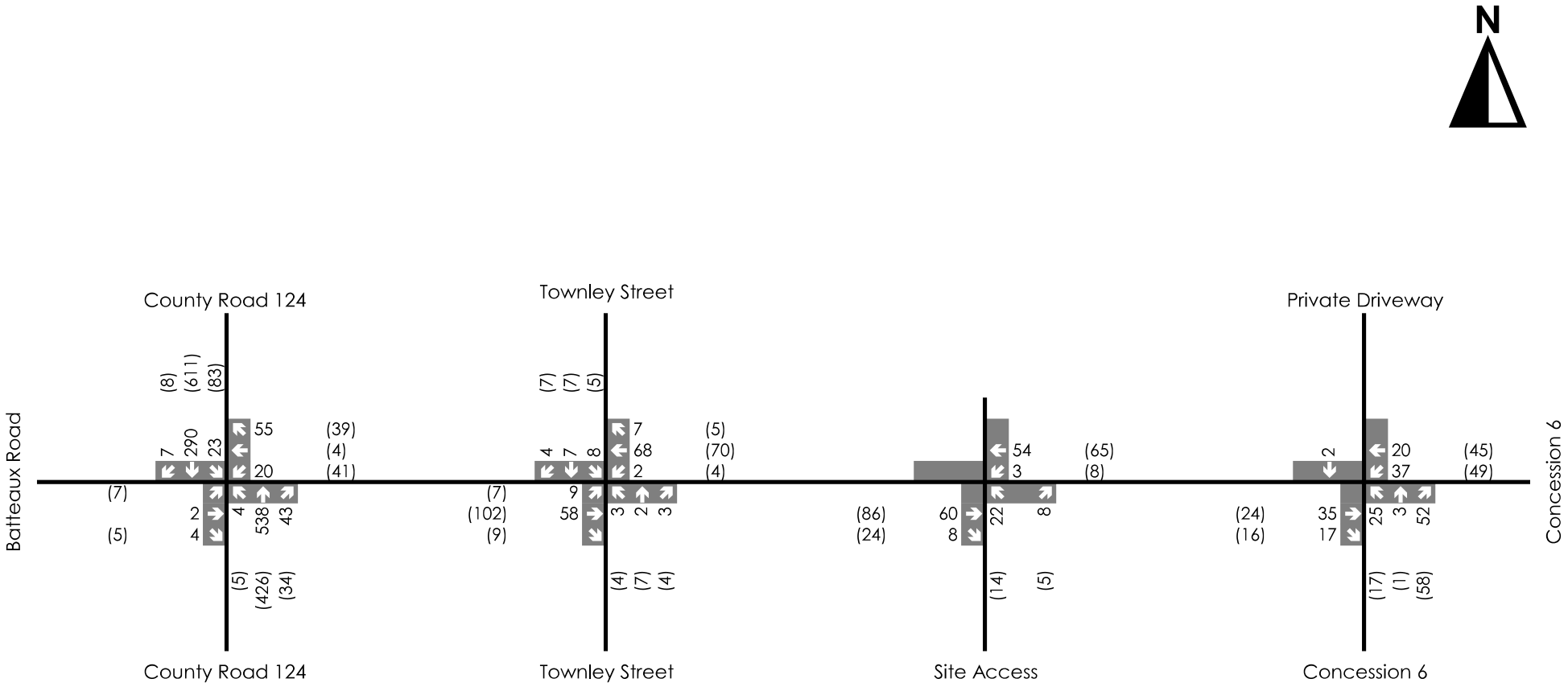
5.2 Auxiliary Turn-Lane Warrants Assessment

Left-turn lane warrants were conducted for the westbound left-turn movement at the intersection of Batteaux Road and Street "A" based on Section 9.17 in the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads – June 2017. It was found that left-turn lanes are not warranted to support the build-out of the development.

Table 8: Left-Turn Lane Warrants

Horizon	Intersection	A.M. Peak Hour				P.M. Peak Hour			
		VA	VO	%LT	Warranted	VA	VO	%LT	Warranted
2034	CR 124 & Street A	57	68	5%	No Ex 9A-7	73	110	11%	No Ex 9A-7

Based on the warrants, a westbound left turn lane is not warranted. Left-turn lane warrants are included in **Appendix F.**



Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

57 Batteaux Road

2034 Future Total Traffic Volumes

CROZIER CONSULTING ENGINEERS

Figure 7

Project No. 1953-6180
Date. February 2026
Analyst. S.A

5.3 Intersection Operations

Table 9 outlines the 2034 future total traffic operations for the unsignalized study intersections. Synchro 11 was used to determine intersection operations of the study intersections. **Appendix D** contains the detailed capacity analysis worksheets.

Table 9: 2034 Future Total Traffic Operations

Intersection (control)	Movement	Performance Metrics					
		Weekday AM			Weekday PM		
		LOS	Delay (s)	v/c ratio	LOS	Delay (s)	v/c ratio
Batteaux Road and County Road 124 (minor stop)	**Overall[1]**	**C**	**-**	**-**	**E**	**-**	**-**
	EB	B	13.1	0.01	D	31.4	0.09
	WB	C	16.5	0.20	E	38.5	0.46
	NB	A	0.1	0.00	A	0.2	0.01
	SB	A	0.9	0.02	A	2.1	0.08
Batteaux Road and Townley Street (minor stop)	**Overall[1]**	**B**	**-**	**-**	**B**	**-**	**-**
	EB	A	1.1	0.01	A	0.5	0.01
	WB	A	0.2	0.00	A	0.4	0.00
	NB	A	9.7	0.01	B	10.1	0.02
	SB	B	10.0	0.04	A	9.8	0.03
Batteaux Road and Concession 6 (minor stop)	**Overall[1]**	**A**	**-**	**-**	**A**	**-**	**-**
	EB	-	0.0	0.04	-	0.0	0.03
	WB	A	5.0	0.03	A	4.0	0.03
	NB	A	9.4	0.11	A	9.1	0.09
Batteaux Road and Street A (minor stop)	**Overall**	**A**	**-**	**-**	**A**	**-**	**-**
	EB	-	0.0	0.04	-	0.0	0.07
	EB	A	0.4	0.00	A	0.9	0.01
	NB	A	9.2	0.04	A	9.5	0.02

Note 1: The overall Level of Service of a two-way stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000).

Under the 2034 future total horizon, the intersection of Batteaux Road/ Melville Street and County Road 124 is forecasted to operate with a LOS "C" (WB) and LOS "E" (WB) in the a.m. and p.m. peak hours, respectively. The westbound movement is forecasted to experience an increase in delay of 3.6 s over the 2034 future background conditions. These operations are typical for stop-controlled minor roadways which conflict with free-flowing major roadways that experience higher peak hour volumes.

All other study intersections are expected to operate with a LOS "B" of better in the 2034 future total horizon. The above metrics indicate that the study road network can accommodate site generated traffic.

6.0 Site Access Safety Review

The development proposal includes one access to Batteaux Road that will provide transportation access to and from the site. This section evaluates the suitability of the site access from a transportation safety perspective and recommends mitigation measures, if warranted.

6.1 Intersection Sight Distance

Section 9.9 of the TAC GDGCR provides intersection sight distance for different intersection control types. The calculated and design sight distances are further summarized in TAC GDGCR Tables 9.9.4 and 9.9.6 for vehicles turning left from stop or turning right from stop, respectively.

Case B1 (Left Turn from the Minor Road) and Case B2 (Right Turn from Minor Road) were used to evaluate sightline adequacy for the site accesses. **Table 10** outlines the sight distance requirements and compares them to the available sight distance, which was measured using online GIS software. **Appendix G** contains relevant TAC GDGCR excerpts.

Table 10: Intersection Sight Distance Assessment

Batteaux Road and Street "A" Design Speed = 60 km/h		
Formula	ISD = 0.278 * V_{major} * t_g	
Feature	Case B1 – Left Turn	Case B2 – Right Turn
Time Gap[1]	Left Turn: 8.0s	Right Turn: 6.5s
Required Sight Distance	130 m (looking east)	110 m (looking west)
Available Sight Distance	~150 m (looking east)	~250 m (looking west)

Note 1: To calculate Time Gap, base time gap is required. This default parameter is based on particular turning cases (such as Case B1 and Case B2) and particular design vehicles. Roadways with more than one lane per direction require additions of 0.5s and 0.7s per addition lane for passenger car and truck design vehicles, respectively. For minor street approach upgrades that exceed 3%, additions of 0.2s and 0.1s for Case B1 and Case B2, respectively, are required per percent grade. Refer to Section 9.9 of TAC-GDGCR for additional details.

The available sight distance on Batteaux Road at the site access exceeds the minimum sight distance requirements. Accordingly, the proposed Street "A" connection can be supported from an intersection sight distance perspective.

6.2 Stopping Sight Distance

For level roadways, the stopping sight distance requirements are tabulated in Table 2.5.2 of TAC GDGCR. **Table 11** outlines the information used in the calculation of the required distance. **Appendix G** contains relevant TAC GDGCR excerpts.

Table 11: Stopping Sight Distance Assessment

Batteaux Road and Street "A" Design Speed = 60 km/h	
Formula (TAC GDGCR 2.5.2)	**SSD = 0.278 * V * t + 0.039 * (V^2/a)**
Brake Reaction Time (t)	2.5 s
Deceleration Rate (a)	3.4 m/s^2
Required Stopping Sight Distance	85 m
Available Sight Distance	~150 m

Clear visibility for 150 metres is available to the east and west of the proposed site access. Accordingly, there is sufficient stopping sight distance for vehicles approaching from the north and south of the site accesses.

7.0 Active Transportation Review

Under existing conditions there are sidewalks present on the south side of Batteaux Road connecting to the development lands. There are no other active transportation facilities such as bike lanes on the external road network, and it is assumed the roadways provided shared infrastructure.

The proposed 20 m Right-of-Way can accommodate a 1.5 m sidewalk in the southeast side of the roadway, as illustrated in the Township of Clearview's Engineering Standards (STD-R2 and STD-R3). The internal sidewalk will provide connectivity to the external pedestrian infrastructure.

8.0 Conclusions

The analysis contained within this study has resulted in the following key findings:

- Under the 2025 existing conditions scenario:
    - The two-way stop-controlled intersection of County Road 124 and Batteaux Road/Melville Street is operating at an LOS "B" (EB/WB) during the weekday a.m. and p.m. peak hour.
    - All other study intersections are operating at a LOS "A" during the peak hours. The intersections experience minimal delays on the minor street approaches.
- Under 2034 future background conditions:
    - The intersection of County Road 124 and Batteaux Road/ Melville Street is forecasted to operate with a LOS "C" (WB) and LOS "D" (EB/WB) in the a.m. and p.m. peak hours respectively.
    - All other study intersections are expected to operate with a LOS "A" during the a.m. and p.m. peak hours.
- The proposed residential development is projected to generate a total of 37 and 49 two-way auto trips during the weekday a.m. and p.m. peak hours, respectively.
- Under the ultimate horizon 2034 future total conditions:
    - A westbound left-turn lane is not warranted at the intersection of Batteaux Road and Street "A".
    - The intersection of County Road 124 & Batteaux Road/Melville Street does not warrant traffic signals.
    - The intersection of County Road 124 and Batteaux Road/ Melville Street is forecasted to operate with a LOS "C" (WB) and LOS "E" (WB) in the a.m. and p.m. peak hours, respectively. A maximum delay of 39 s is forecasted for the westbound movements,

which reflects a delay of 3.6 s over the 2034 future background conditions

- All other study intersections are operating at a LOS "B" or better during the peak hours. The intersections experience minimal delays on the minor street approaches.

- Analysis of intersection and stopping sight distance found more than adequate sight distance is available, and the access can be supported from a sight distance perspective.

The analysis undertaken was prepared using the Draft Plan of Subdivision prepared by Celeste Phillips, dated June 19th, 2025. Any minor changes to the plans will not materially affect the conclusions contained within this report.

In conclusion, the proposed residential development can be supported from a traffic operation and safety perspective.

Respectfully submitted by,

C.F. CROZIER & ASSOCIATES INC.

Kerianne Hagan, P.Eng
Project Engineer, Transportation
2026.02.18

C.F. CROZIER & ASSOCIATES INC.

Shaira Ahmed, EIT
Engineering Intern, Transportation

J:\1900\1953-Georgian Communities\6180- 57 Batteaux Rd\Reports\Transportation\1st Submission\2026.02.20_57 Batteaux Rd Transportation Impact Study.docx

APPENDIX A

Terms of Reference Correspondence

Shaira Ahmed

From: Kerianne Hagan
Sent: August 18, 2025 5:04 PM
To: Dan Perreault; Chris Doherty
Cc: Shaira Ahmed
Subject: RE: Terms of Reference: 57 Batteaux Road (CFCA#1953-6180)

Good Afternoon,

Thank you, Dan and Chris, for your review of the TOR. We will include the requested intersections in our study.

Have a good evening,
Kerianne

Kerianne Hagan, P.Eng.
Project Engineer, Transportation
DID: 705.434.3407

From: Dan Perreault <dperreault@clearview.ca>
Sent: August 18, 2025 1:31 PM
To: Chris Doherty <chris.doherty@simcoe.ca>; Shaira Ahmed <sahmed@cfcrozier.ca>
Cc: Kerianne Hagan <khagan@cfcrozier.ca>
Subject: Re: Terms of Reference: 57 Batteaux Road (CFCA#1953-6180)

Hello Shakira,

I concur with Chris that the TOR looks good for this development.

Can you please add the intersection of Batteaux Road and Concession 6 North to the study.

Dan Perreault, C.E.T.
Director of Public Works
Township of Clearview
dperreault@clearview.ca
O: 705-424-0140,x606
C: 705-441-4106

From: Doherty, Chris <Chris.Doherty@simcoe.ca>
Sent: Monday, August 18, 2025 11:34:44 AM
To: Shaira Ahmed <sahmed@cfcrozier.ca>; Dan Perreault <dperreault@clearview.ca>
Cc: Kerianne Hagan <khagan@cfcrozier.ca>
Subject: RE: Terms of Reference: 57 Batteaux Road (CFCA#1953-6180)

Good morning Shaira,

Could you also add the intersection of County Road 124 and Batteaux Road to your study intersections, other than that, the TOR are acceptable.

Regards,

Chris Doherty, C. Tech.
Engineering Technician
County of Simcoe
Transportation and Engineering Department
Tel: 705-726-9300 Ext 1161
Fax: 705-727-7984

From: Shaira Ahmed <sahmed@cfcrozier.ca>
Sent: Thursday, August 14, 2025 3:15 PM
To: Doherty, Chris <Chris.Doherty@simcoe.ca>; Dan Perreault <dperreault@clearview.ca>
Cc: Kerianne Hagan <khagan@cfcrozier.ca>
Subject: Terms of Reference: 57 Batteaux Road (CFCA#1953-6180)

Hello,

I hope you are doing well. We are working with our Client to complete a Transportation Impact Study for the proposed residential development at 57 Batteaux Road in the Township of Clearview (Town), County of Simcoe (County). The development concept proposes 39 single detached residential units and access to the development is proposed by one (1) full-moves access along Batteaux Road.

Study Intersections

- We propose the following study intersections:
    - Batteaux Road and Townley Street
    - Batteaux Road and Hurontario Street
    - Batteaux Road and Site Access

Existing Conditions

- We will consult specialty traffic counting firms we typically work with to obtain traffic data for the intersections listed above.
- We will analyze the weekday a.m. and p.m. peak periods; 7:00 a.m. to 9:00 a.m. & 4:00 p.m. to 7:00 p.m.; reflective of the typical commuter peak periods.

Study Horizons

- We will analyze the current year (2025) and 2034 (full build-out)
- **Please confirm if these horizon years are adequate.**

Growth Rates

- A growth rate of 2.5% was utilized in the TIS for the Georgian Communities development, we will use the same growth rate as was applied for this study.
- We will also review the traffic data collected in 2024 and the new data collected in 2025 to determine the growth and seasonal variation.

Background Developments

- We will include the following as a background development in our analysis:
    - Georgian Communities Subdivision, Nottawa Development

Please confirm if any other background developments should be included in the analysis. If there are developments that need to be considered, please provide the associated transportation impact studies that should be included in our analysis.

Future Background Conditions

- We will forecast the 2034 future background vehicle traffic volumes based on the above growth rates (and any background developments requested by the Town).
- Future background vehicle traffic volumes will be analyzed based on Synchro, LOS (based on control delays) and maximum volume-to-capacity ratios.

Future Total Conditions

- Trip Distribution will be based on Transportation Tomorrow Survey (TTS) data and/or existing travel patterns.
- Trip Generation will be based on ITE Trip Generation Manual, 11th edition using Land Use Category 210 – Single Detached Family
    - The site is expected to generate 32 and 41 new net a.m. and p.m. peak hour trips.
- Future total vehicle traffic volumes will be analyzed based on Synchro, LOS (based on control delays) and maximum volume-to-capacity ratios.
- Future background and future total conditions will be compared to identify if capacity and queuing issues are forecasted and if site-specific mitigation measures are required.

Traffic Safety

- The available sight distance at the site access will be compared to standards set out by the Transportation Associates of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).
- The supportability of the site access location and restrictions will be reviewed based on traffic operations and expected queue lengths, as well as applicable access spacing guidelines.

Transportation Demand Management (TDM) Review

- The existing and proposed active transportation network and connections will be reviewed.

I hope the contents outlined in this email are acceptable. If there are any questions, please feel free to contact myself.

