On The Lake Developments Inc.

TRANSPORTATION IMPACT STUDY

Mixed-Use Development

1544 & 1546 Four Mile Creek Road, Niagara-on-the-Lake

April 2025

25253.01

Disclaimer

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LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON, L3R 9R9 Canada
T | 905 470 0015 F | 905 470 0030
WWW.LEA.CA

April 8, 2025 Reference Number: 25253.01

Stephen Aghaei
On The Lake Developments Inc.
976 Four Mile Creek Road
Niagara-on-the-Lake, ON
L0S 1J0

Dear Mr. Aghaei,

RE: Transportation Impact Study
Proposed Mixed-Use Development
1544 & 1546 Four Mile Creek Road, Niagara-on-the-Lake

LEA Consulting Ltd. is pleased to present the findings of our Transportation Impact Study (TIS) for the for the proposed residential development located at 1544 & 1546 Four Mile Creek Road in the Town of Niagara-on-the-Lake. This transportation study has been prepared for On the Lake Development Inc in support of the Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) applications for the subject site. This report concludes that the traffic associated with the proposed development does not present any significant impact to traffic conditions in the surrounding area.

Please do not hesitate to contact the undersigned should you have any additional questions or concerns at egilmour@lea.ca

Yours truly,

LEA CONSULTING LTD.

Jocelyn Wallen, P.Eng., RSP1
Sector Lead, Project Management

Eric Gilmour, B.Eng
Project Coordinator, Transportation Planning & Engineering

Encl. Transportation Impact Study – 1544 & 1546 Four Mile Creek Road, Proposed Mixed-Use Development, Town of Niagara-on-the-Lake (April 2025)

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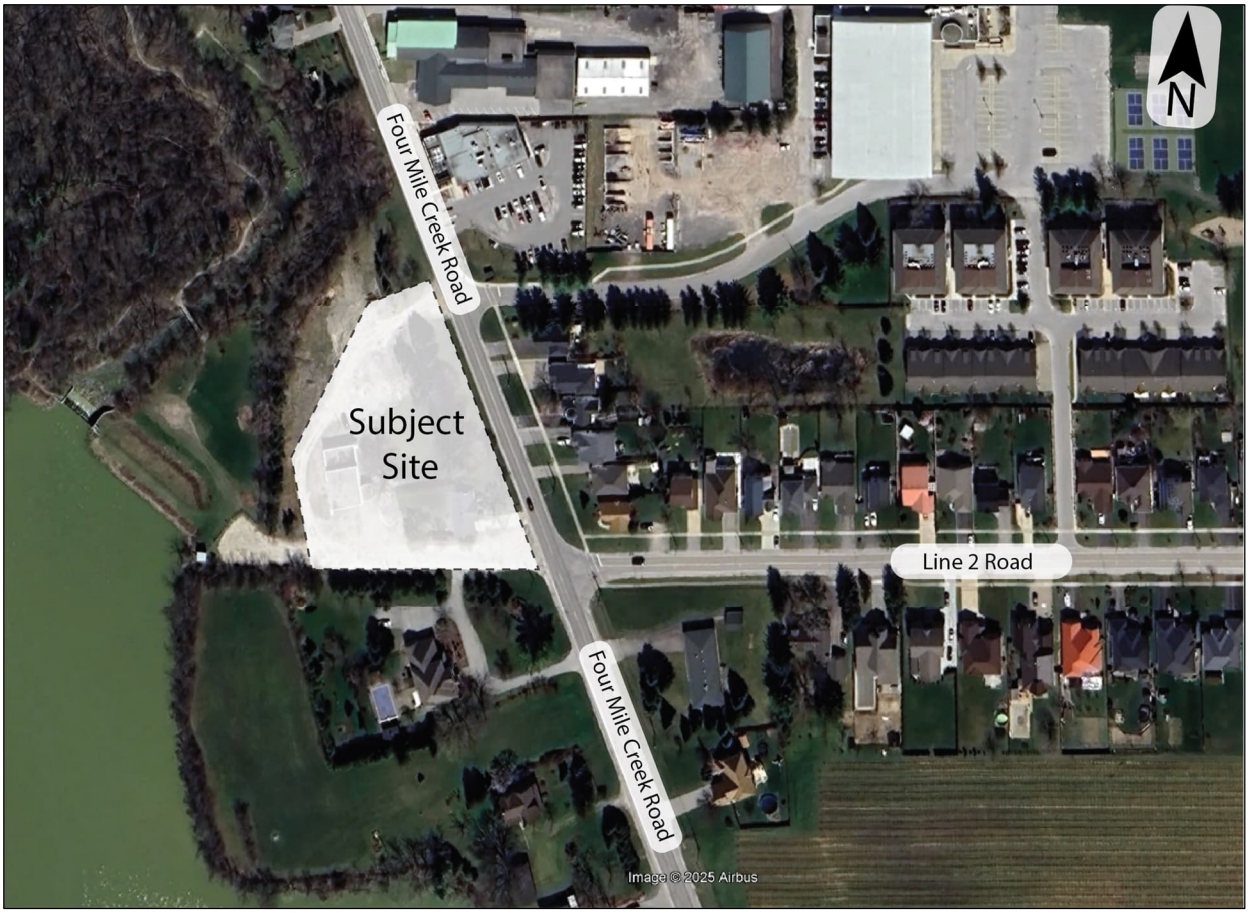
1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by *On The Lake Developments Inc.* to undertake a Transportation Impact Study (TIS) for the proposed mixed-use development located at 1544 & 1546 Four Mile Creek Road in the Town of Niagara-on-the-Lake. This TIS has been prepared in support of the Zoning By-law Amendment (ZBA) application for the subject site.

The subject site is located along the west side of Four Mile Creek Road north of Line 2 Road and south of Arena Road as shown in Figure 1-1.

Figure 1-1: Subject Site Location



Source: Google Earth Pro accessed March 2025

The purpose of this study is to review the existing transportation infrastructure in the surrounding network including the road network, transit network, and active transportation network. This TIS assesses the existing conditions and two future horizons – a one (1) year build-out horizon year and a five (5) years post build-out horizon year for the years 2026 and 2031, respectively, from an existing year 2025.

A comprehensive TDM Plan will be prepared to shift and reduce vehicle demand associated with the proposed development. In addition, this report will review the proposed parking supply against by-law requirements. Finally, a review of the proposed loading supply and functionality of the subject site is

provided. The study scope is consistent with the *Niagara Region Transportation Impact Assessment (TIA) Guidelines* dated July 2023.

1.1 PROPOSED DEVELOPMENT

The site, which is currently occupied by an existing single detached residential building, will be replaced by the proposed mixed-use development which includes a 4-storey mixed-use building containing a total of 29 residential units and a 2-storey commercial/office building containing 1,670 m^2 of commercial GFA (which includes a commercial restaurant) and 1,749 m^2 of office GFA.

The development will include 200 vehicle parking spaces across a one (1) level underground parking garage and surface-level parking. Vehicle and loading access to the site will be provided via the existing two (2) unsignalized full-moves site accesses along Four Mile Creek Road; Four Mile Creek Road & Arena Road/North Site Access and Four Mile Creek Road & Line 2 Road/South Site Access.