Regards,

Shaira Ahmed
Engineering Intern, Transportation
Office: 905.693.4706
Collingwood | Milton | Toronto | Bradford | Guelph

APPENDIX B

Transportation Data

Spectrum

Turning Movement Count
Location Name: BATTEAUX RD & HURONTARIO ST
Date: Tue, Aug 19, 2025 Deployment Lead: Rey Fernandez

Crozier & Associates
SUITE 301 211 YONGE
STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Turning Movement Count (1 . BATTEAUX RD & HURONTARIO ST)

Start Time	N Approach COUNTY RD 124						E Approach BATTEAUX RD						S Approach COUNTY RD 124						W Approach BATTEAUX RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-08-19 06:00:00	0	8	1	0	0	9	3	0	0	0	0	3	0	13	0	0	0	13	0	0	0	0	0	0	25	
2025-08-19 06:15:00	1	11	0	0	0	12	0	0	0	0	0	0	0	19	0	0	0	19	0	0	1	0	0	1	32	
2025-08-19 06:30:00	0	19	1	0	0	20	6	0	0	0	0	6	0	33	0	0	0	33	0	0	0	0	0	0	59	
2025-08-19 06:45:00	0	29	1	0	0	30	4	0	0	0	0	4	1	44	0	0	0	45	0	0	0	0	0	0	79	195
2025-08-19 07:00:00	1	34	4	0	0	39	3	0	0	0	0	3	0	47	0	0	0	47	0	0	0	0	0	0	89	259
2025-08-19 07:15:00	0	27	2	0	0	29	5	0	1	0	1	6	0	51	0	0	0	51	0	0	0	0	0	0	86	313
2025-08-19 07:30:00	1	47	3	0	0	51	5	0	1	0	0	6	1	59	0	0	1	60	0	0	1	0	0	1	118	372
2025-08-19 07:45:00	1	40	6	0	0	47	10	0	1	0	0	11	1	67	0	0	0	68	1	0	0	0	0	1	127	420
2025-08-19 08:00:00	0	45	3	0	0	48	3	0	1	0	0	4	2	73	2	0	0	77	1	1	0	0	0	2	131	462
2025-08-19 08:15:00	1	45	2	0	0	48	4	0	1	0	0	5	3	77	0	0	0	80	1	0	0	0	0	1	134	510
2025-08-19 08:30:00	1	44	1	0	4	46	7	0	2	0	0	9	3	80	1	0	1	84	1	0	0	0	0	1	140	532
2025-08-19 08:45:00	3	46	4	0	0	53	8	0	0	0	0	8	3	72	0	0	0	75	0	0	0	0	0	0	136	541
BREAK																										
2025-08-19 16:00:00	3	84	8	1	0	96	3	1	3	0	0	7	2	68	2	1	0	73	0	0	0	0	0	0	176	
2025-08-19 16:15:00	2	75	6	0	0	83	5	0	3	0	0	8	0	62	1	0	0	63	1	0	2	0	0	3	157	
2025-08-19 16:30:00	2	74	9	0	0	85	3	2	0	0	0	5	0	82	2	0	0	84	2	0	3	0	0	5	179	
2025-08-19 16:45:00	0	81	6	1	0	88	4	0	4	0	0	8	0	50	1	0	0	51	1	0	0	0	0	1	148	660
2025-08-19 17:00:00	0	86	8	0	0	94	3	0	1	0	0	4	5	55	1	1	0	62	0	0	2	0	0	2	162	646
2025-08-19 17:15:00	4	97	11	0	0	112	5	1	2	0	0	8	2	58	0	0	0	60	1	0	0	0	0	1	181	670
2025-08-19 17:30:00	0	51	5	0	0	56	4	0	3	0	0	7	0	49	0	1	0	50	2	0	1	0	0	3	116	607
2025-08-19 17:45:00	0	54	2	0	0	56	2	1	1	0	0	4	0	49	0	0	0	49	0	0	2	0	0	2	111	570
2025-08-19 18:00:00	1	52	1	0	0	54	3	0	1	0	0	4	0	45	1	0	0	46	1	1	2	0	0	4	108	516
2025-08-19 18:15:00	1	47	2	0	0	50	1	1	0	0	0	2	0	51	0	0	0	51	1	0	1	0	0	2	105	440
2025-08-19 18:30:00	0	30	4	0	0	34	5	0	3	0	0	8	3	34	0	0	0	37	1	0	0	0	0	1	80	404
2025-08-19 18:45:00	1	27	5	0	0	33	3	1	0	0	0	4	1	23	2	0	0	26	0	0	0	0	0	0	63	356
Grand Total	23	1153	95	2	4	1273	99	7	28	0	1	134	27	1261	13	3	2	1304	14	2	15	0	0	31	**2742**	-
Approach%	1.8%	90.6%	7.5%	0.2%		-	73.9%	5.2%	20.9%	0%		-	2.1%	96.7%	1%	0.2%		-	45.2%	6.5%	48.4%	0%		-	-	-
Totals %	0.8%	42%	3.5%	0.1%		46.4%	3.6%	0.3%	1%	0%		4.9%	1%	46%	0.5%	0.1%		47.6%	0.5%	0.1%	0.5%	0%		1.1%	-	-
Heavy	1	66	0	0		-	1	0	1	0		-	0	98	1	0		-	0	0	0	0		-	-	-
Heavy %	4.3%	5.7%	0%	0%		-	1%	0%	3.6%	0%		-	0%	7.8%	7.7%	0%		-	0%	0%	0%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Crozier & Associates
SUITE 301 211 YONGE STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (16 °C)

Start Time	N Approach COUNTY RD 124						E Approach BATTEAUX RD						S Approach COUNTY RD 124						W Approach BATTEAUX RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-08-19 08:00:00	0	45	3	0	0	48	3	0	1	0	0	4	2	73	2	0	0	77	1	1	0	0	0	2	131
2025-08-19 08:15:00	1	45	2	0	0	48	4	0	1	0	0	5	3	77	0	0	0	80	1	0	0	0	0	1	134
2025-08-19 08:30:00	1	44	1	0	4	46	7	0	2	0	0	9	3	80	1	0	1	84	1	0	0	0	0	1	140
2025-08-19 08:45:00	3	46	4	0	0	53	8	0	0	0	0	8	3	72	0	0	0	75	0	0	0	0	0	0	136
Grand Total	5	180	10	0	4	195	22	0	4	0	0	26	11	302	3	0	1	316	3	1	0	0	0	4	**541**
Approach%	2.6%	92.3%	5.1%	0%		-	84.6%	0%	15.4%	0%		-	3.5%	95.6%	0.9%	0%		-	75%	25%	0%	0%		-	**-**
Totals %	0.9%	33.3%	1.8%	0%		36%	4.1%	0%	0.7%	0%		4.8%	2%	55.8%	0.6%	0%		58.4%	0.6%	0.2%	0%	0%		0.7%	**-**
PHF	0.42	0.98	0.63	0		0.92	0.69	0	0.5	0		0.72	0.92	0.94	0.38	0		0.94	0.75	0.25	0	0		0.5	0.97
Heavy	1	22	0	0		23	1	0	0	0		1	0	24	0	0		24	0	0	0	0		0	48
Heavy %	20%	12.2%	0%	0%		11.8%	4.5%	0%	0%	0%		3.8%	0%	7.9%	0%	0%		7.6%	0%	0%	0%	0%		0%	8.9%
Lights	4	158	10	0		172	21	0	4	0		25	11	277	3	0		291	3	1	0	0		4	492
Lights %	80%	87.8%	100%	0%		88.2%	95.5%	0%	100%	0%		96.2%	100%	91.7%	100%	0%		92.1%	100%	100%	0%	0%		100%	90.9%
Single-Unit Trucks	0	15	0	0		15	0	0	0	0		0	0	18	0	0		18	0	0	0	0		0	33
Single-Unit Trucks %	0%	8.3%	0%	0%		7.7%	0%	0%	0%	0%		0%	0%	6%	0%	0%		5.7%	0%	0%	0%	0%		0%	6.1%
Buses	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1
Buses %	0%	0.6%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.2%
Articulated Trucks	1	6	0	0		7	1	0	0	0		1	0	6	0	0		6	0	0	0	0		0	14
Articulated Trucks %	20%	3.3%	0%	0%		3.6%	4.5%	0%	0%	0%		3.8%	0%	2%	0%	0%		1.9%	0%	0%	0%	0%		0%	2.6%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	1
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	0%	0%	0%	0%		0%	0.2%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	20%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	80%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: BATTEAUX RD & HURONTARIO ST
Date: Tue, Aug 19, 2025 Deployment Lead: Rey Fernandez

Crozier & Associates
SUITE 301 211 YONGE STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Heavy Intensity Rain (16 °C)

Start Time	N Approach COUNTY RD 124						E Approach BATTEAUX RD						S Approach COUNTY RD 124						W Approach BATTEAUX RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-08-19 16:30:00	2	74	9	0	0	85	3	2	0	0	0	5	0	82	2	0	0	84	2	0	3	0	0	5	179
2025-08-19 16:45:00	0	81	6	1	0	88	4	0	4	0	0	8	0	50	1	0	0	51	1	0	0	0	0	1	148
2025-08-19 17:00:00	0	86	8	0	0	94	3	0	1	0	0	4	5	55	1	1	0	62	0	0	2	0	0	2	162
2025-08-19 17:15:00	4	97	11	0	0	112	5	1	2	0	0	8	2	58	0	0	0	60	1	0	0	0	0	1	181
Grand Total	6	338	34	1	0	379	15	3	7	0	0	25	7	245	4	1	0	257	4	0	5	0	0	9	**670**
Approach%	1.6%	89.2%	9%	0.3%		-	60%	12%	28%	0%		-	2.7%	95.3%	1.6%	0.4%		-	44.4%	0%	55.6%	0%		-	**-**
Totals %	0.9%	50.4%	5.1%	0.1%		56.6%	2.2%	0.4%	1%	0%		3.7%	1%	36.6%	0.6%	0.1%		38.4%	0.6%	0%	0.7%	0%		1.3%	**-**
PHF	0.38	0.87	0.77	0.25		0.85	0.75	0.38	0.44	0		0.78	0.35	0.75	0.5	0.25		0.76	0.5	0	0.42	0		0.45	0.93
Heavy	0	11	0	0		11	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	17
Heavy %	0%	3.3%	0%	0%		2.9%	0%	0%	0%	0%		0%	0%	2.4%	0%	0%		2.3%	0%	0%	0%	0%		0%	2.5%
Lights	6	327	34	1		368	15	3	7	0		25	7	239	4	1		251	4	0	5	0		9	653
Lights %	100%	96.7%	100%	100%		97.1%	100%	100%	100%	0%		100%	100%	97.6%	100%	100%		97.7%	100%	0%	100%	0%		100%	97.5%
Single-Unit Trucks	0	5	0	0		5	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	8
Single-Unit Trucks %	0%	1.5%	0%	0%		1.3%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.2%	0%	0%	0%	0%		0%	1.2%
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Articulated Trucks	0	6	0	0		6	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	9
Articulated Trucks %	0%	1.8%	0%	0%		1.6%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.2%	0%	0%	0%	0%		0%	1.3%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 08:00 AM - 09:00 AM **Weather: Overcast Clouds (16 °C)**

Crozier & Associates
SUITE 301 211 YONGE
STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 04:30 PM - 05:30 PM **Weather: Heavy Intensity Rain (16 °C)**

Spectrum

Turning Movement Count
Location Name: BATTEAUX RD & TOWNLEY ST
Date: Tue, Aug 19, 2025 Deployment Lead: Rey Fernandez

Crozier & Associates
SUITE 301 211 YONGE
STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Turning Movement Count (2 . BATTEAUX RD & TOWNLEY ST)

Start Time	N Approach TOWNLEY ST						E Approach BATTEAUX RD						S Approach TOWNLEY ST						W Approach BATTEAUX RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-08-19 06:00:00	0	0	0	0	0	0	0	2	0	0	0	2	1	0	0	0	0	1	0	1	0	0	0	1	4	
2025-08-19 06:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2025-08-19 06:30:00	0	0	0	0	0	0	0	6	0	0	0	6	2	1	0	0	0	3	0	1	0	0	0	1	10	
2025-08-19 06:45:00	0	0	0	0	0	0	0	4	0	0	0	4	1	0	0	0	0	1	0	2	0	0	3	2	7	21
2025-08-19 07:00:00	0	0	0	0	0	0	0	3	0	0	0	3	0	0	1	0	0	1	0	3	0	0	0	3	7	24
2025-08-19 07:15:00	1	0	0	0	0	1	0	7	0	0	0	7	1	3	1	0	3	5	1	1	0	0	0	2	15	39
2025-08-19 07:30:00	1	1	1	0	0	3	0	7	0	0	0	7	0	0	0	0	2	0	0	5	0	0	0	5	15	44
2025-08-19 07:45:00	1	0	0	0	0	1	0	10	0	0	0	10	0	0	0	0	1	0	0	7	0	0	0	7	18	55
2025-08-19 08:00:00	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	2	0	0	4	1	0	0	5	8	56
2025-08-19 08:15:00	1	3	0	0	0	4	0	5	0	0	0	5	0	0	0	0	0	0	0	3	2	0	2	5	14	55
2025-08-19 08:30:00	1	1	4	0	0	6	3	10	0	0	0	13	1	0	2	0	0	3	0	1	1	0	1	2	24	64
2025-08-19 08:45:00	1	1	2	0	0	4	2	6	1	0	0	9	1	1	0	0	0	2	0	4	3	0	0	7	22	68
BREAK																										
2025-08-19 16:00:00	2	1	2	0	0	5	1	4	0	0	0	5	1	1	0	0	0	2	2	5	3	0	0	10	22	
2025-08-19 16:15:00	2	1	2	0	0	5	3	6	0	0	0	9	0	1	0	0	0	1	0	4	2	0	0	6	21	
2025-08-19 16:30:00	1	1	0	0	0	2	0	2	1	0	1	3	0	1	1	0	0	2	3	5	0	0	0	8	15	
2025-08-19 16:45:00	0	2	0	0	0	2	0	4	2	0	0	6	2	2	2	0	0	6	2	4	0	0	0	6	20	78
2025-08-19 17:00:00	0	1	0	0	0	1	0	2	0	0	0	2	0	1	1	0	0	2	1	10	1	0	0	12	17	73
2025-08-19 17:15:00	1	1	0	0	0	2	0	3	1	0	0	4	1	2	3	0	0	6	3	8	1	0	0	12	24	76
2025-08-19 17:30:00	2	0	1	0	0	3	1	4	2	0	0	7	0	1	0	0	0	1	0	4	0	0	0	4	15	76
2025-08-19 17:45:00	0	0	0	0	0	0	0	1	1	0	0	2	0	0	2	0	0	2	0	1	0	0	0	1	5	61
2025-08-19 18:00:00	0	0	0	0	0	0	0	4	1	0	0	5	1	1	0	0	0	2	0	1	1	0	0	2	9	53
2025-08-19 18:15:00	0	0	1	0	0	1	0	2	0	0	0	2	0	0	0	0	0	0	1	2	0	0	0	3	6	35
2025-08-19 18:30:00	0	2	0	0	0	2	0	5	0	0	1	5	0	0	2	0	0	2	1	3	1	0	0	5	14	34
2025-08-19 18:45:00	0	0	1	0	0	1	0	3	0	0	0	3	3	0	0	0	1	3	2	5	0	0	0	7	14	43
Grand Total	14	15	14	0	0	43	10	103	9	0	2	122	15	15	15	0	9	45	16	84	16	0	6	116	**326**	-
Approach%	32.6%	34.9%	32.6%	0%		-	8.2%	84.4%	7.4%	0%		-	33.3%	33.3%	33.3%	0%		-	13.8%	72.4%	13.8%	0%		-	-	-
Totals %	4.3%	4.6%	4.3%	0%		13.2%	3.1%	31.6%	2.8%	0%		37.4%	4.6%	4.6%	4.6%	0%		13.8%	4.9%	25.8%	4.9%	0%		35.6%	-	-
Heavy	0	0	0	0		-	0	0	0	0		-	0	0	1	0		-	0	0	0	0		-	-	-
Heavy %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	6.7%	0%		-	0%	0%	0%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: BATTEAUX RD & TOWNLEY ST
Date: Tue, Aug 19, 2025 Deployment Lead: Rey Fernandez

Crozier & Associates
SUITE 301 211 YONGE
STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (16 °C)

Start Time	N Approach TOWNLEY ST						E Approach BATTEAUX RD						S Approach TOWNLEY ST						W Approach BATTEAUX RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-08-19 08:00:00	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	2	0	0	4	1	0	0	5	8
2025-08-19 08:15:00	1	3	0	0	0	4	0	5	0	0	0	5	0	0	0	0	0	0	0	3	2	0	2	5	14
2025-08-19 08:30:00	1	1	4	0	0	6	3	10	0	0	0	13	1	0	2	0	0	3	0	1	1	0	1	2	24
2025-08-19 08:45:00	1	1	2	0	0	4	2	6	1	0	0	9	1	1	0	0	0	2	0	4	3	0	0	7	22
Grand Total	3	5	6	0	0	14	5	24	1	0	0	30	2	1	2	0	2	5	0	12	7	0	3	19	**68**
Approach%	21.4%	35.7%	42.9%	0%		-	16.7%	80%	3.3%	0%		-	40%	20%	40%	0%		-	0%	63.2%	36.8%	0%		-	-
Totals %	4.4%	7.4%	8.8%	0%		20.6%	7.4%	35.3%	1.5%	0%		44.1%	2.9%	1.5%	2.9%	0%		7.4%	0%	17.6%	10.3%	0%		27.9%	-
PHF	0.75	0.42	0.38	0		0.58	0.42	0.6	0.25	0		0.58	0.5	0.25	0.25	0		0.42	0	0.75	0.58	0		0.68	0.71
Heavy	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Lights	3	3	6	0		12	5	20	1	0		26	2	1	2	0		5	0	12	7	0		19	62
Lights %	100%	60%	100%	0%		85.7%	100%	83.3%	100%	0%		86.7%	100%	100%	100%	0%		100%	0%	100%	100%	0%		100%	91.2%
Articulated Trucks	0	0	0	0		0	0	0	0	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%	0%		0%	0%	0%	0%	0%		0%	0%
Bicycles on Road	0	2	0	0		2	0	4	0	0		4	0	0	0	0		0	0	0	0	0		0	6
Bicycles on Road %	0%	40%	0%	0%		14.3%	0%	16.7%	0%	0%		13.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	8.8%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	3	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	40%		-	-	-	-	60%		-

Spectrum

Turning Movement Count
Location Name: BATTEAUX RD & TOWNLEY ST
Date: Tue, Aug 19, 2025 Deployment Lead: Rey Fernandez