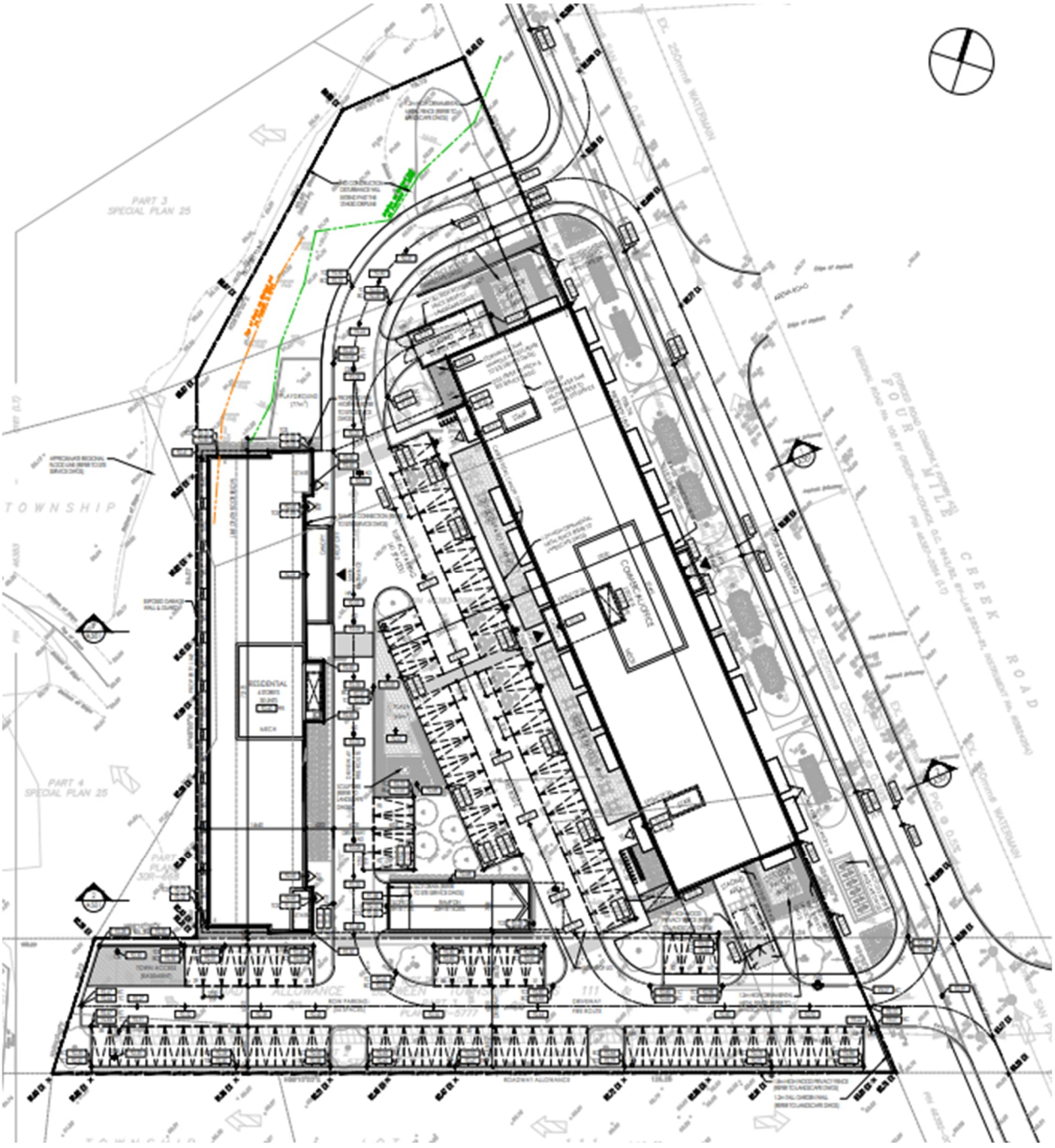
The site statistics for the proposed development are presented in Table 1-1 while the proposed site plan is illustrated in Figure 1-2.

Table 1-1: Site Statistics

Land Use	Unit Count/GFA
Residential	29 Units
Non-Residential	
Commercial	1,670 m^2
Outdoor Patio (Commercial Restaurant)	390 m^2
Office	1,749 m^2
Non-Residential Total	**3,809 m^2 (a)**
Vehicle Parking Supply	200 Spaces

(a) In addition, the site features 220m^2 of mechanical penthouse and 79m^2 of service space which does not impact trip generation or parking supply, bringing the development total to 3,718 m^2 of non-residential GFA for the building (excluding the outdoor patio which is included in outdoor amenity)

Figure 1-2: Site Plan



Source: Icke Brochu Architects Inc, April 2025

2 EXISTING TRANSPORTATION CONDITIONS

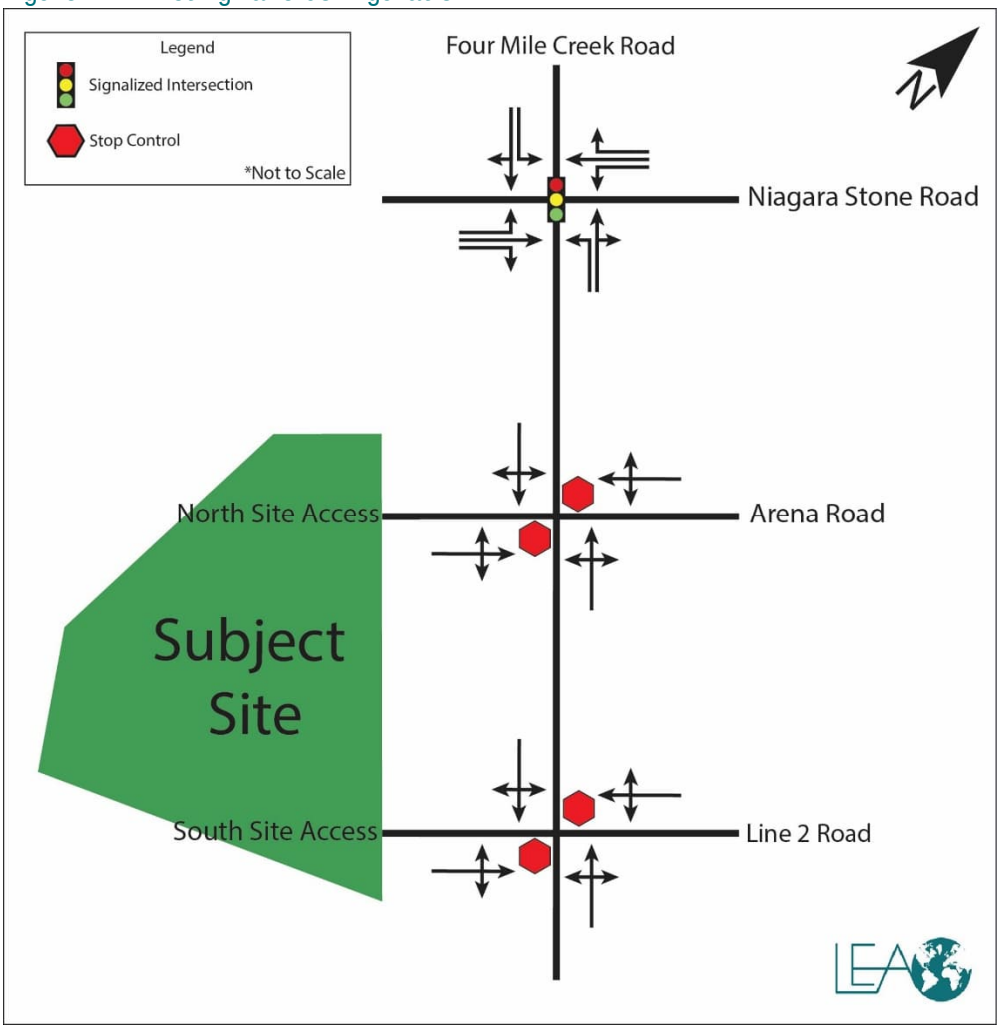
This section identifies and assesses the existing transportation conditions within the study area, including the road, transit, cycling, and pedestrian networks. The study area was determined by assessing the size of the proposed development and its anticipated transportation impact, and through consultation with the Town of Niagara-on-the-Lake and Niagara Regional staff noted in the Terms of Reference provided in Appendix A. The existing study area includes the following intersections:

- Four Mile Creek Road & Arena Road/North Site Access (Unsignalized);
- Four Mile Creek Road & Line 2 Road/South Site Access (Unsignalized); and
- Four Mile Creek Road & Niagara Stone Road (Signalized).

2.1 EXISTING ROAD NETWORK

The following section provides a description and classification of the roadways within the study area. Figure 2-1 illustrates the existing road network and lane configuration within the study area.

Figure 2-1: Existing Lane Configuration



Four Mile Creek Road is a north-south regional road that operates with a two (2) lane cross-section (one lane per direction) and has a posted speed limit of 50 km/h within the study area. The roadway extends from Lakeshore Road to Niagara Town Line within the Town of Niagara-on-the-Lake.

Arena Road is a north-south and east-west local road that operates with a two (2) lane cross-section (one lane per direction) and has an assumed speed limit of 50 km/h within the study area. The roadway extends from Four Mile Creek Road to Lorraine Street within the Town of Niagara-on-the-Lake.

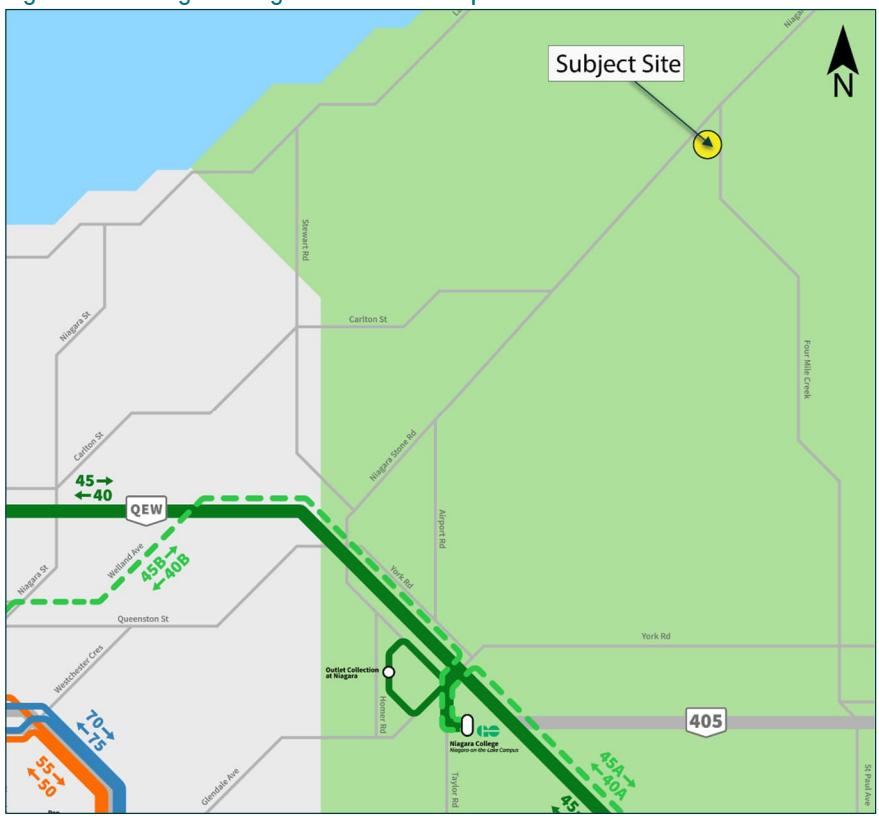
Line 2 Road is an east-west collector road that operates with a two (2) lane cross-section (one lane per direction) and has a posted speed limit of 50 km/h within the study area. The roadway extends from Four Mile Creek Road to Niagara River Parkway within the Town of Niagara-on-the-Lake.

Niagara Stone Road is a north-south/east-west regional road that operates with a two (2) lane cross-section (one lane per direction) and has a posted speed limit of 50 km/h within the study area. The roadway extends from Queenston Street to Anderson Lane within the Town of Niagara on-the-Lake.

2.2 EXISTING TRANSIT NETWORK

The only transit the subject site has access to is the NRT On Demand service, the subject site is in an area that does not have access to the regularly scheduled transit network operated by Niagara Regional Transit. The nearest regularly scheduled Niagara Regional transit services are located at the Outlet Collection of Niagara approximately a 10-minute drive south from the site. The nearest GO Transit bus service is also located approximately 10 minutes away by car from the site. The location of the site in relation to the available transit is shown in Figure 2-2.

Figure 2-2: Niagara Regional Route Map



Source: Niagara Regional Routes, Accessed January 2025

2.3 EXISTING CYCLING NETWORK

The subject site is in an area which has some access to the existing cycling network. The nearest cycling facility is available along Line 2 Road which has a designated on-road cycling route which operates in an east-west between Four Mile Creek Road and Concession 4 Road. As noted in Figure 2-3 there are existing cycling lanes along Four Mile Creek Road, however, at present these cycling lanes do not appear to be present.