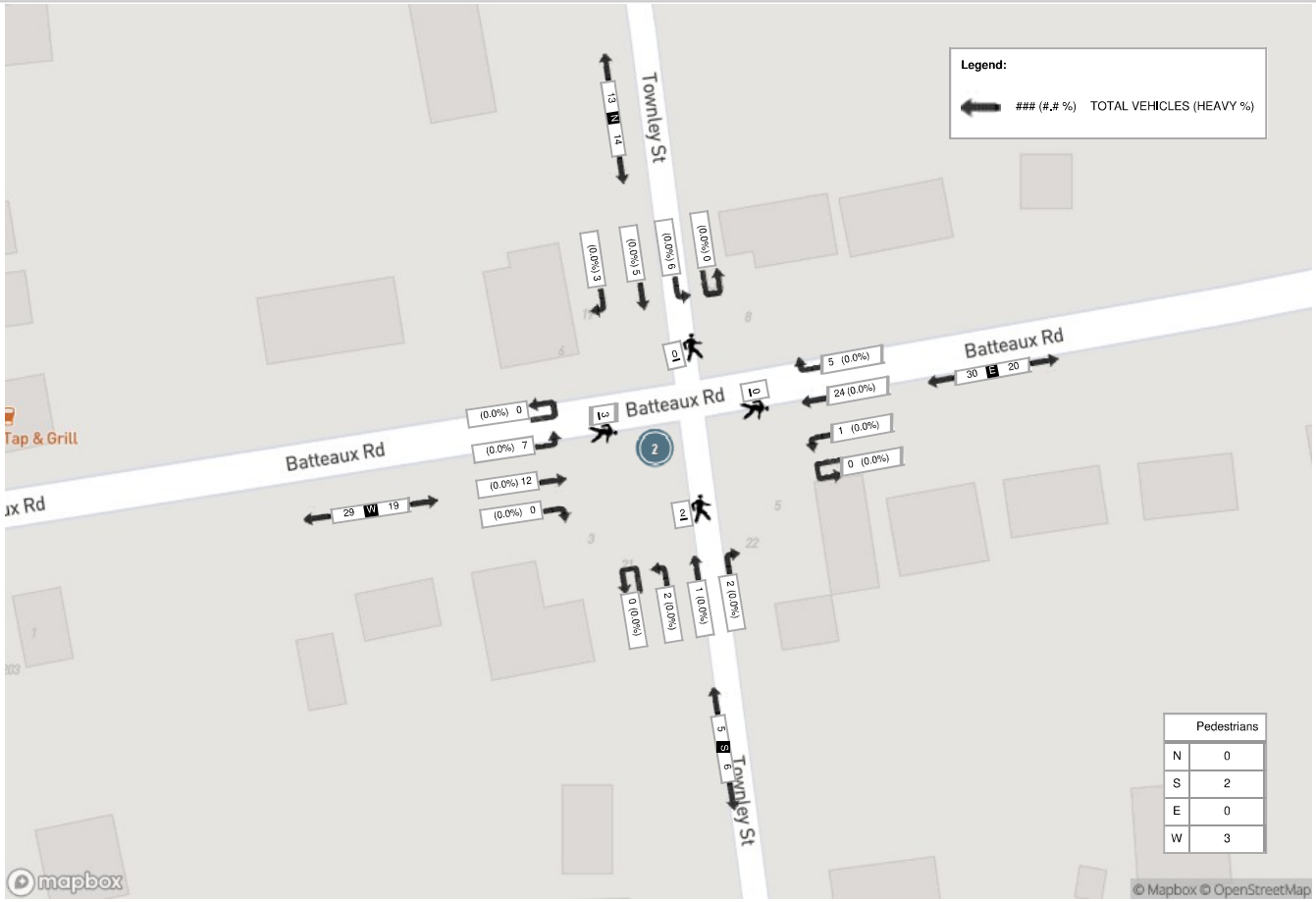
Crozier & Associates
SUITE 301 211 YONGE STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Heavy Intensity Rain (16 °C)

Start Time	N Approach TOWNLEY ST						E Approach BATTEAUX RD						S Approach TOWNLEY ST						W Approach BATTEAUX RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-08-19 16:00:00	2	1	2	0	0	5	1	4	0	0	0	5	1	1	0	0	0	2	2	5	3	0	0	10	22
2025-08-19 16:15:00	2	1	2	0	0	5	3	6	0	0	0	9	0	1	0	0	0	1	0	4	2	0	0	6	21
2025-08-19 16:30:00	1	1	0	0	0	2	0	2	1	0	1	3	0	1	1	0	0	2	3	5	0	0	0	8	15
2025-08-19 16:45:00	0	2	0	0	0	2	0	4	2	0	0	6	2	2	2	0	0	6	2	4	0	0	0	6	20
Grand Total	5	5	4	0	0	14	4	16	3	0	1	23	3	5	3	0	0	11	7	18	5	0	0	30	**78**
Approach%	35.7%	35.7%	28.6%	0%		-	17.4%	69.6%	13%	0%		-	27.3%	45.5%	27.3%	0%		-	23.3%	60%	16.7%	0%		-	**-**
Totals %	6.4%	6.4%	5.1%	0%		17.9%	5.1%	20.5%	3.8%	0%		29.5%	3.8%	6.4%	3.8%	0%		14.1%	9%	23.1%	6.4%	0%		38.5%	**-**
PHF	0.63	0.63	0.5	0		0.7	0.33	0.67	0.38	0		0.64	0.38	0.63	0.38	0		0.46	0.58	0.9	0.42	0		0.75	0.89
Heavy	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Lights	5	5	4	0		14	4	16	3	0		23	3	5	3	0		11	7	18	5	0		30	78
Lights %	100%	100%	100%	0%		100%	100%	100%	100%	0%		100%	100%	100%	100%	0%		100%	100%	100%	100%	0%		100%	100%
Articulated Trucks	0	0	0	0		0	0	0	0	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%	0%		0%	0%	0%	0%	0%		0%	0%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		**-**

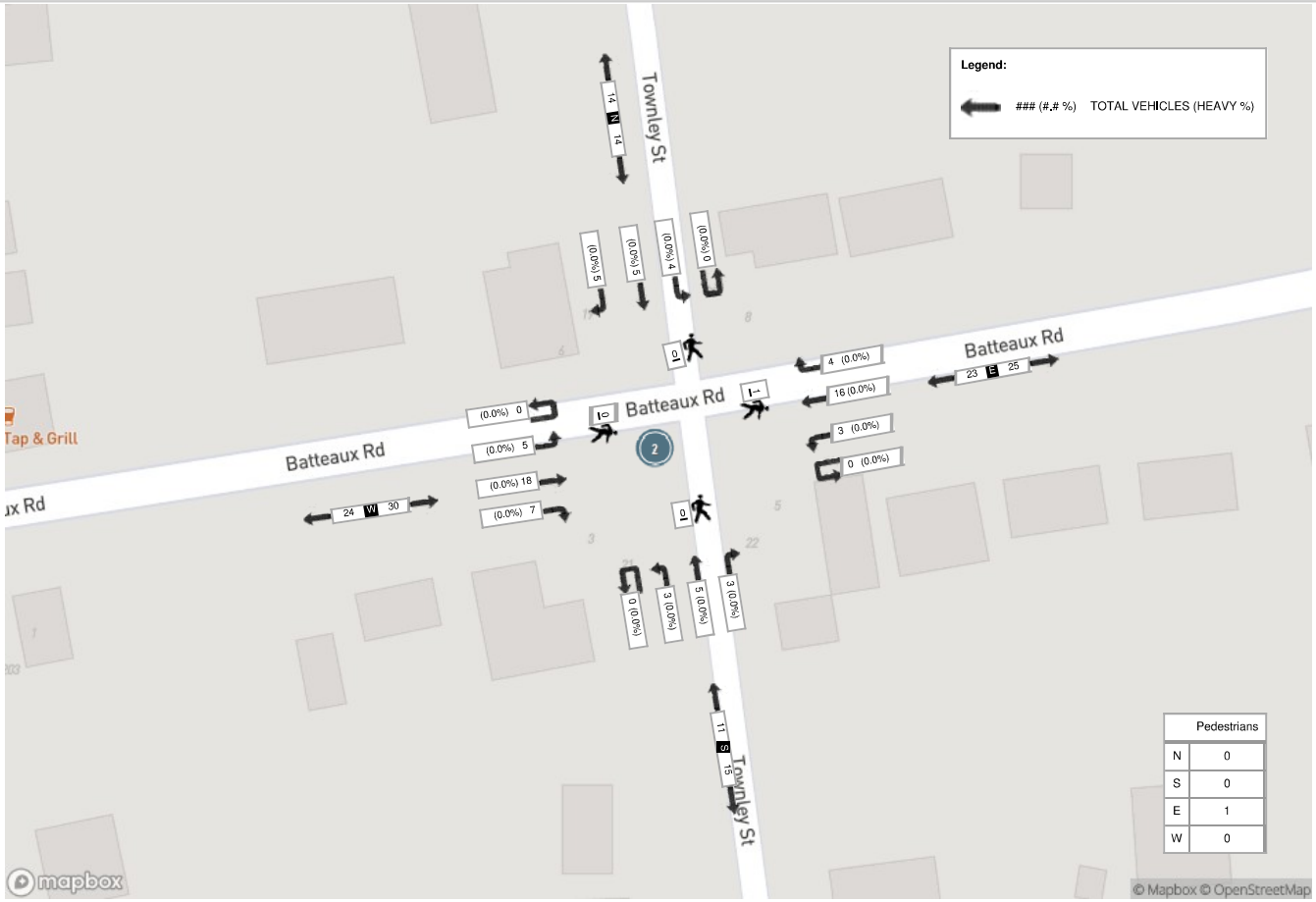
Crozier & Associates
SUITE 301 211 YONGE
STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 08:00 AM - 09:00 AM **Weather: Overcast Clouds (16 °C)**



Crozier & Associates
SUITE 301 211 YONGE
STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 04:00 PM - 05:00 PM **Weather: Heavy Intensity Rain (16 °C)**



Spectrum

Turning Movement Count
Location Name: BATTEAUX ROAD & N NOTTAWASAGA CONCESSION 6
Date: Tue, Aug 19, 2025 Deployment Lead: Rey Fernandez

Crozier & Associates
SUITE 301 211 YONGE STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Turning Movement Count (3 . BATTEAUX ROAD & N NOTTAWASAGA CONCESSION 6)

Start Time	N Approach TRAIN TRAIL						E Approach NOTTAWASAGA CONCESSION 6						S Approach N NOTTAWASAGA CONCESSION 6						W Approach BATTEAUX RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-08-19 06:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	3	
2025-08-19 06:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	
2025-08-19 06:30:00	0	0	0	0	0	0	0	0	2	0	0	2	2	0	1	0	0	3	4	0	0	0	0	4	9	
2025-08-19 06:45:00	0	0	0	0	0	0	0	0	4	0	0	4	5	0	0	0	0	5	0	0	0	0	0	0	9	22
2025-08-19 07:00:00	0	0	0	0	0	0	0	0	7	0	0	7	11	1	0	0	2	12	0	2	0	0	0	2	21	40
2025-08-19 07:15:00	0	0	0	0	0	0	0	0	5	0	1	5	8	0	0	0	0	8	0	3	0	0	0	3	16	55
2025-08-19 07:30:00	0	0	0	0	0	0	0	0	9	0	0	9	7	0	1	0	0	8	2	2	0	0	0	4	21	67
2025-08-19 07:45:00	0	1	0	0	0	1	0	2	10	0	0	12	9	0	3	0	0	12	2	1	0	0	0	3	28	86
2025-08-19 08:00:00	0	0	0	0	3	0	0	2	7	0	1	9	8	2	3	0	0	13	3	0	0	0	0	3	25	90
2025-08-19 08:15:00	0	1	0	0	1	1	0	1	4	0	0	5	4	1	7	0	0	12	3	0	0	0	0	3	21	95
2025-08-19 08:30:00	0	1	0	0	0	1	0	2	11	0	1	13	9	0	4	0	0	13	2	3	0	0	0	5	32	106
2025-08-19 08:45:00	0	0	0	0	1	0	0	3	7	0	0	10	20	0	5	0	0	25	4	2	0	0	0	6	41	119
BREAK																										
2025-08-19 16:00:00	0	0	0	0	0	0	0	6	8	0	0	14	11	0	1	0	0	12	2	4	0	0	0	6	32	
2025-08-19 16:15:00	0	0	0	0	1	0	0	1	8	0	0	9	10	0	7	0	0	17	1	1	0	0	0	2	28	
2025-08-19 16:30:00	0	0	0	0	0	0	0	1	11	0	0	12	9	1	2	0	0	12	5	1	0	0	0	6	30	
2025-08-19 16:45:00	0	0	0	0	0	0	0	3	11	0	0	14	14	0	1	0	0	15	2	0	0	0	0	2	31	121
2025-08-19 17:00:00	0	0	0	0	0	0	0	5	9	0	0	14	13	0	2	0	0	15	4	1	0	0	0	5	34	123
2025-08-19 17:15:00	0	1	0	0	0	1	0	1	8	0	0	9	5	0	1	0	0	6	1	3	0	0	0	4	20	115
2025-08-19 17:30:00	0	0	0	0	0	0	0	1	8	0	0	9	6	0	2	0	0	8	0	0	0	0	0	0	17	102
2025-08-19 17:45:00	0	2	0	0	0	2	0	2	7	0	0	9	7	0	3	0	0	10	0	0	0	0	0	0	21	92
2025-08-19 18:00:00	0	0	0	0	0	0	0	1	5	0	0	6	5	0	1	0	0	6	1	1	0	0	0	2	14	72
2025-08-19 18:15:00	0	0	0	0	0	0	0	1	4	0	0	5	5	0	3	0	0	8	1	1	0	0	0	2	15	67
2025-08-19 18:30:00	0	0	0	0	2	0	0	1	6	0	0	7	5	0	0	0	0	5	3	1	0	0	0	4	16	66
2025-08-19 18:45:00	0	0	0	0	1	0	0	1	1	0	0	2	7	0	3	0	0	10	1	1	0	0	0	2	14	59
Grand Total	0	6	0	0	9	6	0	34	152	0	3	186	180	5	50	0	2	235	43	29	0	0	0	72	**499**	-
Approach%	0%	100%	0%	0%		-	0%	18.3%	81.7%	0%		-	76.6%	2.1%	21.3%	0%		-	59.7%	40.3%	0%	0%		-	-	-
Totals %	0%	1.2%	0%	0%		1.2%	0%	6.8%	30.5%	0%		37.3%	36.1%	1%	10%	0%		47.1%	8.6%	5.8%	0%	0%		14.4%	-	-
Heavy	0	0	0	0		-	0	0	3	0		-	4	0	0	0		-	0	0	0	0		-	-	-
Heavy %	0%	0%	0%	0%		-	0%	0%	2%	0%		-	2.2%	0%	0%	0%		-	0%	0%	0%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: BATTEAUX ROAD & N NOTTAWASAGA CONCESSION 6
Date: Tue, Aug 19, 2025 Deployment Lead: Rey Fernandez

Crozier & Associates
SUITE 301 211 YONGE STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 08:00 AM - 09:00 AM **Weather: Overcast Clouds (16 °C)**

Start Time	N Approach TRAIN TRAIL						E Approach NOTTAWASAGA CONCESSION 6						S Approach N NOTTAWASAGA CONCESSION 6						W Approach BATTEAUX RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-08-19 08:00:00	0	0	0	0	3	0	0	2	7	0	1	9	8	2	3	0	0	13	3	0	0	0	0	3	25
2025-08-19 08:15:00	0	1	0	0	1	1	0	1	4	0	0	5	4	1	7	0	0	12	3	0	0	0	0	3	21
2025-08-19 08:30:00	0	1	0	0	0	1	0	2	11	0	1	13	9	0	4	0	0	13	2	3	0	0	0	5	32
2025-08-19 08:45:00	0	0	0	0	1	0	0	3	7	0	0	10	20	0	5	0	0	25	4	2	0	0	0	6	41
Grand Total	0	2	0	0	5	2	0	8	29	0	2	37	41	3	19	0	0	63	12	5	0	0	0	17	**119**
Approach%	0%	100%	0%	0%		-	0%	21.6%	78.4%	0%		-	65.1%	4.8%	30.2%	0%		-	70.6%	29.4%	0%	0%		-	**-**
Totals %	0%	1.7%	0%	0%		1.7%	0%	6.7%	24.4%	0%		31.1%	34.5%	2.5%	16%	0%		52.9%	10.1%	4.2%	0%	0%		14.3%	**-**
PHF	0	0.5	0	0		0.5	0	0.67	0.66	0		0.71	0.51	0.38	0.68	0		0.63	0.75	0.42	0	0		0.71	0.73
Heavy	0	0	0	0		0	0	0	1	0		1	2	0	0	0		2	0	0	0	0		0	3
Heavy %	0%	0%	0%	0%		0%	0%	0%	3.4%	0%		2.7%	4.9%	0%	0%	0%		3.2%	0%	0%	0%	0%		0%	2.5%
Lights	0	0	0	0		0	0	8	27	0		35	39	0	15	0		54	12	5	0	0		17	106
Lights %	0%	0%	0%	0%		0%	0%	100%	93.1%	0%		94.6%	95.1%	0%	78.9%	0%		85.7%	100%	100%	0%	0%		100%	89.1%
Single-Unit Trucks	0	0	0	0		0	0	0	1	0		1	2	0	0	0		2	0	0	0	0		0	3
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	3.4%	0%		2.7%	4.9%	0%	0%	0%		3.2%	0%	0%	0%	0%		0%	2.5%
Bicycles on Road	0	2	0	0		2	0	0	1	0		1	0	3	4	0		7	0	0	0	0		0	10
Bicycles on Road %	0%	100%	0%	0%		100%	0%	0%	3.4%	0%		2.7%	0%	100%	21.1%	0%		11.1%	0%	0%	0%	0%		0%	8.4%
Pedestrians	-	-	-	-	5	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	71.4%		-	-	-	-	28.6%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: BATTEAUX ROAD & N NOTTAWASAGA CONCESSION 6
Date: Tue, Aug 19, 2025 Deployment Lead: Rey Fernandez