Figure 2-3: Existing Cycling Network

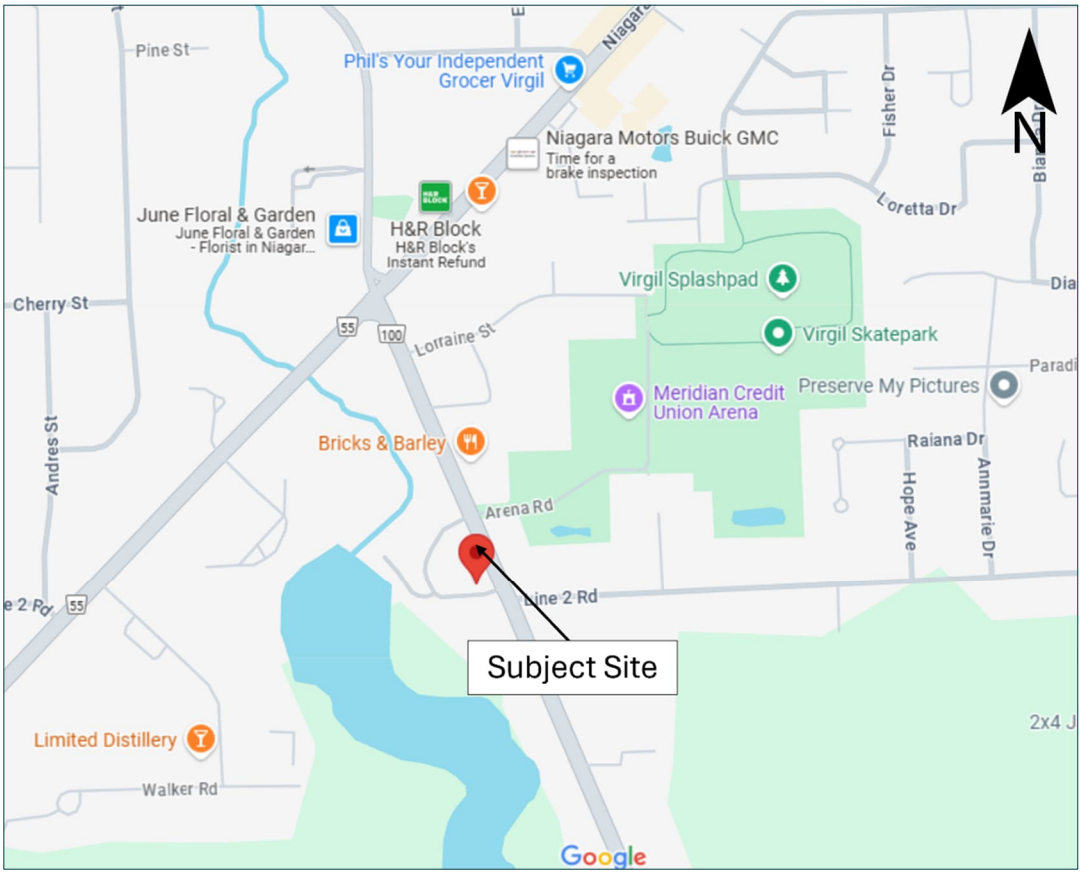
Source: Niagara Region Transportation Master Plan, October 2017

2.4 EXISTING PEDESTRIAN NETWORK

The subject site is in an area of the Town that has access to the existing pedestrian network. The existing pedestrian network consists of sidewalks along both sides of Line 2 Road and Niagara Stone Road, as well as sidewalks along the eastern side of Four Mile Creek Road and the north side of Arena Road. Signalized pedestrian crosswalks are available at all signalized intersections, and there area also pedestrian crossings (without ladder pavement markings) at the unsignalized intersections at Arena Road & Four Mile Creek Road and Line 2 Road & Four Mile Creek Road for safe pedestrian crossings.

The existing sidewalk network can provide future residents access to the nearby amenities located north of the subject site. The amenities within walking distance (within a 10-minute walk) to the site are noted in Figure 2-4 which includes restaurants, grocery stores, retail, and financial institutions.

Figure 2-4: Amenities within Walking Distance to the Subject Site



Source: Google Maps, Accessed March 2025

2.5 TRAFFIC DATA COLLECTION

Turning movement counts (TMCs) were used as the source of traffic data for the intersection capacity analysis. Traffic counts were obtained through surveys undertaken by LEA Consulting on December 17, 2024. Signal timing plans (STPs) at the signalized intersection were obtained from the Town of Niagara-on-the-Lake. Table 2-1 summarizes the traffic data utilized in this study, with detailed TMCs and STPs provided in Appendix B.

Table 2-1: Traffic Data Collection

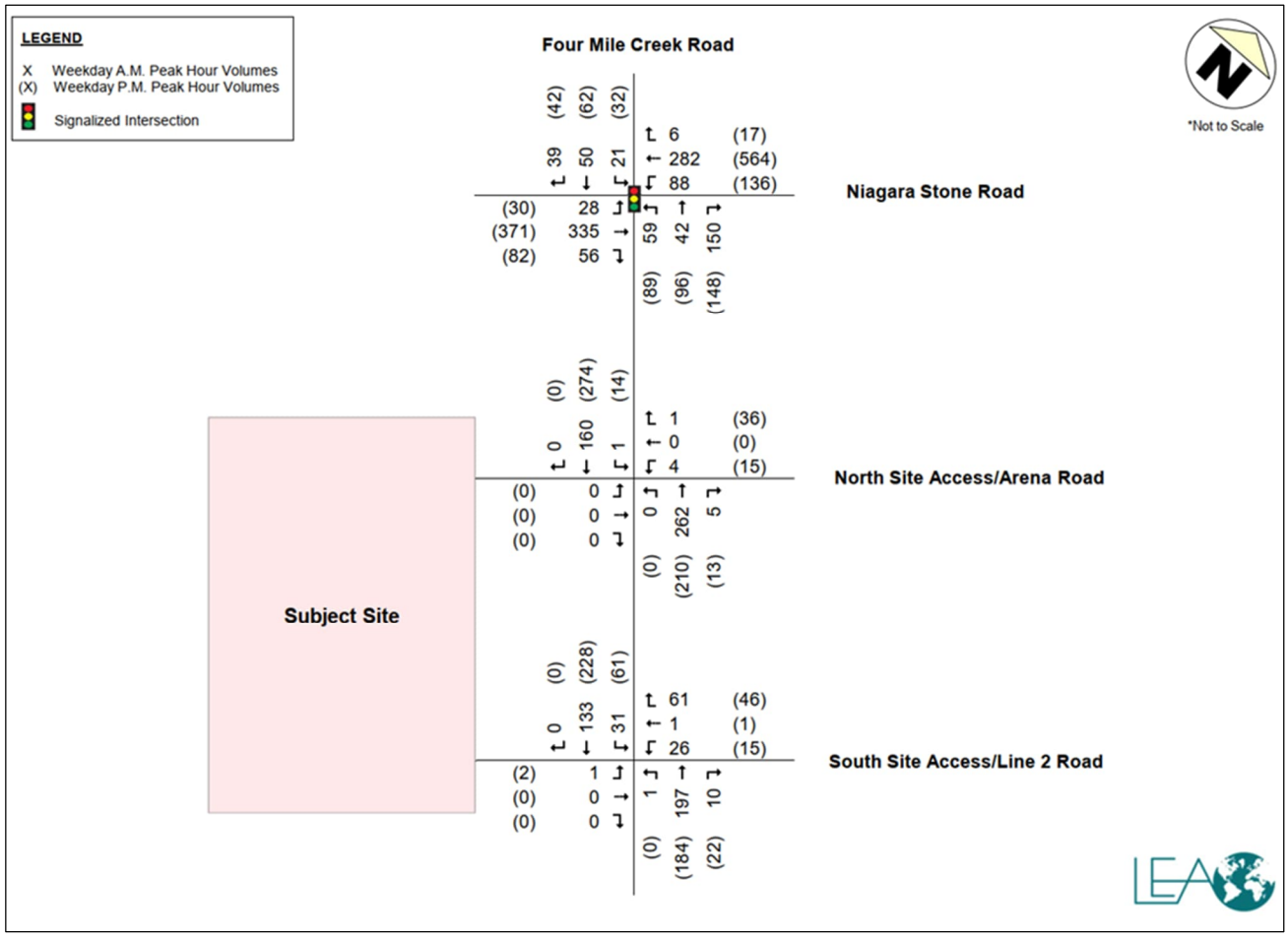
Intersection	TMC Date	Source
Four Mile Creek Road & Niagara Stone Road	Tuesday, December 17, 2024	LEA Consulting
Four Mile Creek Road & Arena Road		
Four Mile Creek Road & Line 2 Road		

2.6 EXISTING TRAFFIC VOLUMES

Under existing traffic conditions, traffic volumes were balanced at adjacent intersections as appropriate. Summer traffic volumes provided by the Ministry of Transportation Ontario (MTO) were also applied to existing counts along Niagara Stone Road and Four Mile Creek Road corridors using a 1.4 multiplier. To arrive at the multiplier, seasonal volumes at the Glendale interchange of the Queen Elizabeth Way were compared.

The existing traffic volumes in the study area during the weekday AM and PM peak hours are illustrated in Figure 2-5.

Figure 2-5: Existing Weekday Traffic Volumes



3 FUTURE BACKGROUND TRANSPORTATION CONDITIONS

For the analysis of future background traffic conditions, this study considered a one (1) year horizon (assumed build-out of the development) commencing from an existing year of 2025 to a build-out year of 2026, and five (5) years after the build-out year to 2031. Future background conditions include traffic added to the network from other future developments, corridor growth and considers overall improvements to the transportation network. The future background conditions will be used as the baseline for evaluating the impact of the proposed development.

3.1 CHANGES TO THE MODELS

Input parameters from existing traffic conditions were maintained with corresponding future background traffic volumes for the future background Synchro model. No planned changes to the road network were identified for the study area and the future background road network therefore is assumed to reflect the existing road network.

3.2 CORRIDOR GROWTH

Due to the lack of available historical turning moving counts, an annual growth rate of two (2) percent was applied to through traffic volumes along Niagara Stone Road and Four Mile Creek Road. Ministry of Transportation summer volumes were also applied to existing counts with a 1.4 multiplier applied to Niagara Stone Road and Four Mile Creek Road corridors. The 1.4 multiplier was determined by comparing seasonal volumes at the Glendale interchange of the Queen Elizabeth Way. Corridor growth rates are detailed in Table 3-1.

Table 3-1: Corridor Growth Rates

Corridor	AM	PM
EB/WB Niagara Stone Road	2.00% per year	2.00% per year
NB/SB Four Mile Creek Road	2.00% per year	2.00% per year

3.3 BACKGROUND DEVELOPMENTS

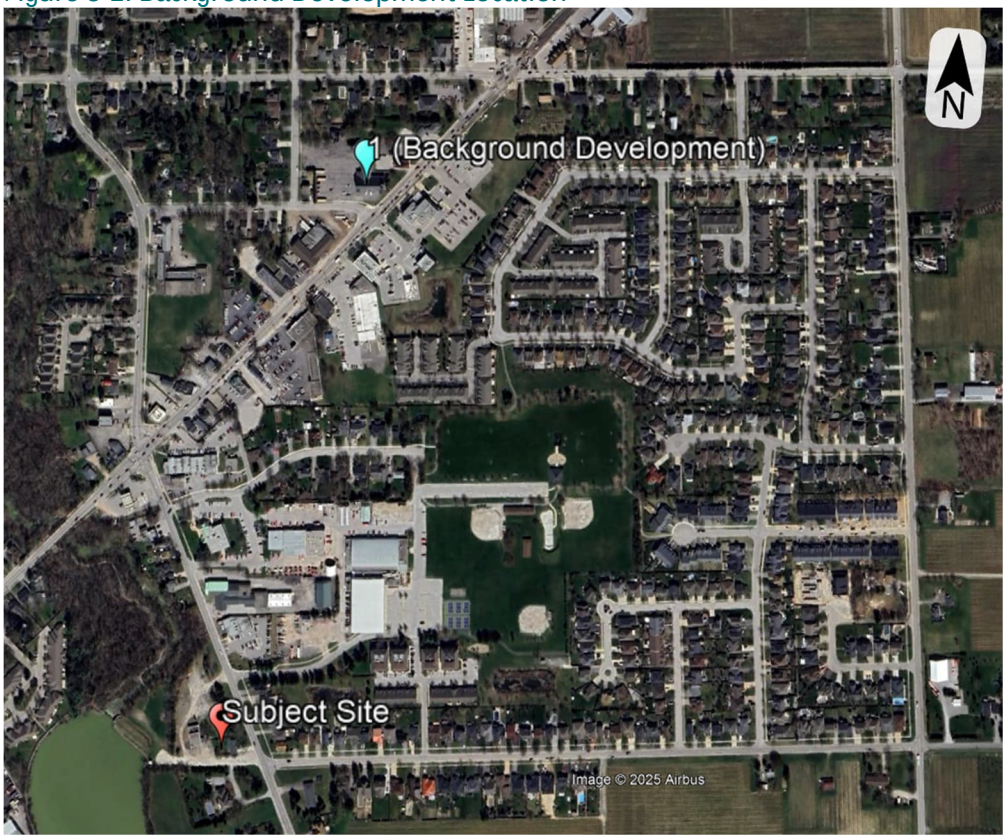
As shown in Table 3-2, one (1) background development was included in the future background analysis. Supporting documentation is provided in Appendix C.

Table 3-2: Future Background Development

#	Location	Proposed Development	Source of Traffic Volumes
1	1570 Niagara Stone Road, Niagara-on-the-Lake	14 townhouse dwelling units; 24 mid-rise dwelling units.	TIB dated September 2023 (Figure 2) SBLC Inc.

The background development's location in proximity to the subject site is provided in Figure 3-1.

Figure 3-1: Background Development Location



3.4 FUTURE BACKGROUND TRAFFIC VOLUMES

Future background traffic volumes were derived by adding the traffic associated with the identified background development and corridor growth to the existing traffic volumes. The future background traffic volumes for the 2026 and 2031 horizon years are illustrated in Figure 3-2 and Figure 3-3.