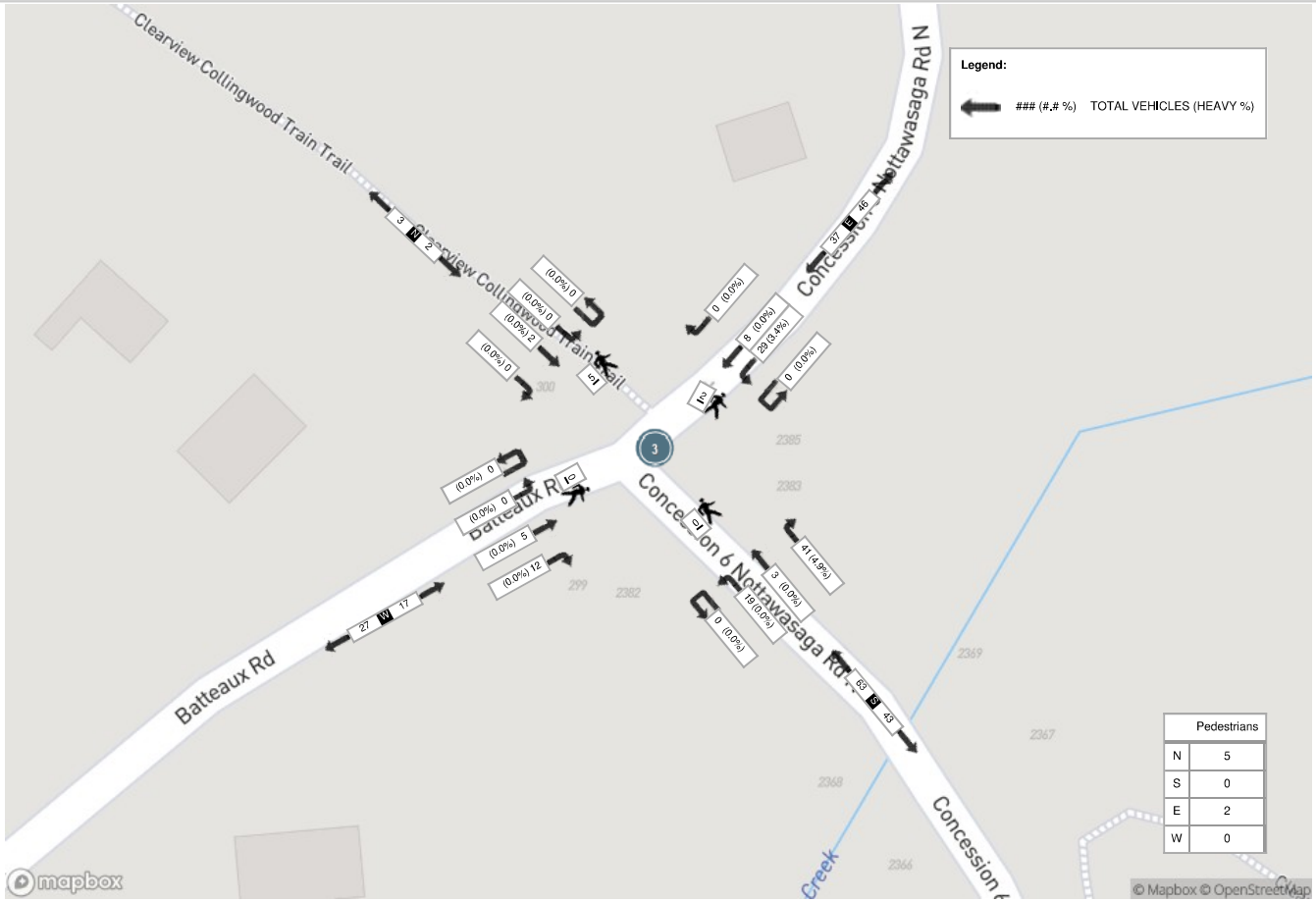
Crozier & Associates
SUITE 301 211 YONGE STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 04:15 PM - 05:15 PM **Weather: Heavy Intensity Rain (16 °C)**

Start Time	N Approach TRAIN TRAIL						E Approach NOTTAWASAGA CONCESSION 6						S Approach N NOTTAWASAGA CONCESSION 6						W Approach BATTEAUX RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-08-19 16:15:00	0	0	0	0	1	0	0	1	8	0	0	9	10	0	7	0	0	17	1	1	0	0	0	2	28
2025-08-19 16:30:00	0	0	0	0	0	0	0	1	11	0	0	12	9	1	2	0	0	12	5	1	0	0	0	6	30
2025-08-19 16:45:00	0	0	0	0	0	0	0	3	11	0	0	14	14	0	1	0	0	15	2	0	0	0	0	2	31
2025-08-19 17:00:00	0	0	0	0	0	0	0	5	9	0	0	14	13	0	2	0	0	15	4	1	0	0	0	5	34
Grand Total	0	0	0	0	1	0	0	10	39	0	0	49	46	1	12	0	0	59	12	3	0	0	0	15	**123**
Approach%	0%	0%	0%	0%		-	0%	20.4%	79.6%	0%		-	78%	1.7%	20.3%	0%		-	80%	20%	0%	0%		-	-
Totals %	0%	0%	0%	0%		0%	0%	8.1%	31.7%	0%		39.8%	37.4%	0.8%	9.8%	0%		48%	9.8%	2.4%	0%	0%		12.2%	-
PHF	0	0	0	0		0	0	0.5	0.89	0		0.88	0.82	0.25	0.43	0		0.87	0.6	0.75	0	0		0.63	0.9
Heavy	0	0	0	0		0	0	0	1	0		1	1	0	0	0		1	0	0	0	0		0	2
Heavy %	0%	0%	0%	0%		0%	0%	0%	2.6%	0%		2%	2.2%	0%	0%	0%		1.7%	0%	0%	0%	0%		0%	1.6%
Lights	0	0	0	0		0	0	10	38	0		48	45	1	12	0		58	12	3	0	0		15	121
Lights %	0%	0%	0%	0%		0%	0%	100%	97.4%	0%		98%	97.8%	100%	100%	0%		98.3%	100%	100%	0%	0%		100%	98.4%
Single-Unit Trucks	0	0	0	0		0	0	0	1	0		1	1	0	0	0		1	0	0	0	0		0	2
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	2.6%	0%		2%	2.2%	0%	0%	0%		1.7%	0%	0%	0%	0%		0%	1.6%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

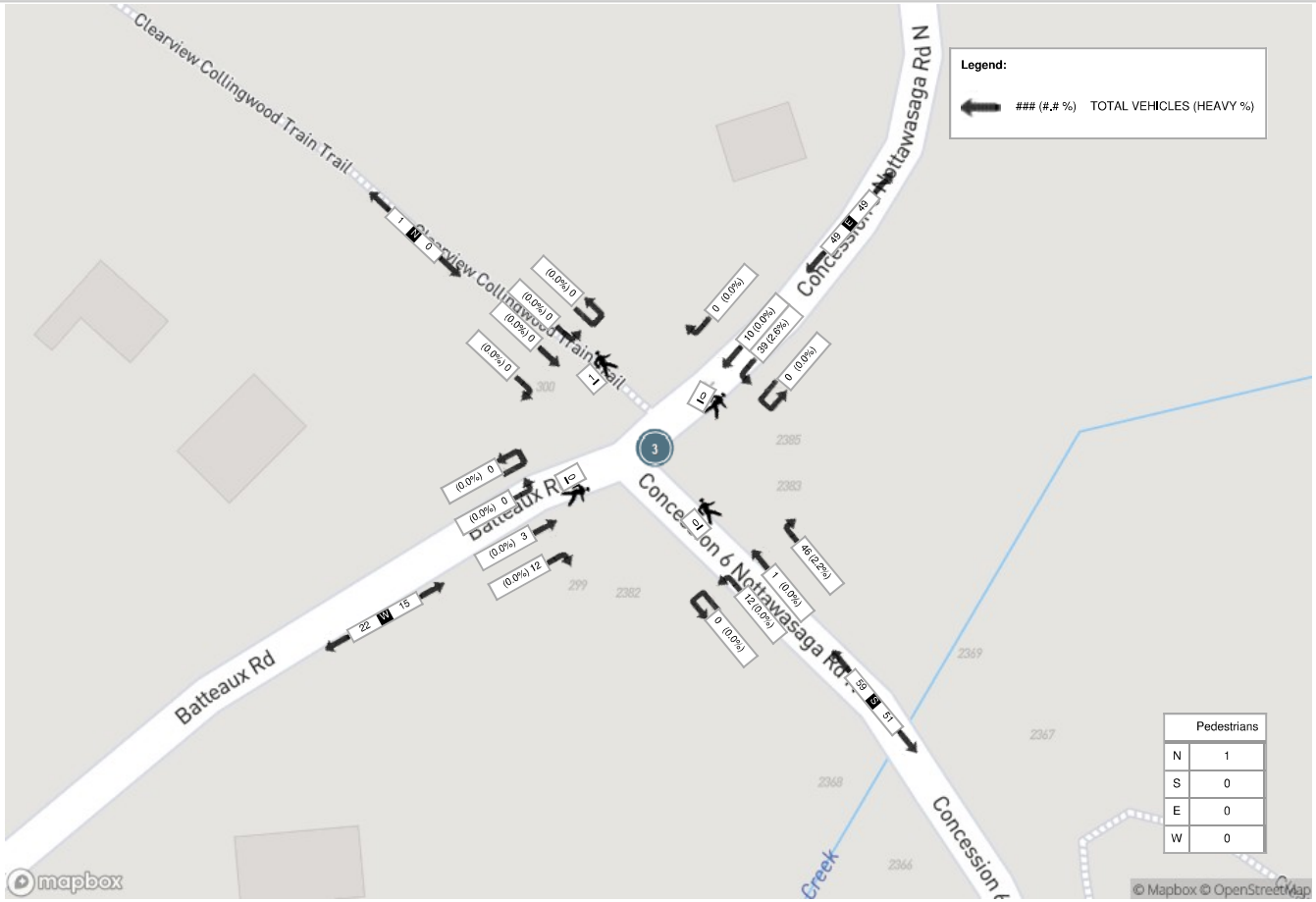
Crozier & Associates
SUITE 301 211 YONGE
STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 08:00 AM - 09:00 AM **Weather: Overcast Clouds (16 °C)**



Crozier & Associates
SUITE 301 211 YONGE
STREET
TORONTO ONTARIO, M5B 1M4
CANADA

Peak Hour: 04:15 PM - 05:15 PM **Weather: Heavy Intensity Rain (16 °C)**



Spectrum

Turning Movement Count
Location Name: COUNTY RD 124 & BATTEAUX RD / MELVILLE ST
Date: Tue, Jan 30, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Turning Movement Count (1 . COUNTY RD 124 & BATTEAUX RD / MELVILLE ST)

Start Time	N Approach COUNTY RD 124						E Approach BATTEAUX RD						S Approach COUNTY RD 124						W Approach BATTEAUX RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	1	11	0	0	0	12	2	0	0	0	0	2	0	10	0	0	0	10	0	0	0	0	0	0	24	
06:15:00	0	10	1	0	0	11	2	0	0	0	0	2	0	22	0	0	0	22	0	0	0	0	0	0	35	
06:30:00	0	10	0	0	0	10	6	0	1	0	0	7	1	26	0	0	0	27	0	0	0	0	0	0	44	
06:45:00	0	10	0	0	0	10	5	0	0	0	0	5	1	33	0	0	0	34	0	0	0	0	0	0	49	152
07:00:00	0	32	2	0	0	34	2	0	1	0	0	3	0	35	0	0	0	35	0	0	0	0	0	0	72	200
07:15:00	0	20	0	0	0	20	1	0	0	0	0	1	0	32	0	0	1	32	0	0	1	0	0	1	54	219
07:30:00	0	22	1	0	0	23	7	0	3	0	0	10	1	56	0	0	1	57	0	0	1	0	0	1	91	266
07:45:00	0	45	5	0	0	50	3	0	3	0	0	6	0	56	0	0	0	56	0	0	0	0	0	0	112	329
08:00:00	1	47	4	0	0	52	5	0	0	0	0	5	0	37	1	0	2	38	0	0	0	0	0	0	95	352
08:15:00	1	23	6	0	0	30	2	0	1	0	0	3	3	70	1	0	1	74	0	0	1	0	0	1	108	406
08:30:00	1	41	10	0	1	52	7	0	0	0	0	7	3	101	0	0	0	104	2	0	1	0	0	3	166	481
08:45:00	1	30	5	0	3	36	9	0	3	0	1	12	1	77	0	0	0	78	0	0	2	0	0	2	128	497
09:00:00	1	41	12	0	0	54	14	0	1	0	0	15	19	57	0	0	0	76	0	0	1	0	0	1	146	548
09:15:00	1	33	12	0	0	46	23	0	8	0	2	31	7	50	2	0	0	59	0	0	1	0	0	1	137	577
09:30:00	1	47	3	0	3	51	9	2	0	0	1	11	3	60	0	0	0	63	0	0	0	0	4	0	125	536
09:45:00	3	34	3	0	0	40	6	0	1	0	1	7	1	41	2	0	1	44	0	1	1	0	0	2	93	501
BREAK																										
15:00:00	1	54	6	0	0	61	4	1	0	0	0	5	3	43	0	0	0	46	0	0	1	0	0	1	113	
15:15:00	1	54	14	0	0	69	5	0	3	0	0	8	9	49	1	0	3	59	1	1	0	0	0	2	138	
15:30:00	0	73	22	0	0	95	10	0	4	0	0	14	11	47	0	0	0	58	1	0	3	0	2	4	171	
15:45:00	2	75	7	0	0	84	20	3	12	0	0	35	1	46	0	0	3	47	1	1	1	0	0	3	169	591
16:00:00	2	73	8	0	0	83	14	0	4	0	0	18	4	64	0	0	0	68	0	0	0	0	0	0	169	647
16:15:00	2	73	8	0	0	83	4	0	1	0	1	5	3	46	1	0	0	50	0	0	0	0	0	0	138	647
16:30:00	4	72	3	0	1	79	10	0	1	1	3	12	1	44	0	0	0	45	0	0	0	0	2	0	136	612
16:45:00	0	67	6	0	2	73	2	0	2	0	0	4	3	59	0	0	0	62	1	0	1	0	2	2	141	584
17:00:00	1	77	9	0	0	87	7	0	5	0	0	12	5	43	2	0	1	50	0	0	0	0	0	0	149	564
17:15:00	1	74	2	0	3	77	4	0	2	0	0	6	1	50	0	0	0	51	0	0	1	0	3	1	135	561
17:30:00	1	71	12	0	0	84	3	0	1	0	1	4	0	32	0	0	0	32	3	0	0	0	0	3	123	548
17:45:00	3	50	7	0	0	60	6	0	1	0	0	7	0	51	0	0	2	51	1	0	3	0	1	4	122	529
18:00:00	2	40	3	0	0	45	3	0	2	0	1	5	1	24	1	0	1	26	2	0	0	0	0	2	78	458
18:15:00	1	43	6	0	1	50	8	1	4	0	0	13	5	34	0	0	0	39	1	1	0	0	0	2	104	427
18:30:00	0	21	4	0	0	25	7	0	1	0	0	8	2	24	0	0	2	26	0	0	0	0	0	0	59	363
18:45:00	0	25	3	0	0	28	1	0	2	0	1	3	3	28	0	0	0	31	0	0	0	0	0	0	62	303
Grand Total	32	1398	184	0	14	1614	211	7	67	1	12	286	92	1447	11	0	18	1550	13	4	19	0	14	36	**3486**	-
Approach%	2%	86.6%	11.4%	0%		-	73.8%	2.4%	23.4%	0.3%		-	5.9%	93.4%	0.7%	0%		-	36.1%	11.1%	52.8%	0%		-	-	-
Totals %	0.9%	40.1%	5.3%	0%		46.3%	6.1%	0.2%	1.9%	0%		8.2%	2.6%	41.5%	0.3%	0%		44.5%	0.4%	0.1%	0.5%	0%		1%	-	-
Heavy	1	60	6	0		-	6	0	3	0		-	5	86	0	0		-	0	0	1	0		-	-	-
Heavy %	3.1%	4.3%	3.3%	0%		-	2.8%	0%	4.5%	0%		-	5.4%	5.9%	0%	0%		-	0%	0%	5.3%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: COUNTY RD 124 & BATTEAUX RD / MELVILLE ST
Date: Tue, Jan 30, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 08:30 AM - 09:30 AM Weather: Overcast Clouds (-0.69 °C)

Start Time	N Approach COUNTY RD 124						E Approach BATTEAUX RD						S Approach COUNTY RD 124						W Approach BATTEAUX RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:30:00	1	41	10	0	1	52	7	0	0	0	0	7	3	101	0	0	0	104	2	0	1	0	0	3	166
08:45:00	1	30	5	0	3	36	9	0	3	0	1	12	1	77	0	0	0	78	0	0	2	0	0	2	128
09:00:00	1	41	12	0	0	54	14	0	1	0	0	15	19	57	0	0	0	76	0	0	1	0	0	1	146
09:15:00	1	33	12	0	0	46	23	0	8	0	2	31	7	50	2	0	0	59	0	0	1	0	0	1	137
Grand Total	4	145	39	0	4	188	53	0	12	0	3	65	30	285	2	0	0	317	2	0	5	0	0	7	**577**
Approach%	2.1%	77.1%	20.7%	0%		-	81.5%	0%	18.5%	0%		-	9.5%	89.9%	0.6%	0%		-	28.6%	0%	71.4%	0%		-	-
Totals %	0.7%	25.1%	6.8%	0%		32.6%	9.2%	0%	2.1%	0%		11.3%	5.2%	49.4%	0.3%	0%		54.9%	0.3%	0%	0.9%	0%		1.2%	-
PHF	1	0.88	0.81	0		0.87	0.58	0	0.38	0		0.52	0.39	0.71	0.25	0		0.76	0.25	0	0.63	0		0.58	-
Heavy	0	13	1	0		14	2	0	0	0		2	3	24	0	0		27	0	0	1	0		1	-
Heavy %	0%	9%	2.6%	0%		7.4%	3.8%	0%	0%	0%		3.1%	10%	8.4%	0%	0%		8.5%	0%	0%	20%	0%		14.3%	-
Lights	4	132	37	0		173	51	0	12	0		63	27	261	2	0		290	2	0	4	0		6	-
Lights %	100%	91%	94.9%	0%		92%	96.2%	0%	100%	0%		96.9%	90%	91.6%	100%	0%		91.5%	100%	0%	80%	0%		85.7%	-
Single-Unit Trucks	0	4	0	0		4	0	0	0	0		0	0	12	0	0		12	0	0	0	0		0	-
Single-Unit Trucks %	0%	2.8%	0%	0%		2.1%	0%	0%	0%	0%		0%	0%	4.2%	0%	0%		3.8%	0%	0%	0%	0%		0%	-
Buses	0	1	1	0		2	2	0	0	0		2	3	0	0	0		3	0	0	1	0		1	-
Buses %	0%	0.7%	2.6%	0%		1.1%	3.8%	0%	0%	0%		3.1%	10%	0%	0%	0%		0.9%	0%	0%	20%	0%		14.3%	-
Articulated Trucks	0	8	0	0		8	0	0	0	0		0	0	12	0	0		12	0	0	0	0		0	-
Articulated Trucks %	0%	5.5%	0%	0%		4.3%	0%	0%	0%	0%		0%	0%	4.2%	0%	0%		3.8%	0%	0%	0%	0%		0%	-
Bicycles on Road	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	2.6%	0%		0.5%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	57.1%		-	-	-	-	42.9%		-	-	-	-	0%		-	-	-	-	0%		-