Figure 3-2: Future Background Traffic Volumes - 2026 Horizon

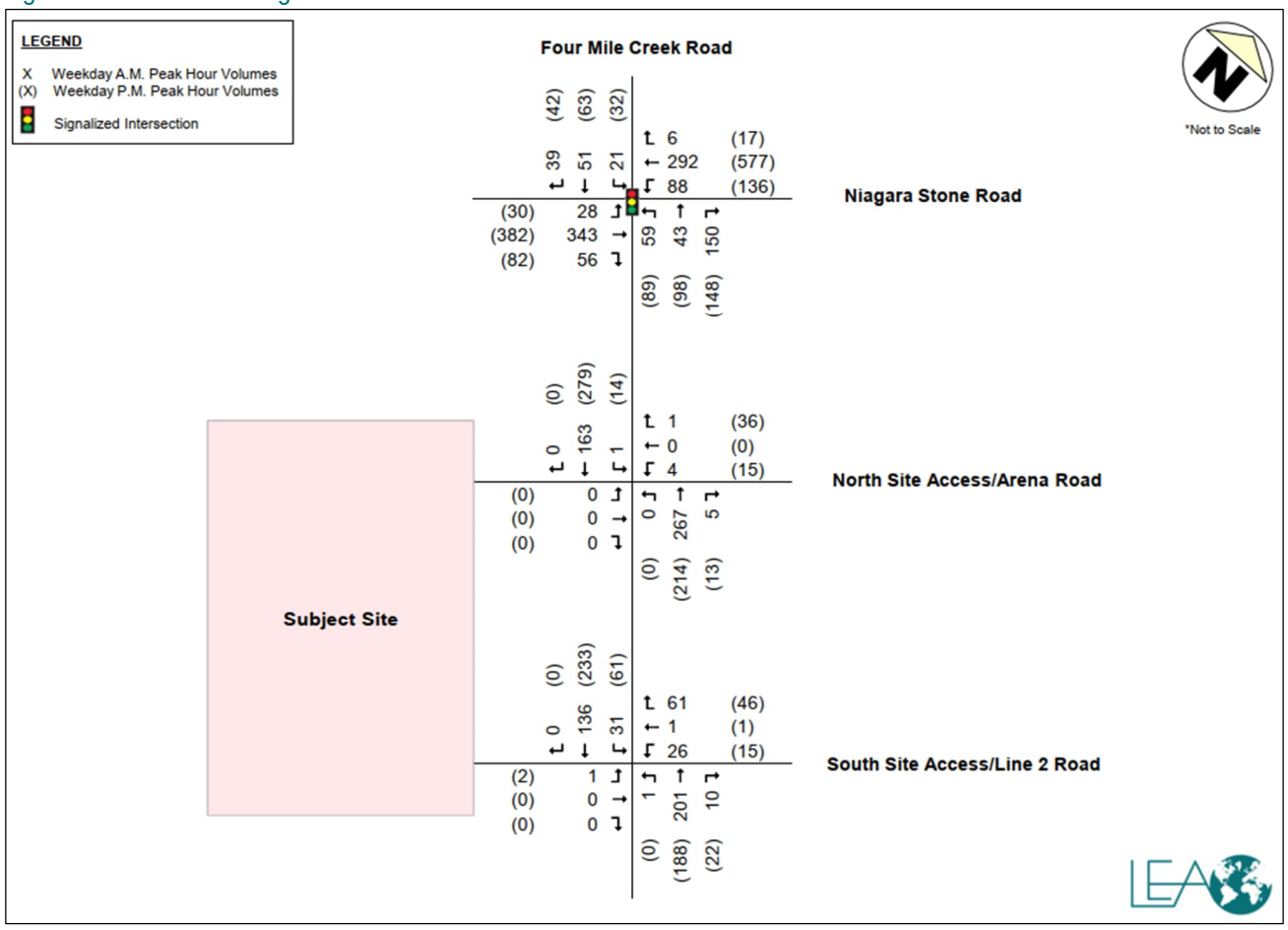
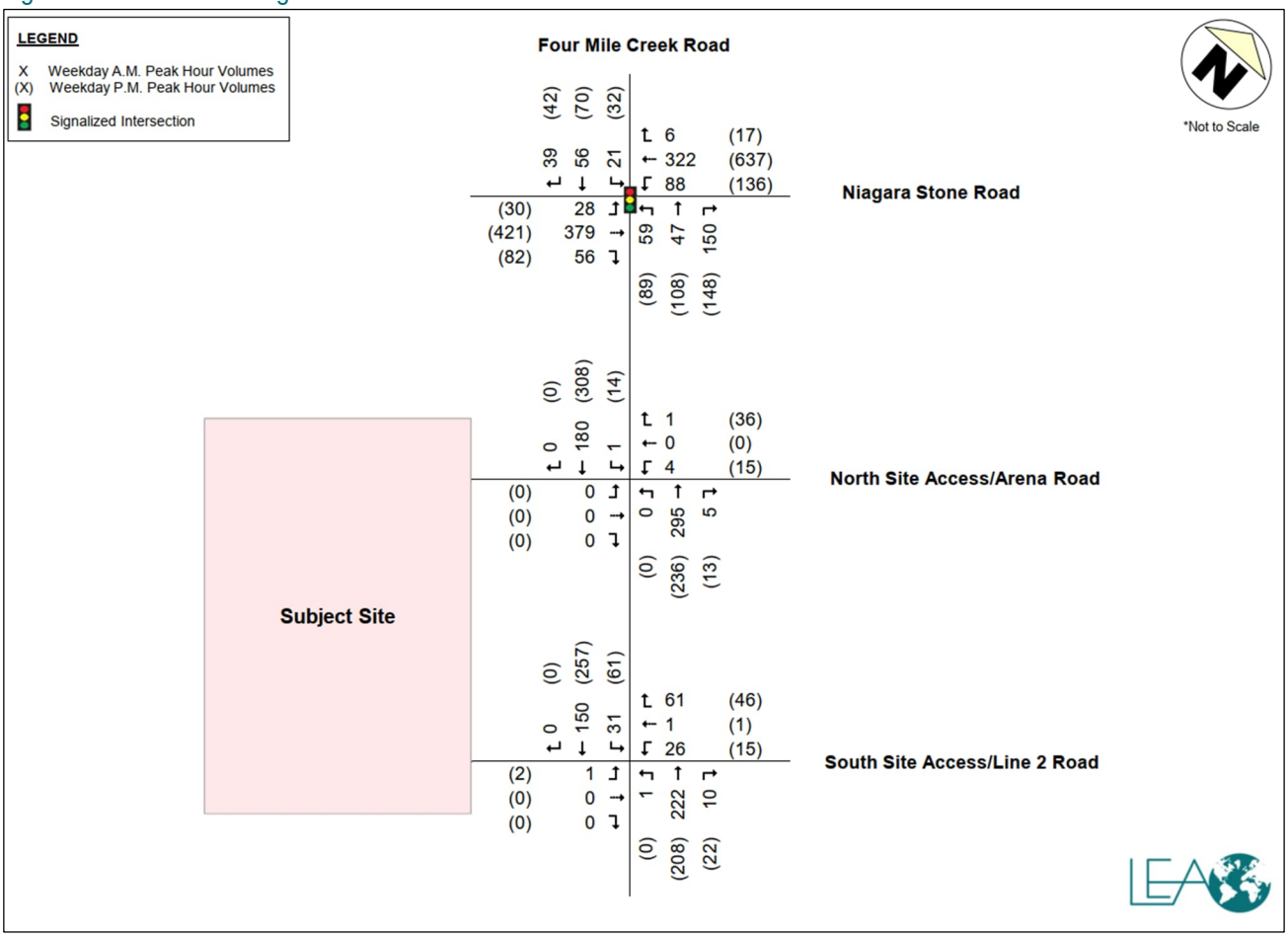


Figure 3-3: Future Background Traffic Volumes - 2031 Horizon



4 SITE GENERATED TRAFFIC AND FUTURE TOTAL CONDITIONS

Trip generation associated with the proposed development was determined using the standard methodology provided by the *Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition*. The following section discusses the calculation of site-generated trips and the distribution of anticipated site trips on the study area road network.

4.1 MODAL SPLIT

The local area modal split for the proposed development was based on 2022 Transportation Tomorrow Survey (TTS) data using the 2006 traffic analysis zones. Data was filtered for traffic analysis zones (TAZ) 6042 to 6051 and 6190 to 6200 (which contain or surround the subject site) for residential/work trips and retail trips.

For residential/work trips, trip purposes included home-based work and home-based school while for retail trips, trip purposes included home-based work and home-based discretionary. The local modal split applied to each land use during the weekday AM/PM peak periods are provided in Table 4-1. Detailed TTS calculations are provided in Appendix D.

Table 4-1: Residential, Retail, and Office Mode Split

Land Use	Description	Modal Split
Proposed Residential	**External Person Trips**	**100%**
	Auto Driver Trips	65%
	Passenger Trip	18%
	Transit Trips	11%
	Pedestrian trips	6%
	Cycling Trips	0%
Proposed Retail	**External Person Trips**	**100%**
	Auto Driver Trips	80%
	Passenger Trip	15%
	Transit Trips	1%
	Pedestrian trips	3%
	Cycling Trips	1%
Proposed Office	**External Person Trips**	**100%**
	Auto Driver Trips	65%
	Passenger Trip	18%
	Transit Trips	11%
	Pedestrian trips	6%
	Cycling Trips	0%

4.2 TRIP GENERATION

Trip generation rates for the proposed development were calculated based on the ITE Trip Generation Manual 11th Edition using the following steps:

- Baseline Auto Trips:
  - For proposed residential units, person trips were used.

- For proposed retail use, average rates for ITE LUC 822 Strip Retail (<40k) in General Urban/Suburban were used.
- For proposed office use, average rates for ITE LUC 710 General Office Building in General Urban/Suburban were used.

- Conversion to Person Trips:
  - For proposed residential, used average rates for ITE LUC 221 Multifamily Housing (Mid-Rise) in General Urban/Suburban, not close to rail transit.
  - For proposed retail, based on an auto split and average vehicle occupancy for ITE LUC 820 per ITE Trip Generation Handbook, 3rd edition.
  - For proposed office, based on an auto split and average vehicle occupancy for ITE LUC 710 per ITE Trip Generation Handbook, 3rd edition.
- Interaction Trip Reduction:
  - Since the development is mixed-use, it was assumed that some trips would be between residential, retail and office use proposed within the site. As a result, those trips will not be added to the external network. Internal trip reduction was applied per methodology outlined in ITE Trip Generation Handbook, 3rd Edition (Tables 6.1 and 6.2).
- Mode Split:
  - Per 2022 Transportation Tomorrow Survey (TTS) data, obtained existing mode split for home-based trips and school-based trips for residential/work, and home-based trips and home-based discretionary trips for retail. Traffic analysis zones used are based on 2006 zones.
  - For residential/work, filtered for traffic analysis zones 6042-6051, 6190-6200 (which contain or surround subject site). For retail, filtered for traffic analysis zones 6042-6051, 6150-6200 (which contain or surround subject site), to obtain a larger sample size.
  - Using non-auto mode share for each use, reduced external person trips.
- Pass-by Trips:
  - As per the ITE Trip Generation Manual 11th Edition's List of Land Uses with Vehicle Pass-By Rates and Data, pass-by percentage was applied for retail.
  - Due to the lack of a pass-by percentage for ITE LUC 822 Strip Retail, a percentage for ITE LUC 821 Shopping Plaza (40-150k) was applied instead.
  - A pass-by percentage of 40% was applied to the Weekday PM peak period.

4.2.1 Vehicle Trip Generation

As previously discussed, the proposed development will replace the existing single detached residential building with a proposed mixed-use development containing a total of 29 residential units, 1,670 m^2 (17,847 ft^2) of commercial GFA, and 1,749 m^2 (18,826 ft^2) of office GFA. For the purposes of calculating trip generation, commercial and office GFA was rounded up to 18,000 ft^2 and 19,000 ft^2, respectively.

The proposed development is anticipated to generate a total of 63 two-way (40 inbound, 23 outbound) and 122 two-way (57 inbound, 65 outbound) net site auto trips during the weekday AM and PM peak hours, respectively, as shown in Table 4-2.

Table 4-2: Proposed Site Vehicle Trip Generation Rates

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
ITE LUC 221 – Multifamily Housing (Mid-Rise) 29 units	ITE Person Trip Rate (/unit)	0.11	0.37	0.48	0.31	0.22	0.53
	ITE Person Trips	3	11	14	9	7	16
	Site Interaction	0	-0	0	-4	-3	-7
	Total External Person Trips	3	11	14	5	4	9
	External Auto Trips (65%)	2	7	9	3	3	6
	Primary External Auto Trips	**2**	**7**	**9**	**3**	**3**	**6**
ITE LUC 822– Strip Retail (<40k) 18,000 ft^2	ITE Auto Trip Rate (/1000 ft^2)	1.42	0.94	2.36	3.30	3.30	6.59
	ITE Auto Trips	25	17	42	60	59	119
	Adjusted Person Trips	29	20	49	73	70	143
	Site Interaction	-1	-1	-2	-8	-5	-13
	Total External Person Trips	28	19	47	65	65	130
	External Auto Trips (80%)	22	15	37	52	52	104
	Pass By Trips (Weekday PM – 40%)	0	0	0	21	21	42
	Primary External Auto Trips	**22**	**15**	**37**	**31**	**31**	**62**
ITE LUC 710– General Office Building 19,000 ft^2	ITE Auto Trip Rate (/1000 ft^2)	1.34	0.18	1.52	0.24	1.20	1.44
	ITE Auto Trips	26	3	29	5	22	27
	Adjusted Person Trips	28	4	32	6	24	30
	Site Interaction	-1	-1	-2	-1	-5	-6
	Total External Person Trips	27	3	30	5	19	24
	External Auto Trips (65%)	18	2	20	3	12	15
	Primary External Auto Trips	**18**	**2**	**20**	**3**	**12**	**15**
Existing Trips to Remove		**-2**	**-1**	**-3**	**-1**	**-2**	**-3**
New Site Auto Trips		**42**	**24**	**66**	**37**	**46**	**83**
Pass By Auto Trips		**0**	**0**	**0**	**21**	**21**	**42**
Net Site Auto Trips		**40**	**23**	**63**	**57**	**65**	**122**

4.2.2 Multi-Modal Trip Generation

The multi-modal trip generation for the proposed development is provided in Table 4-3 and was based on the local area mode split as detailed in Section 4.1. Overall, the majority of trips are expected to be auto driver trips, followed by passenger, pedestrian, transit, and cycling trips.