Spectrum

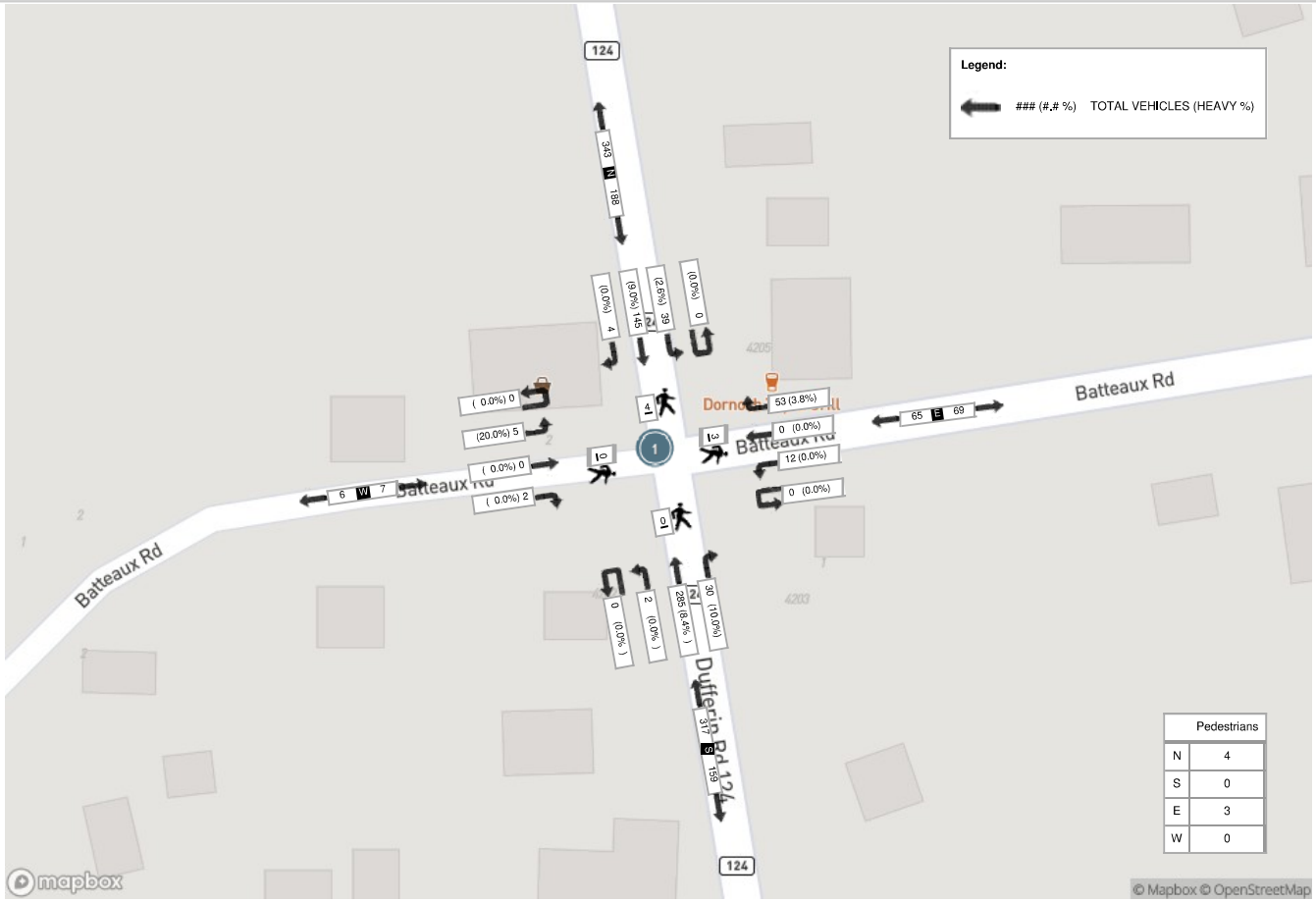
Turning Movement Count
Location Name: COUNTY RD 124 & BATTEAUX RD / MELVILLE ST
Date: Tue, Jan 30, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

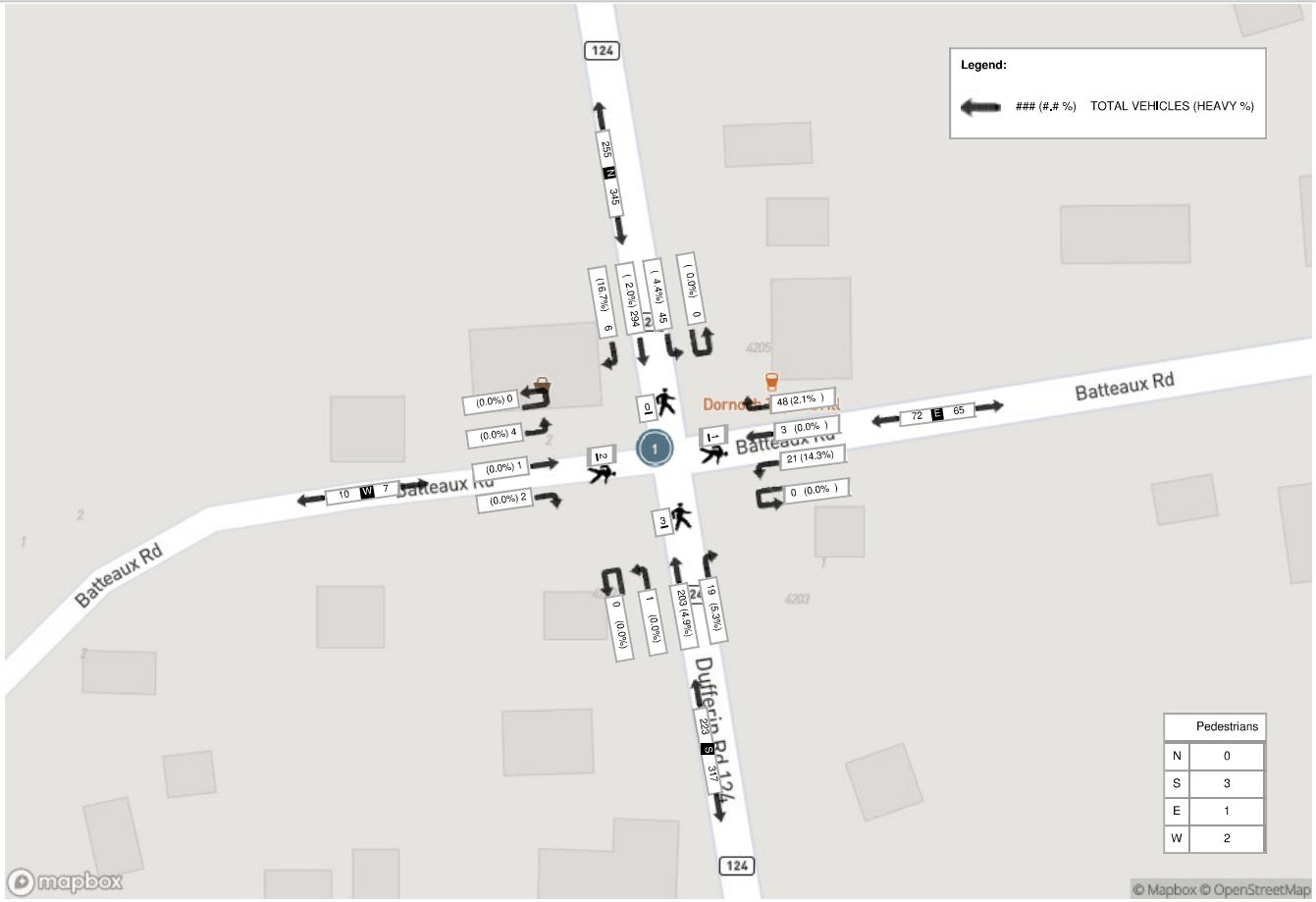
Peak Hour: 03:30 PM - 04:30 PM Weather: Light Snow (0.66 °C)

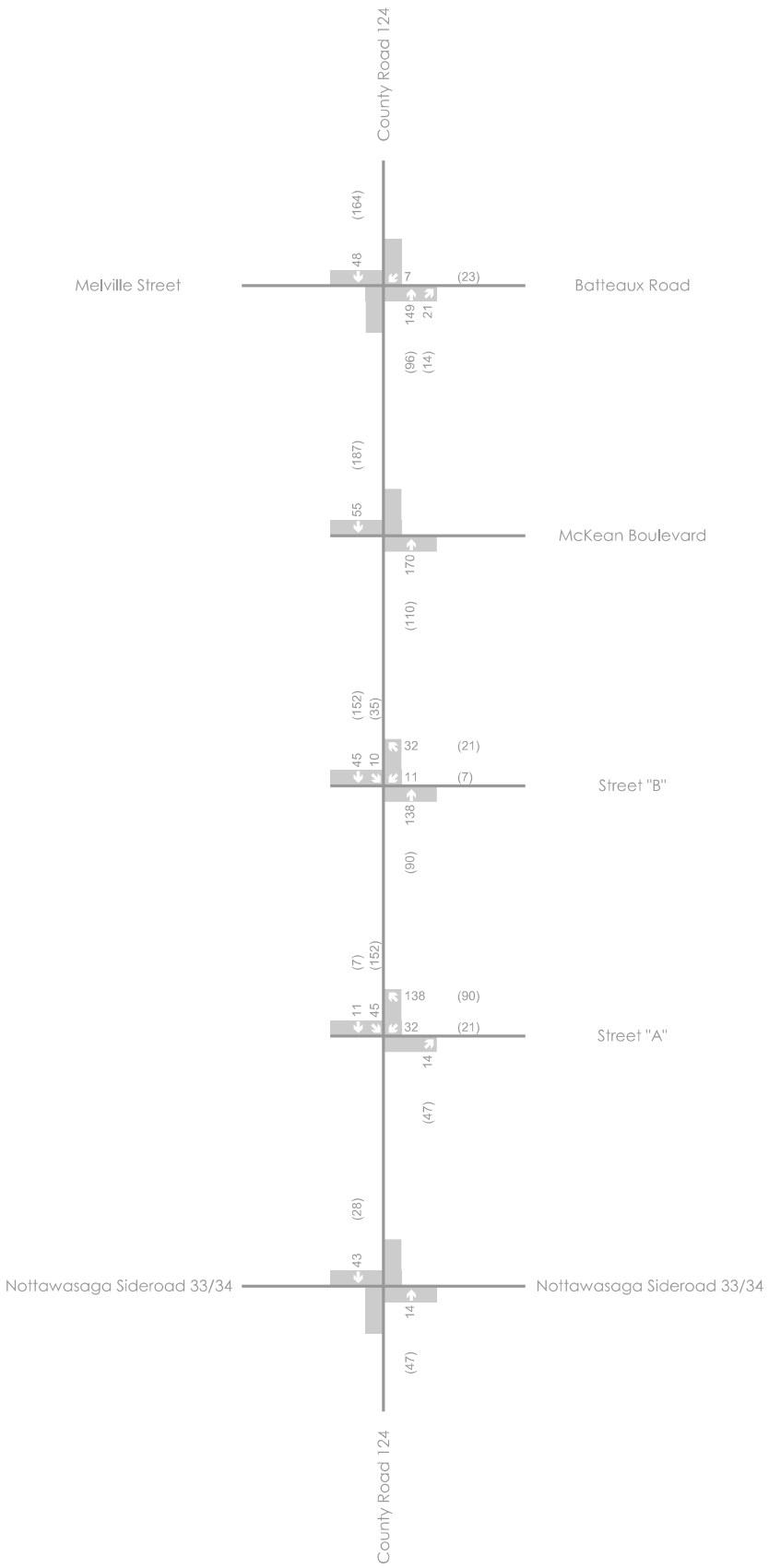
Start Time	N Approach COUNTY RD 124						E Approach BATTEAUX RD						S Approach COUNTY RD 124						W Approach BATTEAUX RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:30:00	0	73	22	0	0	95	10	0	4	0	0	14	11	47	0	0	0	58	1	0	3	0	2	4	171
15:45:00	2	75	7	0	0	84	20	3	12	0	0	35	1	46	0	0	3	47	1	1	1	0	0	3	169
16:00:00	2	73	8	0	0	83	14	0	4	0	0	18	4	64	0	0	0	68	0	0	0	0	0	0	169
16:15:00	2	73	8	0	0	83	4	0	1	0	1	5	3	46	1	0	0	50	0	0	0	0	0	0	138
Grand Total	6	294	45	0	0	345	48	3	21	0	1	72	19	203	1	0	3	223	2	1	4	0	2	7	**647**
Approach%	1.7%	85.2%	13%	0%		-	66.7%	4.2%	29.2%	0%		-	8.5%	91%	0.4%	0%		-	28.6%	14.3%	57.1%	0%		-	-
Totals %	0.9%	45.4%	7%	0%		53.3%	7.4%	0.5%	3.2%	0%		11.1%	2.9%	31.4%	0.2%	0%		34.5%	0.3%	0.2%	0.6%	0%		1.1%	-
PHF	0.75	0.98	0.51	0		0.91	0.6	0.25	0.44	0		0.51	0.43	0.79	0.25	0		0.82	0.5	0.25	0.33	0		0.44	-
Heavy	1	6	2	0		9	1	0	3	0		4	1	10	0	0		11	0	0	0	0		0	-
Heavy %	16.7%	2%	4.4%	0%		2.6%	2.1%	0%	14.3%	0%		5.6%	5.3%	4.9%	0%	0%		4.9%	0%	0%	0%	0%		0%	-
Lights	5	288	43	0		336	46	2	18	0		66	18	193	1	0		212	2	1	4	0		7	-
Lights %	83.3%	98%	95.6%	0%		97.4%	95.8%	66.7%	85.7%	0%		91.7%	94.7%	95.1%	100%	0%		95.1%	100%	100%	100%	0%		100%	-
Single-Unit Trucks	0	5	0	0		5	0	0	0	0		0	0	5	0	0		5	0	0	0	0		0	-
Single-Unit Trucks %	0%	1.7%	0%	0%		1.4%	0%	0%	0%	0%		0%	0%	2.5%	0%	0%		2.2%	0%	0%	0%	0%		0%	-
Buses	1	0	2	0		3	1	0	3	0		4	1	1	0	0		2	0	0	0	0		0	-
Buses %	16.7%	0%	4.4%	0%		0.9%	2.1%	0%	14.3%	0%		5.6%	5.3%	0.5%	0%	0%		0.9%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	1	0	0		1	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	-
Articulated Trucks %	0%	0.3%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	2%	0%	0%		1.8%	0%	0%	0%	0%		0%	-
Bicycles on Road	0	0	0	0		0	1	1	0	0		2	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	2.1%	33.3%	0%	0%		2.8%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	2	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	16.7%		-	-	-	-	50%		-	-	-	-	33.3%		-

Peak Hour: 08:30 AM - 09:30 AM **Weather: Overcast Clouds (-0.69 °C)**



Peak Hour: 03:30 PM - 04:30 PM **Weather: Light Snow (0.66 °C)**





Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

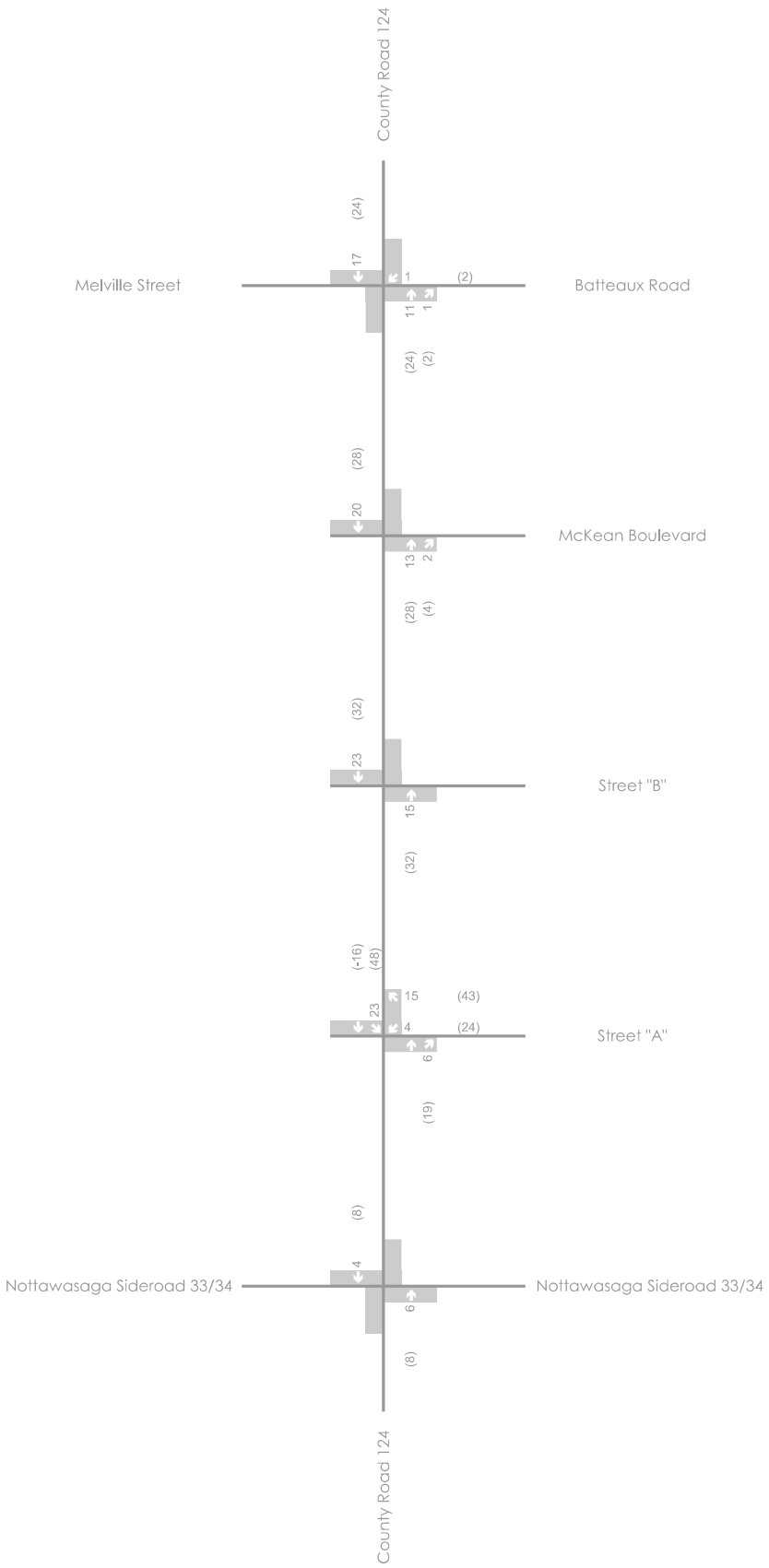
Nottawa Development

Full Build-Out Residential Trip Assignment

CROZIER CONSULTING ENGINEERS

Figure 12

Project No. 1953-6040
Date. 2024-02-01
Analyst. KH



Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

Nottawa Development

Commercial Trip Assignment

CROZIER CONSULTING ENGINEERS

Figure 15

Project No. 1953-6040
Date. 2024-02-01
Analyst. KH

APPENDIX C

Level of Service Definitions

Level of Service Definitions

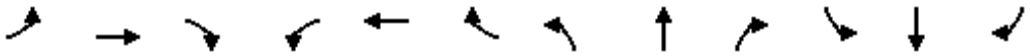
Two-Way Stop Controlled Intersections

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

Adapted from Highway Capacity Manual 2000, Transportation Research Board

APPENDIX D

Detailed Capacity Analysis Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	3	5	0	30	3	302	15	14	180	5
Future Volume (Veh/h)	0	1	3	5	0	30	3	302	15	14	180	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	1	3	5	0	31	3	311	15	14	186	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	572	548	188	544	544	318	191			326		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	572	548	188	544	544	318	191			326		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	99	100	96	100			99		
cM capacity (veh/h)	408	440	859	446	441	718	1395			1245		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	36	329	205
Volume Left	0	5	3	14
Volume Right	3	31	15	5
cSH	694	661	1395	1245
Volume to Capacity	0.01	0.05	0.00	0.01
Queue Length 95th (m)	0.1	1.4	0.1	0.3
Control Delay (s)	10.2	10.8	0.1	0.6
Lane LOS	B	B	A	A
Approach Delay (s)	10.2	10.8	0.1	0.6
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	32.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	22	0	1	30	5	2	1	2	6	5	3
Future Volume (Veh/h)	7	22	0	1	30	5	2	1	2	6	5	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	10	31	0	1	42	7	3	1	3	8	7	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	49			31			106	102	31	102	98	46
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			31			106	102	31	102	98	46
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	99	99	100
cM capacity (veh/h)	1558			1582			860	782	1043	871	786	1024

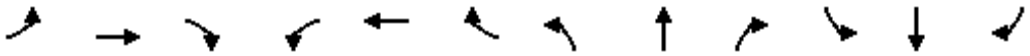
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	41	50	7	19
Volume Left	10	1	3	8
Volume Right	0	7	3	4
cSH	1558	1582	916	864
Volume to Capacity	0.01	0.00	0.01	0.02
Queue Length 95th (m)	0.2	0.0	0.2	0.5
Control Delay (s)	1.8	0.2	9.0	9.3
Lane LOS	A	A	A	A
Approach Delay (s)	1.8	0.2	9.0	9.3
Approach LOS			A	A

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	14.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	12	29	8	19	41
Future Volume (Veh/h)	5	12	29	8	19	41
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	7	16	40	11	26	56
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			23		106	15
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			23		106	15
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		97	95
cM capacity (veh/h)			1579		874	1056

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	23	51	82
Volume Left	0	40	26
Volume Right	16	0	56
cSH	1700	1579	990
Volume to Capacity	0.01	0.03	0.08
Queue Length 95th (m)	0.0	0.6	2.2
Control Delay (s)	0.0	5.8	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	5.8	9.0
Approach LOS			A

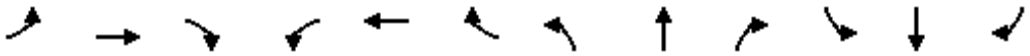
Intersection Summary			
Average Delay		6.6	
Intersection Capacity Utilization		18.9%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	4	10	3	22	4	245	10	51	338	6
Future Volume (Veh/h)	5	0	4	10	3	22	4	245	10	51	338	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	0	4	11	3	24	4	263	11	55	363	6
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	778	758	366	756	756	268	369			274		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	778	758	366	756	756	268	369			274		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	96	99	97	100			96		
cM capacity (veh/h)	291	321	679	311	322	770	1190			1289		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	9	38	278	424
Volume Left	5	11	4	55
Volume Right	4	24	11	6
cSH	390	501	1190	1289
Volume to Capacity	0.02	0.08	0.00	0.04
Queue Length 95th (m)	0.6	2.0	0.1	1.1
Control Delay (s)	14.4	12.8	0.1	1.4
Lane LOS	B	B	A	A
Approach Delay (s)	14.4	12.8	0.1	1.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	48.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	49	7	3	25	4	3	5	3	4	5	5
Future Volume (Veh/h)	5	49	7	3	25	4	3	5	3	4	5	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	55	8	3	28	4	3	6	3	4	6	6
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	32			63			116	109	59	113	111	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	32			63			116	109	59	113	111	30
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	99	100	100	99	99
cM capacity (veh/h)	1580			1540			847	777	1007	853	775	1044

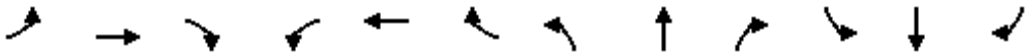
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	69	35	12	16
Volume Left	6	3	3	4
Volume Right	8	4	3	6
cSH	1580	1540	842	880
Volume to Capacity	0.00	0.00	0.01	0.02
Queue Length 95th (m)	0.1	0.0	0.3	0.4
Control Delay (s)	0.7	0.6	9.3	9.2
Lane LOS	A	A	A	A
Approach Delay (s)	0.7	0.6	9.3	9.2
Approach LOS			A	A

Intersection Summary				
Average Delay	2.5			
Intersection Capacity Utilization	14.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	3	12	39	10	12	46
Future Volume (Veh/h)	3	12	39	10	12	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	13	43	11	13	51
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			16		106	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			16		106	10
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		99	95
cM capacity (veh/h)			1608		867	1075

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	16	54	64
Volume Left	0	43	13
Volume Right	13	0	51
cSH	1700	1608	1025
Volume to Capacity	0.01	0.03	0.06
Queue Length 95th (m)	0.0	0.7	1.6
Control Delay (s)	0.0	5.9	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.9	8.7
Approach LOS			A

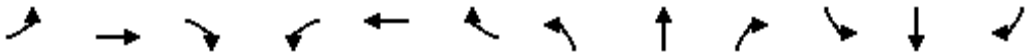
Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2	4	15	0	38	4	538	41	17	290	7
Future Volume (Veh/h)	0	2	4	15	0	38	4	538	41	17	290	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	2	4	15	0	39	4	555	42	18	299	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	962	944	302	928	926	576	306			597		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	962	944	302	928	926	576	306			597		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	99	94	100	92	100			98		
cM capacity (veh/h)	214	259	742	244	263	513	1266			989		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	6	54	601	324
Volume Left	0	15	4	18
Volume Right	4	39	42	7
cSH	457	393	1266	989
Volume to Capacity	0.01	0.14	0.00	0.02
Queue Length 95th (m)	0.3	3.8	0.1	0.4
Control Delay (s)	13.0	15.6	0.1	0.7
Lane LOS	B	C	A	A
Approach Delay (s)	13.0	15.6	0.1	0.7
Approach LOS	B	C		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	48.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	50	0	2	46	7	3	2	3	8	7	4
Future Volume (Veh/h)	9	50	0	2	46	7	3	2	3	8	7	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	13	70	0	3	65	10	4	3	4	11	10	6
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	75			70			183	177	70	178	172	70
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	75			70			183	177	70	178	172	70
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	100	100	99	99	99
cM capacity (veh/h)	1524			1531			759	709	993	773	714	993

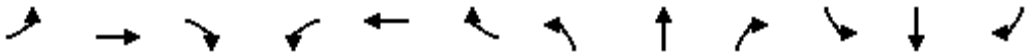
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	83	78	11	27
Volume Left	13	3	4	11
Volume Right	0	10	4	6
cSH	1524	1531	813	787
Volume to Capacity	0.01	0.00	0.01	0.03
Queue Length 95th (m)	0.2	0.0	0.3	0.9
Control Delay (s)	1.2	0.3	9.5	9.7
Lane LOS	A	A	A	A
Approach Delay (s)	1.2	0.3	9.5	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay	2.5			
Intersection Capacity Utilization	16.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	29	15	37	18	24	52
Future Volume (Veh/h)	29	15	37	18	24	52
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	40	21	51	25	33	71
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			61		178	50
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			61		178	50
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	93
cM capacity (veh/h)			1530		790	1009

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	61	76	104
Volume Left	0	51	33
Volume Right	21	0	71
cSH	1700	1530	927
Volume to Capacity	0.04	0.03	0.11
Queue Length 95th (m)	0.0	0.8	3.0
Control Delay (s)	0.0	5.1	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	5.1	9.4
Approach LOS			A

Intersection Summary			
Average Delay		5.6	
Intersection Capacity Utilization		20.9%	ICU Level of Service
Analysis Period (min)		15	



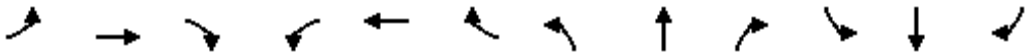
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	5	38	4	28	5	426	29	64	611	8
Future Volume (vph)	7	0	5	38	4	28	5	426	29	64	611	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948			0.946			0.992			0.998	
Flt Protected		0.970			0.973			0.999			0.995	
Satd. Flow (prot)	0	1713	0	0	1715	0	0	1781	0	0	1714	0
Flt Permitted		0.970			0.973			0.999			0.995	
Satd. Flow (perm)	0	1713	0	0	1715	0	0	1781	0	0	1714	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		82.3			122.7			283.7			240.8	
Travel Time (s)		5.9			8.8			20.4			17.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	11%	2%
Adj. Flow (vph)	8	0	5	41	4	30	5	458	31	69	657	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	75	0	0	494	0	0	735	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	5	38	4	28	5	426	29	64	611	8
Future Volume (Veh/h)	7	0	5	38	4	28	5	426	29	64	611	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	8	0	5	41	4	30	5	458	31	69	657	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1315	1298	662	1288	1288	474	666			489		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1315	1298	662	1288	1288	474	666			489		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	69	97	95	99			94		
cM capacity (veh/h)	119	150	462	132	153	591	923			1074		

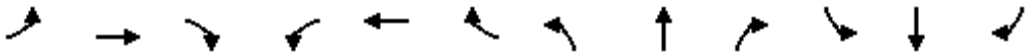
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	13	75	494	735
Volume Left	8	41	5	69
Volume Right	5	30	31	9
cSH	166	193	923	1074
Volume to Capacity	0.08	0.39	0.01	0.06
Queue Length 95th (m)	2.0	13.6	0.1	1.6
Control Delay (s)	28.5	34.9	0.2	1.6
Lane LOS	D	D	A	A
Approach Delay (s)	28.5	34.9	0.2	1.6
Approach LOS	D	D		

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	75.4%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	78	9	4	56	5	4	7	4	5	7	7
Future Volume (vph)	7	78	9	4	56	5	4	7	4	5	7	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.989			0.966			0.951	
Flt Protected		0.996			0.997			0.988			0.987	
Satd. Flow (prot)	0	1831	0	0	1837	0	0	1778	0	0	1748	0
Flt Permitted		0.996			0.997			0.988			0.987	
Satd. Flow (perm)	0	1831	0	0	1837	0	0	1778	0	0	1748	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		122.7			2646.9			274.4			215.0	
Travel Time (s)		8.8			190.6			19.8			15.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	8	88	10	4	63	6	4	8	4	6	8	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	0	73	0	0	16	0	0	22	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	78	9	4	56	5	4	7	4	5	7	7
Future Volume (Veh/h)	7	78	9	4	56	5	4	7	4	5	7	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	8	88	10	4	63	6	4	8	4	6	8	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	69			98			195	186	93	191	188	66
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	69			98			195	186	93	191	188	66
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	99	100	99	99	99
cM capacity (veh/h)	1532			1495			747	703	964	754	701	998

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	106	73	16	22
Volume Left	8	4	4	6
Volume Right	10	6	4	8
cSH	1532	1495	766	803
Volume to Capacity	0.01	0.00	0.02	0.03
Queue Length 95th (m)	0.1	0.1	0.5	0.7
Control Delay (s)	0.6	0.4	9.8	9.6
Lane LOS	A	A	A	A
Approach Delay (s)	0.6	0.4	9.8	9.6
Approach LOS			A	A

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	16.8%	ICU Level of Service	A	
Analysis Period (min)	15			

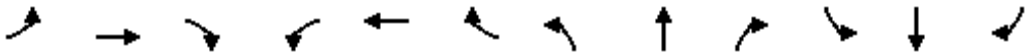
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	20	15	49	38	15	58
Future Volume (vph)	20	15	49	38	15	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.941				0.893	
Flt Protected				0.973	0.990	
Satd. Flow (prot)	1753	0	0	1823	1660	0
Flt Permitted				0.973	0.990	
Satd. Flow (perm)	1753	0	0	1823	1660	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	2646.9			72.4	364.2	
Travel Time (s)	190.6			5.2	26.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	1%	2%	2%	1%
Adj. Flow (vph)	22	17	54	42	17	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	39	0	0	96	81	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	20	15	49	38	15	58
Future Volume (Veh/h)	20	15	49	38	15	58
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	22	17	54	42	17	64
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			39		180	30
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			39		180	30
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	94
cM capacity (veh/h)			1577		781	1047

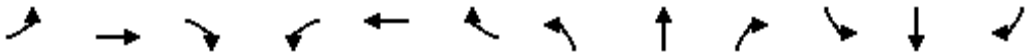
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	39	96	81
Volume Left	0	54	17
Volume Right	17	0	64
cSH	1700	1577	977
Volume to Capacity	0.02	0.03	0.08
Queue Length 95th (m)	0.0	0.9	2.2
Control Delay (s)	0.0	4.3	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	4.3	9.0
Approach LOS			A

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	4	20	0	55	4	538	43	23	290	7
Future Volume (vph)	0	2	4	20	0	55	4	538	43	23	290	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.910			0.901			0.990			0.997	
Flt Protected					0.987						0.996	
Satd. Flow (prot)	0	1729	0	0	1642	0	0	1752	0	0	1682	0
Flt Permitted					0.987						0.996	
Satd. Flow (perm)	0	1729	0	0	1642	0	0	1752	0	0	1682	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		82.3			122.7			283.7			240.8	
Travel Time (s)		5.9			8.8			20.4			17.3	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	2%	4%	0%	8%	0%	0%	13%	20%
Adj. Flow (vph)	0	2	4	21	0	57	4	555	44	24	299	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	0	0	78	0	0	603	0	0	330	0
Sign Control		Stop			Stop			Free			Free	

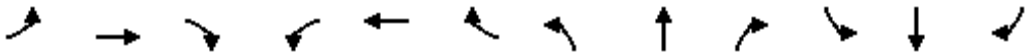
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2	4	20	0	55	4	538	43	23	290	7
Future Volume (Veh/h)	0	2	4	20	0	55	4	538	43	23	290	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	2	4	21	0	57	4	555	44	24	299	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	992	958	302	940	939	577	306			599		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	992	958	302	940	939	577	306			599		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	99	91	100	89	100			98		
cM capacity (veh/h)	195	252	742	238	257	512	1266			988		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	6	78	603	330
Volume Left	0	21	4	24
Volume Right	4	57	44	7
cSH	451	391	1266	988
Volume to Capacity	0.01	0.20	0.00	0.02
Queue Length 95th (m)	0.3	5.9	0.1	0.6
Control Delay (s)	13.1	16.5	0.1	0.9
Lane LOS	B	C	A	A
Approach Delay (s)	13.1	16.5	0.1	0.9
Approach LOS	B	C		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	58	0	2	68	7	3	2	3	8	7	4
Future Volume (vph)	9	58	0	2	68	7	3	2	3	8	7	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.988			0.951			0.970	
Flt Protected		0.993			0.999			0.982			0.980	
Satd. Flow (prot)	0	1850	0	0	1839	0	0	1740	0	0	1771	0
Flt Permitted		0.993			0.999			0.982			0.980	
Satd. Flow (perm)	0	1850	0	0	1839	0	0	1740	0	0	1771	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		122.7			537.2			274.4			215.0	
Travel Time (s)		8.8			38.7			19.8			15.5	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	13	82	0	3	96	10	4	3	4	11	10	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	95	0	0	109	0	0	11	0	0	27	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	58	0	2	68	7	3	2	3	8	7	4
Future Volume (Veh/h)	9	58	0	2	68	7	3	2	3	8	7	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	13	82	0	3	96	10	4	3	4	11	10	6
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	106			82			226	220	82	220	215	101
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	106			82			226	220	82	220	215	101
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	100	100	98	99	99
cM capacity (veh/h)	1485			1515			711	671	978	724	675	954

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	95	109	11	27
Volume Left	13	3	4	11
Volume Right	0	10	4	6
cSH	1485	1515	775	744
Volume to Capacity	0.01	0.00	0.01	0.04
Queue Length 95th (m)	0.2	0.0	0.3	0.9
Control Delay (s)	1.1	0.2	9.7	10.0
Lane LOS	A	A	A	B
Approach Delay (s)	1.1	0.2	9.7	10.0
Approach LOS			A	B

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	17.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	35	17	37	20	25	52
Future Volume (vph)	35	17	37	20	25	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.956				0.909	
Flt Protected				0.968	0.984	
Satd. Flow (prot)	1816	0	0	1792	1644	0
Flt Permitted				0.968	0.984	
Satd. Flow (perm)	1816	0	0	1792	1644	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	2112.7			138.5	376.7	
Travel Time (s)	152.1			10.0	27.1	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	4%	0%	0%	5%
Adj. Flow (vph)	48	23	51	27	34	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	0	0	78	105	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	35	17	37	20	25	52
Future Volume (Veh/h)	35	17	37	20	25	52
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	48	23	51	27	34	71
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			71		188	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			71		188	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	93
cM capacity (veh/h)			1517		778	998

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	71	78	105
Volume Left	0	51	34
Volume Right	23	0	71
cSH	1700	1517	914
Volume to Capacity	0.04	0.03	0.11
Queue Length 95th (m)	0.0	0.8	3.1
Control Delay (s)	0.0	5.0	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	5.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay		5.4	
Intersection Capacity Utilization		21.0%	ICU Level of Service
Analysis Period (min)		15	

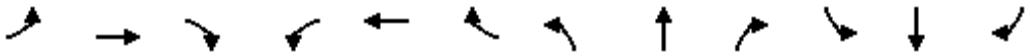
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	60	8	3	54	22	8
Future Volume (vph)	60	8	3	54	22	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.963	
Flt Protected				0.998	0.965	
Satd. Flow (prot)	1833	0	0	1859	1731	0
Flt Permitted				0.998	0.965	
Satd. Flow (perm)	1833	0	0	1859	1731	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	537.2			2112.7	203.8	
Travel Time (s)	38.7			152.1	14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	9	3	59	24	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	0	0	62	33	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 15.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	60	8	3	54	22	8
Future Volume (Veh/h)	60	8	3	54	22	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	9	3	59	24	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			74		134	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			74		134	70
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	99
cM capacity (veh/h)			1526		857	993

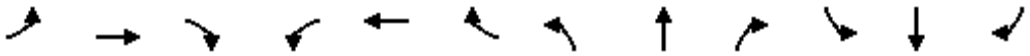
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	74	62	33
Volume Left	0	3	24
Volume Right	9	0	9
cSH	1700	1526	891
Volume to Capacity	0.04	0.00	0.04
Queue Length 95th (m)	0.0	0.0	0.9
Control Delay (s)	0.0	0.4	9.2
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.2
Approach LOS			A

Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	5	41	4	39	5	426	34	83	611	8
Future Volume (vph)	7	0	5	41	4	39	5	426	34	83	611	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948			0.937			0.990			0.998	
Flt Protected		0.970			0.976						0.994	
Satd. Flow (prot)	0	1713	0	0	1704	0	0	1780	0	0	1716	0
Flt Permitted		0.970			0.976						0.994	
Satd. Flow (perm)	0	1713	0	0	1704	0	0	1780	0	0	1716	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		82.3			122.7			283.7			240.8	
Travel Time (s)		5.9			8.8			20.4			17.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	11%	2%
Adj. Flow (vph)	8	0	5	44	4	42	5	458	37	89	657	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	90	0	0	500	0	0	755	0
Sign Control		Stop			Stop			Free			Free	

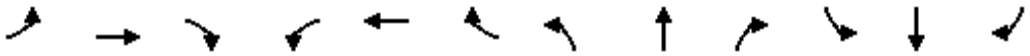
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.6%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	5	41	4	39	5	426	34	83	611	8
Future Volume (Veh/h)	7	0	5	41	4	39	5	426	34	83	611	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	8	0	5	44	4	42	5	458	37	89	657	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1370	1344	662	1331	1330	476	666			495		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1370	1344	662	1331	1330	476	666			495		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	100	99	64	97	93	99			92		
cM capacity (veh/h)	105	138	462	121	141	589	923			1069		

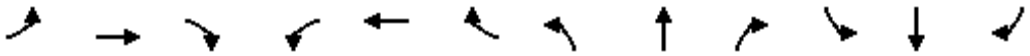
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	13	90	500	755
Volume Left	8	44	5	89
Volume Right	5	42	37	9
cSH	149	195	923	1069
Volume to Capacity	0.09	0.46	0.01	0.08
Queue Length 95th (m)	2.3	17.7	0.1	2.2
Control Delay (s)	31.4	38.5	0.2	2.1
Lane LOS	D	E	A	A
Approach Delay (s)	31.4	38.5	0.2	2.1
Approach LOS	D	E		

Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	77.6%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	102	9	4	70	5	4	7	4	5	7	7
Future Volume (vph)	7	102	9	4	70	5	4	7	4	5	7	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.991			0.966			0.951	
Flt Protected		0.997			0.998			0.988			0.987	
Satd. Flow (prot)	0	1839	0	0	1842	0	0	1778	0	0	1748	0
Flt Permitted		0.997			0.998			0.988			0.987	
Satd. Flow (perm)	0	1839	0	0	1842	0	0	1778	0	0	1748	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		122.7			537.2			274.4			215.0	
Travel Time (s)		8.8			38.7			19.8			15.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	8	115	10	4	79	6	4	8	4	6	8	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	133	0	0	89	0	0	16	0	0	22	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	102	9	4	70	5	4	7	4	5	7	7
Future Volume (Veh/h)	7	102	9	4	70	5	4	7	4	5	7	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	8	115	10	4	79	6	4	8	4	6	8	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	85			125			238	229	120	234	231	82
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	85			125			238	229	120	234	231	82
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	99	100	99	99	99
cM capacity (veh/h)	1512			1462			700	665	931	707	664	978

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	133	89	16	22
Volume Left	8	4	4	6
Volume Right	10	6	4	8
cSH	1512	1462	726	766
Volume to Capacity	0.01	0.00	0.02	0.03
Queue Length 95th (m)	0.1	0.1	0.5	0.7
Control Delay (s)	0.5	0.4	10.1	9.8
Lane LOS	A	A	B	A
Approach Delay (s)	0.5	0.4	10.1	9.8
Approach LOS			B	A

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	18.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	24	16	49	45	17	58
Future Volume (vph)	24	16	49	45	17	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946				0.896	
Flt Protected				0.975	0.989	
Satd. Flow (prot)	1762	0	0	1825	1663	0
Flt Permitted				0.975	0.989	
Satd. Flow (perm)	1762	0	0	1825	1663	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	2112.7			138.5	376.7	
Travel Time (s)	152.1			10.0	27.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	1%	2%	2%	1%
Adj. Flow (vph)	27	18	54	50	19	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	0	104	83	0
Sign Control	Free			Free	Stop	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	24	16	49	45	17	58
Future Volume (Veh/h)	24	16	49	45	17	58
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	27	18	54	50	19	64
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			45		194	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			45		194	36
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	94
cM capacity (veh/h)			1570		767	1039

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	45	104	83
Volume Left	0	54	19
Volume Right	18	0	64
cSH	1700	1570	961
Volume to Capacity	0.03	0.03	0.09
Queue Length 95th (m)	0.0	0.9	2.3
Control Delay (s)	0.0	4.0	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	4.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay		5.0	
Intersection Capacity Utilization		22.9%	ICU Level of Service
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	86	24	8	65	14	5
Future Volume (vph)	86	24	8	65	14	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.971				0.966	
Flt Protected				0.994	0.964	
Satd. Flow (prot)	1809	0	0	1852	1735	0
Flt Permitted				0.994	0.964	
Satd. Flow (perm)	1809	0	0	1852	1735	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	537.2			2112.7	203.8	
Travel Time (s)	38.7			152.1	14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	26	9	71	15	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	0	0	80	20	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	86	24	8	65	14	5
Future Volume (Veh/h)	86	24	8	65	14	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	93	26	9	71	15	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			119		195	106
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			119		195	106
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	99
cM capacity (veh/h)			1469		789	948

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	119	80	20
Volume Left	0	9	15
Volume Right	26	0	5
cSH	1700	1469	824
Volume to Capacity	0.07	0.01	0.02
Queue Length 95th (m)	0.0	0.1	0.6
Control Delay (s)	0.0	0.9	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	0.9	9.5
Approach LOS			A

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX E

Signal Warrants

Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision

GO TO Justification:

What are the intersecting roadways? County Road 124 and Batteaux

What is the direction of the Main Road street? North-South

When was the data collected? Future Total 2034

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 1

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Rural Population < 10,000 AND Speed >= 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
6:00	0	194	0	0	0	0	1	108	1	5	0	35	0
7:00	0	399	6	0	0	1	7	238	4	33	0	30	0
8:00	4	538	43	0	2	4	22	290	7	19	0	53	0
9:00	1	377	16	0	0	2	10	212	4	19	0	39	0
15:00	5	426	33	7	0	5	80	611	8	41	4	38	0
16:00	1	343	15	7	0	4	41	560	5	17	0	29	0
17:00	3	249	8	4	0	4	49	304	3	19	0	19	0
18:00	3	339	19	6	0	4	57	492	5	26	1	29	0
Total	**16**	**2,865**	**141**	**24**	**2**	**24**	**266**	**2,815**	**38**	**180**	**5**	**272**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Factored 8 hour pedestrian volume	20,005		25		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									4,610
Net 8 Hour Vehicular Volume on Street Being Crossed									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	10	10	1	6	2	4	0	0	
Factored volume of total pedestrians	20,005		25		0		0		
Factored volume of delayed pedestrians	30		8		8		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									4,610
Net 8 Hour Volume of Delayed Pedestrians									12

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: County Road 124 and Batteaux

Count Date: Future Total 2034

Justification 1: Minimum Vehicle Volumes

Free Flow Rural Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☑	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☐	6:00	7:00	8:00	9:00	15:00	16:00	17:00	18:00		
1A	480	720	600	900	344	719	982	681	1,258	1,022	662	981		
	COMPLIANCE %				72	100	100	100	100	100	100	100	772	96
1B	120	170	120	170	39	65	78	60	95	57	47	66		
	COMPLIANCE %				33	54	65	50	79	48	39	55	423	53
Free Flow Signal Justification 1:					Both 1A and 1B 100% Fullfilled each of 8 hours — Yes ☐ No ☑									
					Lesser of 1A or 1B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑									

Justification 2: Delay to Cross Traffic

Free Flow Rural Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☑	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☐	6:00	7:00	8:00	9:00	15:00	16:00	17:00	18:00		
2A	480	720	600	900	304	655	904	621	1,163	965	615	914		
	COMPLIANCE %				63	100	100	100	100	100	100	100	763	95
2B	50	75	50	75	5	33	21	19	52	24	24	33		
	COMPLIANCE %				10	67	42	38	100	49	47	67	418	52
Free Flow Signal Justification 2:					Both 2A and 2B 100% Fullfilled each of 8 hours — Yes ☐ No ☑									
					Lesser of 2A or 2B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑									

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main) X	Heaviest Minor Approach Y (actual)	Required Value Y (warrant threshold)	Average % Compliance	Overall % Compliance
Justification 4	8:00	904	72	141	51 %	56 %
	15:00	1,163	83	86	97 %	
	16:00	965	46	125	37 %	
	18:00	914	56	138	41 %	

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: County Road 124 and Batteaux

Count Date: Future Total 2034

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume

Pedestrian Volume Analysis

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600					Justified
	2601 - 7000					
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200			
	200 - 300			
	> 300	Not Justified		

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

Intersection: County Road 124 and Batteaux

Count Date: Future Total 2034

Summary Results

Justification			Compliance	Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	96 %	☐	☑
	B	Crossing Volume	53 %		
2. Delay to Cross Traffic	A	Main Road	95 %	☐	☑
	B	Crossing Road	52 %		
3. Combination	A	Justificaton 1	53 %	☐	☑
	B	Justification 2	52 %		
4. 4-Hr Volume			56 %	☐	☑
5. Collision Experience			0 %	☐	☑
6. Pedestrians	A	Volume	Justification met	☐	☑
	B	Delay	Justification not met		

Proposed Collision Justification (Justification 5A)

Return to Justifications 1-6

INPUT

a.- Intersection type (no input required): 3

b.- What year is the intersection being considered for traffic signals? 2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach-ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

ANALYSIS

Reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10		---
Parameter k	0.81	0.81	0.81	0.81	0.81		0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15		2.15
Ci,y	0.680	0.696	0.712	0.741	1.000		1.000
Comp. Ratio for Period	3.829						1.000

Non-reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4		---
Parameter k	1.47	1.47	1.47	1.47	1.47		1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38		1.38
$C_{i,y}$	0.849	0.860	0.870	0.890	1.000		1.000
Comp. Ratio for Period	4.469						1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

RESULTS

Justification	Compliance		Signal Justified? YES	NO
5. Collision Experience	Net Safety Change	2.648	☐	☑
	Total Collisions will after this intersection is signalized	*Increase*		

Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision

GO TO Justification:

What are the intersecting roadways? County Road 124 and Batteaux

What is the direction of the Main Road street? North-South

When was the data collected? Future Total 2034

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 1

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Rural Population < 10,000 AND Speed >= 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
6:00	0	194	0	0	0	0	1	108	1	5	0	36	0
7:00	0	399	6	0	0	1	7	238	4	35	0	31	0
8:00	4	538	43	0	2	4	23	290	7	20	0	55	0
9:00	1	377	16	0	0	2	10	212	4	20	0	41	0
15:00	5	426	34	7	0	5	83	611	8	41	4	39	0
16:00	1	343	16	7	0	4	42	560	5	17	0	30	0
17:00	3	249	9	4	0	4	51	304	3	19	0	20	0
18:00	3	339	19	6	0	4	59	492	5	26	1	30	0
Total	**16**	**2,865**	**143**	**24**	**2**	**24**	**277**	**2,815**	**38**	**184**	**5**	**281**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Factored 8 hour pedestrian volume	20,005		25		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									4,610
Net 8 Hour Vehicular Volume on Street Being Crossed									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	10	10	1	6	2	4	0	0	
Factored volume of total pedestrians	20,005		25		0		0		
Factored volume of delayed pedestrians	30		8		8		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									4,610
Net 8 Hour Volume of Delayed Pedestrians									12

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

Intersection: County Road 124 and Batteaux Count Date: Future Total 2034

Summary Results

Justification			Compliance	Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	96 %	☐	☑
	B	Crossing Volume	54 %		
2. Delay to Cross Traffic	A	Main Road	95 %	☐	☑
	B	Crossing Road	53 %		
3. Combination	A	Justificaton 1	54 %	☐	☑
	B	Justification 2	53 %		
4. 4-Hr Volume			58 %	☐	☑
5. Collision Experience			0 %	☐	☑
6. Pedestrians	A	Volume	Justification met	☐	☑
	B	Delay	Justification not met		

APPENDIX F

Left-Turn Lane Warrants

Ontario

MTO DESIGN SUPPLEMENT

FOR

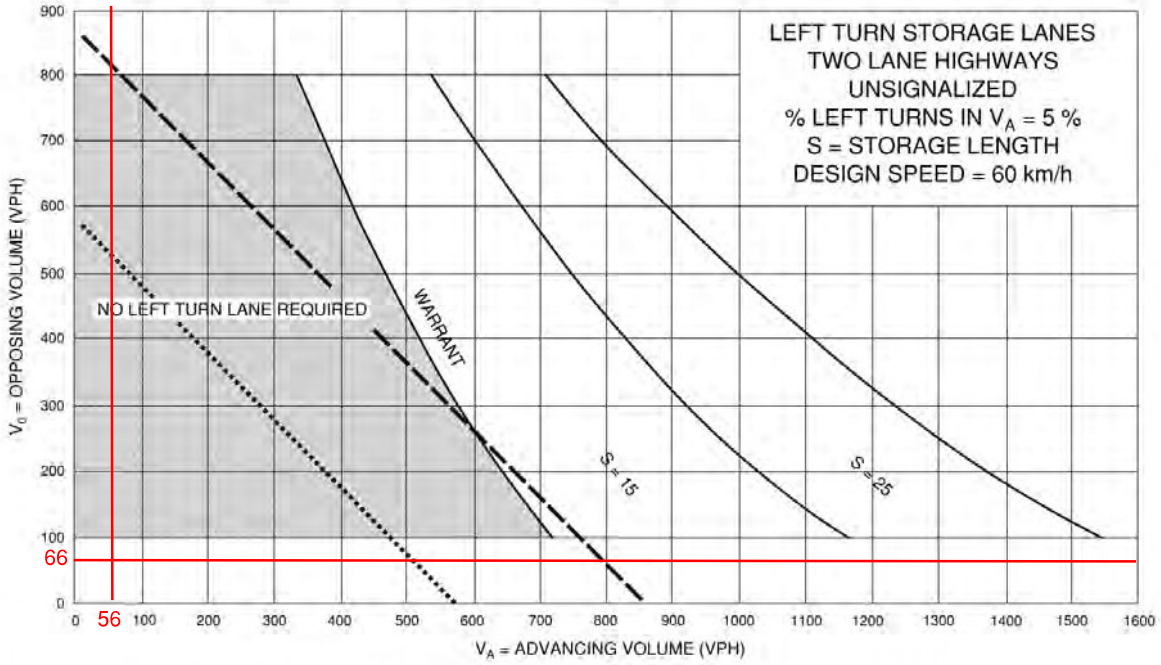
TAC GEOMETRIC DESIGN GUIDE (GDG) FOR

CANADIAN ROADS - 2017

OCTOBER 2023

STANDARDS and CONTRACTS BRANCH
HIGHWAY DESIGN OFFICE

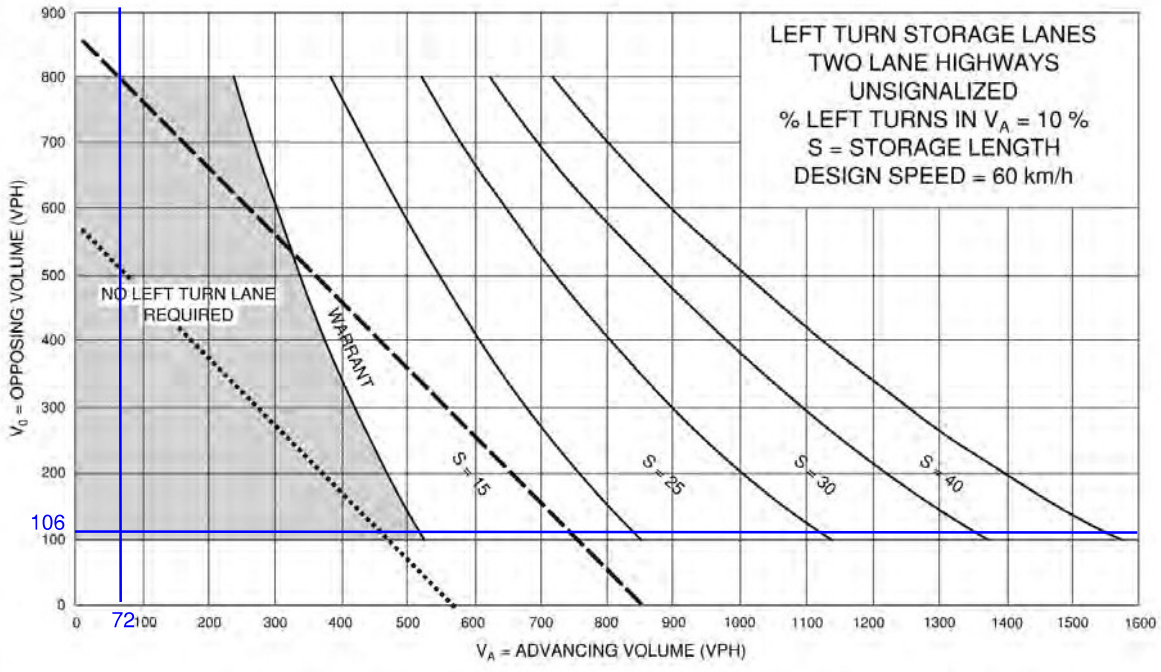
Exhibit-9A-7



A.M. Peak Hour

P.M. Peak Hour

2034 Future Total Traffic Volumes
County Road 124 and Batteaux Road



Ontario

MTO DESIGN SUPPLEMENT

FOR

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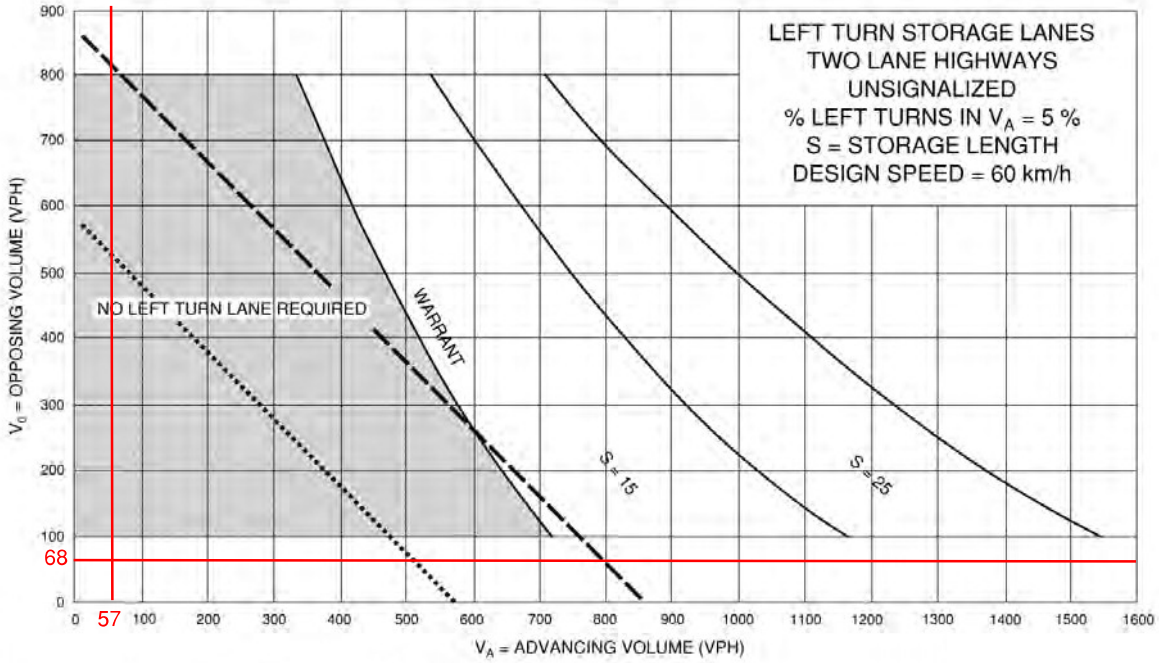
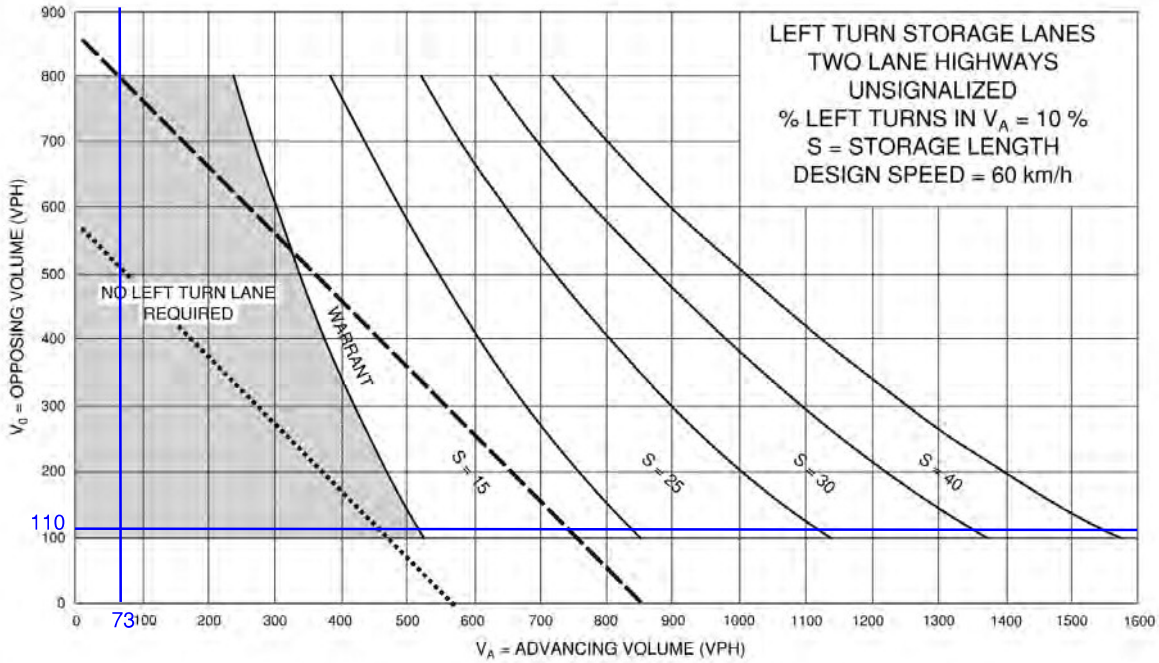
Exhibit-9A-7



A.M. Peak Hour

P.M. Peak Hour

2034 Future Total Traffic Volumes
County Road 124 and Batteaux Road



APPENDIX G

TAC Manual

Stopping sight distance is the sum of the distance travelled during the perception and reaction time and the braking distance.

$$SSD = 0.278Vt + 0.039 \frac{V^2}{a} \quad (2.5.2)$$

Where:

SSD = Stopping sight distance (m)
t = Brake reaction time, 2.5 s
V = Design speed (km/h)
a = Deceleration rate (m/s^2)

Table 2.5.2 gives the minimum stopping sight distances on level grade, on wet pavement, for a range of design speeds. These values are used for vertical curve design, intersection geometry and the placement of traffic control devices. The stopping sight distances quoted in **Table 2.5.2** may need to be increased for a variety of reasons related to grade and vehicle type as noted below.

Table 2.5.2: Stopping Sight Distance on level roadways for Automobiles[54]

Design speed (km/h)	Brake reaction distance (m)	Braking distance on level (m)	Stopping sight distance	
			Calculated (m)	Design (m)
20	13.9	4.6	18.5	20
30	20.9	10.3	31.2	35
40	27.8	18.4	46.2	50
50	34.8	28.7	63.5	65
60	41.7	41.3	83.0	85
70	48.7	56.2	104.9	105
80	55.6	73.4	129.0	130
90	62.6	92.9	155.5	160
100	69.5	114.7	184.2	185
110	76.5	138.8	215.3	220
120	83.4	165.2	248.6	250
130	90.4	193.8	284.2	285

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 3.4 m/s^2 used to determine calculated sight distance.

Table 9.9.3: Time Gap for Case B1, Left Turn from Stop

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	7.5
Single-unit truck	9.5
Combination truck (WB 19 and WB 20)	11.5
Longer truck	To be established by road authority

Notes: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.2 s for each percent grade for left turns.
- Some road authorities use higher values for certain specialized vehicles (e.g., Alberta uses 22 s for very long log trucks).

The intersection sight distance along the major road (distance b in **Figure 9.9.2**) is determined by:

$$ISD = 0.278\ V_{major}\ t_g \qquad (9.9.1)$$

Where:

ISD = intersection sight distance (length of the leg of sight triangle along the major road) (m)
V_{major} = design speed of the major road (km/h)
t_g = time gap for minor road vehicle to enter the major road (s)

For example, a passenger car turning left onto a two-lane major road should be provided sight distance equivalent to a time gap of 7.5 s in major-road traffic. If the design speed of the major road is 100 km/h, this corresponds to a sight distance of 0.278(100)(7.5) = 208.5 or 210 m, rounded for design.

A passenger car turning left onto a four-lane undivided roadway will need to cross two near lanes, rather than one. This increases the recommended gap in major-road traffic from 7.5 to 8.0 s. The corresponding value of sight distance for this example would be 223 m. If the minor-road approach to such an intersection is located on a 4% upgrade, then the time gap selected for intersection sight distance design for left turns should be increased from 8.0 to 8.8 s, equivalent to an increase of 0.2 s for each percent grade.

The design values for intersection sight distance for passenger cars are shown in **Table 9.9.4**. **Figure 9.9.4** includes design values, based on the time gaps for the design vehicles included in **Table 9.9.3**.

No adjustment of the recommended sight distance values for the major-road grade is generally needed because both the major- and minor-road vehicle will be on the same grade when departing from the intersection. However, if the minor-road design vehicle is a heavy truck and the intersection is located near a sag vertical curve with grades over 3%, then an adjustment to extend the recommended sight distance based on the major-road grade should be considered.

Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn From Stop

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	41.7	45
30	35	62.6	65
40	50	83.4	85
50	65	104.3	105
60	85	125.1	130
70	105	146.0	150
80	130	166.8	170
90	160	187.7	190
100	185	208.5	210
110	220	229.4	230
120	250	250.2	255
130	285	271.1	275

Note: Intersection sight distance shown is for a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

Sight distance design for left turns at divided-highway intersections should consider multiple design vehicles and median width. If the design vehicle used to determine sight distance for a divided-highway intersection is larger than a passenger car, then sight distance for left turns will need to be checked for that selected design vehicle and for smaller design vehicles as well. If the divided-highway median is wide enough to store the design vehicle with a clearance to the through lanes of approximately 1 m at both ends of the vehicle, no separate analysis for the departure sight triangle for left turns is needed on the minor-road approach for the near roadway to the left. In most cases, the departure sight triangle for right turns (case B2) will provide sufficient sight distance for a passenger car to cross the near roadway to reach the median. Possible exceptions are addressed in the discussion of case B3.

The time gaps in **Table 9.9.3** can be decreased by 1.0 s for right-turn maneuvers without undue interference with major-road traffic. These adjusted time gaps for the right turn from the minor road are shown in **Table 9.9.5**. Design values based on these adjusted time gaps are shown in **Table 9.9.6** for passenger cars. **Figure 9.9.5** includes the design values for the design vehicles for each of the time gaps in **Table 9.9.5**.

Table 9.9.5: Time Gap for Case B2—Right Turn from Stop and Case B3—Crossing Maneuver

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	6.5
Single-unit truck	8.5
Combination truck (WB 19 and WB 20)	10.5

Note: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.1 s for each percent grade for left turns.

Table 9.9.6: Design Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	36.1	40
30	35	54.2	55
40	50	72.3	75
50	65	90.4	95
60	85	108.4	110
70	105	126.5	130
80	130	144.6	145
90	160	162.6	165
100	185	180.7	185
110	220	198.8	200
120	250	216.8	220
130	285	234.9	235

Note: Intersection sight distance shown is for a stopped passenger car to turn right onto or to cross a two-lane highway with no median and with grades of 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

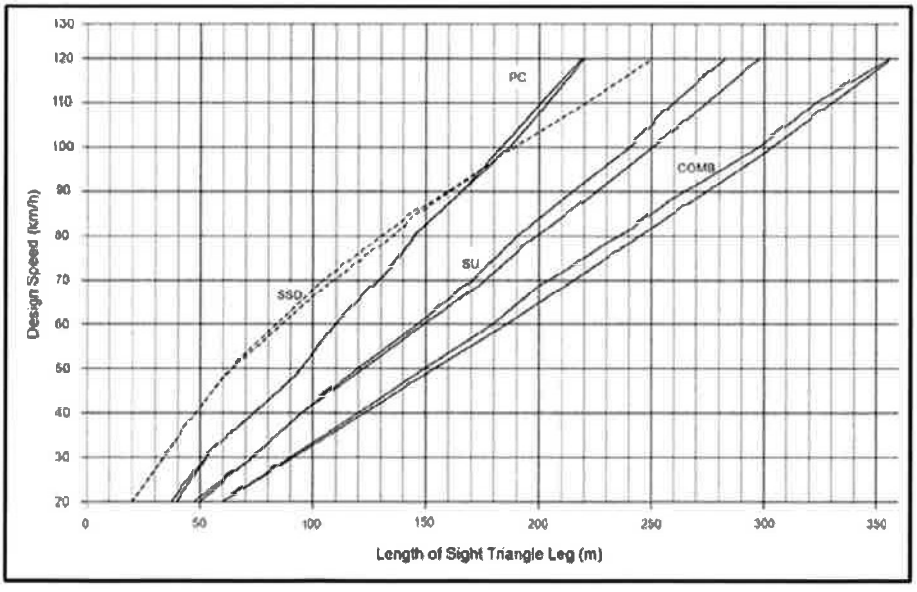


Figure 9.9.5: Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver (Calculated and Design Values Plotted)

Case F – Left Turns from the Major Road

All locations along a major highway from which vehicles are permitted to turn left across opposing traffic, including intersections and driveways, should have sufficient sight distance to accommodate the left-turn maneuver. Left-turning drivers need sufficient sight distance to decide when to turn left across the lane(s) used by opposing traffic. Sight distance design should be based on a left turn by a stopped vehicle, since a vehicle that turns left without stopping would need less sight distance. The sight distance along the major road to accommodate left turns is the distance traversed at the design speed of the major road in the travel time for the design vehicle given in **Table 9.9.11**.

Table 9.9.11: Time Gap for Case F, Left Turns from the Major Road

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	5.5
Single-unit truck	6.5
Combination truck (WB 19 and WB 20)	7.5

Note: Adjustment for multi-lane highways: For turning vehicles that cross more than one opposing lane, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane to be crossed.

The table also contains appropriate adjustment factors for the number of major-road lanes to be crossed by the turning vehicle. The unadjusted time gap in **Table 9.9.11** for passenger cars was used to develop the sight distances in **Table 9.9.12** and is illustrated in **Figure 9.9.8.**

Table 9.9.12: Intersection Sight Distance – Case F, Left Turn from the Major Road

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance	
		Passenger Cars	
		Calculated (m)	Design (m)
20	20	30.6	35
30	35	45.9	50
40	50	61.2	65
50	65	76.5	80
60	85	91.7	95
70	105	107.0	110
80	130	122.3	125
90	160	137.6	140
100	185	152.9	155
110	220	168.2	170
120	250	183.5	185
130	285	198.8	200

Note: Intersection sight distance shown is for a passenger car making a left turn from an undivided highway. For other conditions and design vehicles, the time gap should be adjusted and the sight distance recalculated.

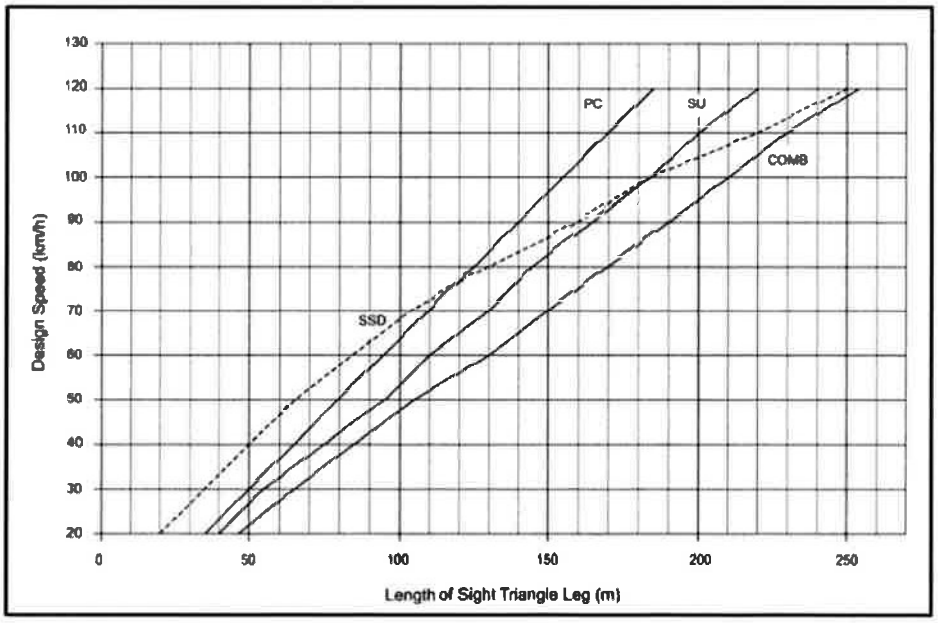


Figure 9.9.8: Intersection Sight Distance – Case F, Left Turn from the Major Road