Table 4-3: Subject Site Multi-Modal Trip Generation

Land Use	Description	Modal Split	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	In	In	In	Total
Proposed Residential	**External Person Trips**	**100%**	**3**	**11**	**14**	**5**	**4**	**9**
	Auto Driver Trips	65%	2	7	9	3	3	6
	Passenger Trip	18%	1	2	3	1	1	2
	Transit Trips	11%	0	1	1	1	0	1
	Pedestrian trips	6%	0	1	1	0	0	0
	Cycling Trips	0%	0	0	0	0	0	0

Land Use	Description	Modal Split	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	In	In	In	Total
Proposed Retail	**External Person Trips**	**100%**	**28**	**19**	**47**	**65**	**65**	**130**
	Auto Driver Trips	80%	22	15	37	52	52	104
	Passenger Trip	15%	4	3	7	9	9	18
	Transit Trips	1%	0	0	0	1	1	2
	Pedestrian trips	3%	2	1	3	2	2	4
	Cycling Trips	1%	0	0	0	1	1	2
Proposed Office	**External Person Trips**	**100%**	**27**	**3**	**30**	**5**	**19**	**24**
	Auto Driver Trips	65%	18	2	20	3	12	15
	Passenger Trip	18%	5	1	6	1	3	4
	Transit Trips	11%	3	0	3	1	2	3
	Pedestrian trips	6%	1	0	1	0	2	2
	Cycling Trips	0%	0	0	0	0	0	0
Total Proposed	**External Person Trips**	**100%**	**58**	**33**	**91**	**75**	**88**	**163**
	Auto Driver Trips	-	42	24	66	58	67	125
	Passenger Trip	-	10	6	16	11	13	24
	Transit Trips	-	3	1	4	3	3	6
	Pedestrian trips	-	3	2	5	2	4	6
	Cycling Trips	-	0	0	0	1	1	2

4.3 TRIP DISTRIBUTION AND ASSIGNMENT

Vehicle trip distribution was based on 2022 Transportation Tomorrow Survey (TTS) data and 2006 traffic analysis zones using the following parameters:

- Traffic zones: 6042 to 6051 and 6190 to 6200 for residential/work trips and retail trips.
- Trip Types: For weekday AM and PM peak periods, auto trips originating in/destined to residential, work and retail for the traffic zones outlined above.
- Residential/work-use: inbound and outbound distribution was based on PM and AM, respectively (peak flow direction).
- Retail use: inbound and outbound distribution was based on PM due to limited data in the AM.

The vehicle trip assignment was based on local road network, turn restrictions, changes in future network (i.e., assumed none), logical routing, and type of access. Detailed trip distribution and assignment are available in Appendix D.

Table 4-4: Site Trip Distribution

Origin/ Destination	Assigned Route	Residential/Work		Retail	
		Weekday AM/ Weekday PM		Weekday AM/ Weekday PM	
		In	Out	In	Out
North	Four Mile Creek Road and EW Corridors	17%	14%	8%	9%
South	Four Mile Creek Road and EW Corridors	54%	55%	50%	57%
East	Four Mile Creek Road and EW Corridors	1%	1%	2%	0%
West	Four Mile Creek Road and EW Corridors	29%	30%	41%	34%
	TOTAL	**100%**	**100%**	**100%**	**100%**

4.4 SITE GENERATED TRAFFIC VOLUMES

Existing traffic volumes to be removed (which were removed based on the TMC's collected) are provided in Figure 4-1 while residential, retail, and office traffic volumes are provided in Figure 4-2 to Figure 4-4. New site traffic volumes and net site traffic including pass-by trips are provided in Figure 4-5 and Figure 4-6.

Figure 4-1: Existing Site Trip Traffic to Remove

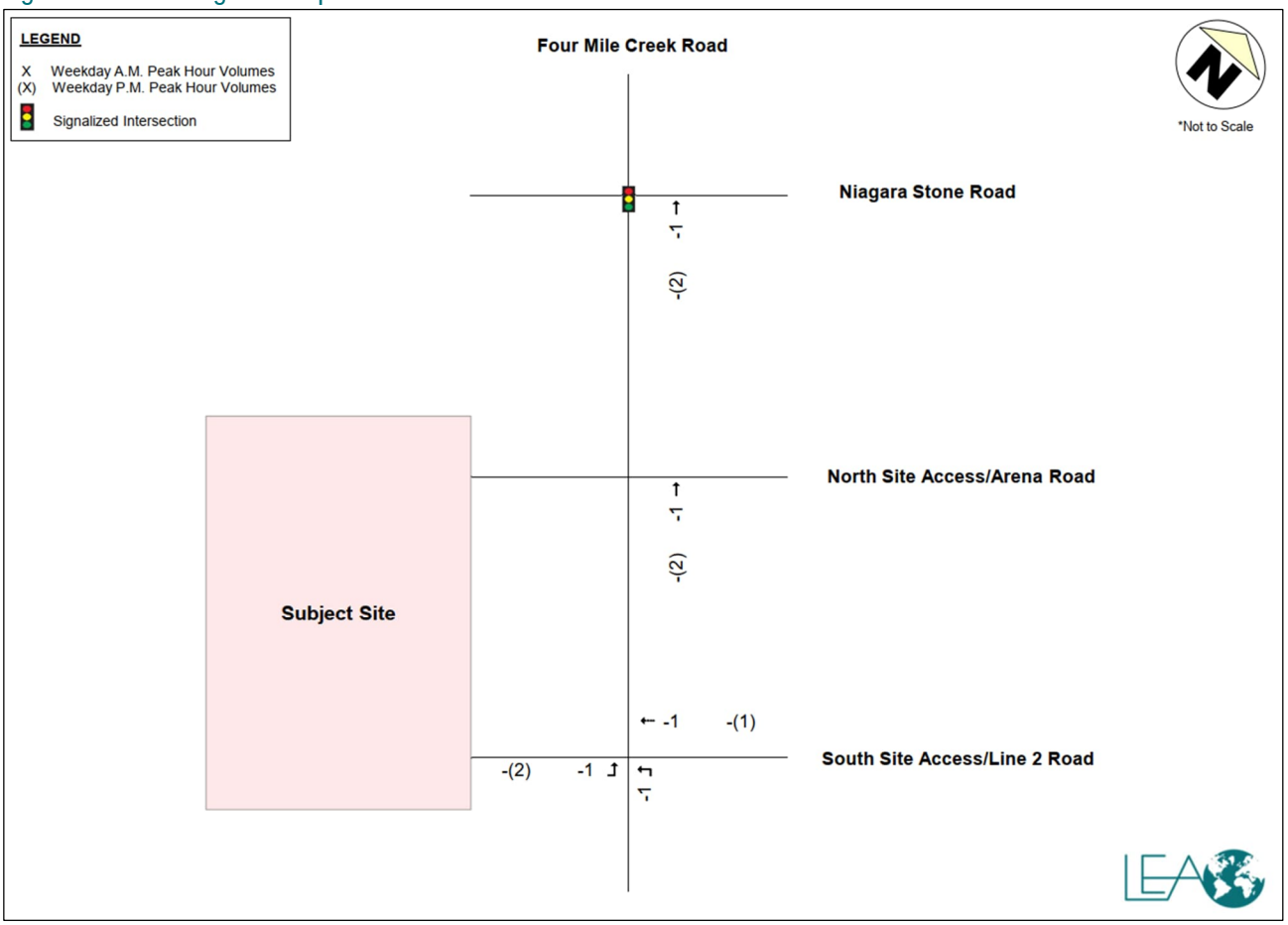


Figure 4-2: Proposed Residential Site Trip Traffic Volumes

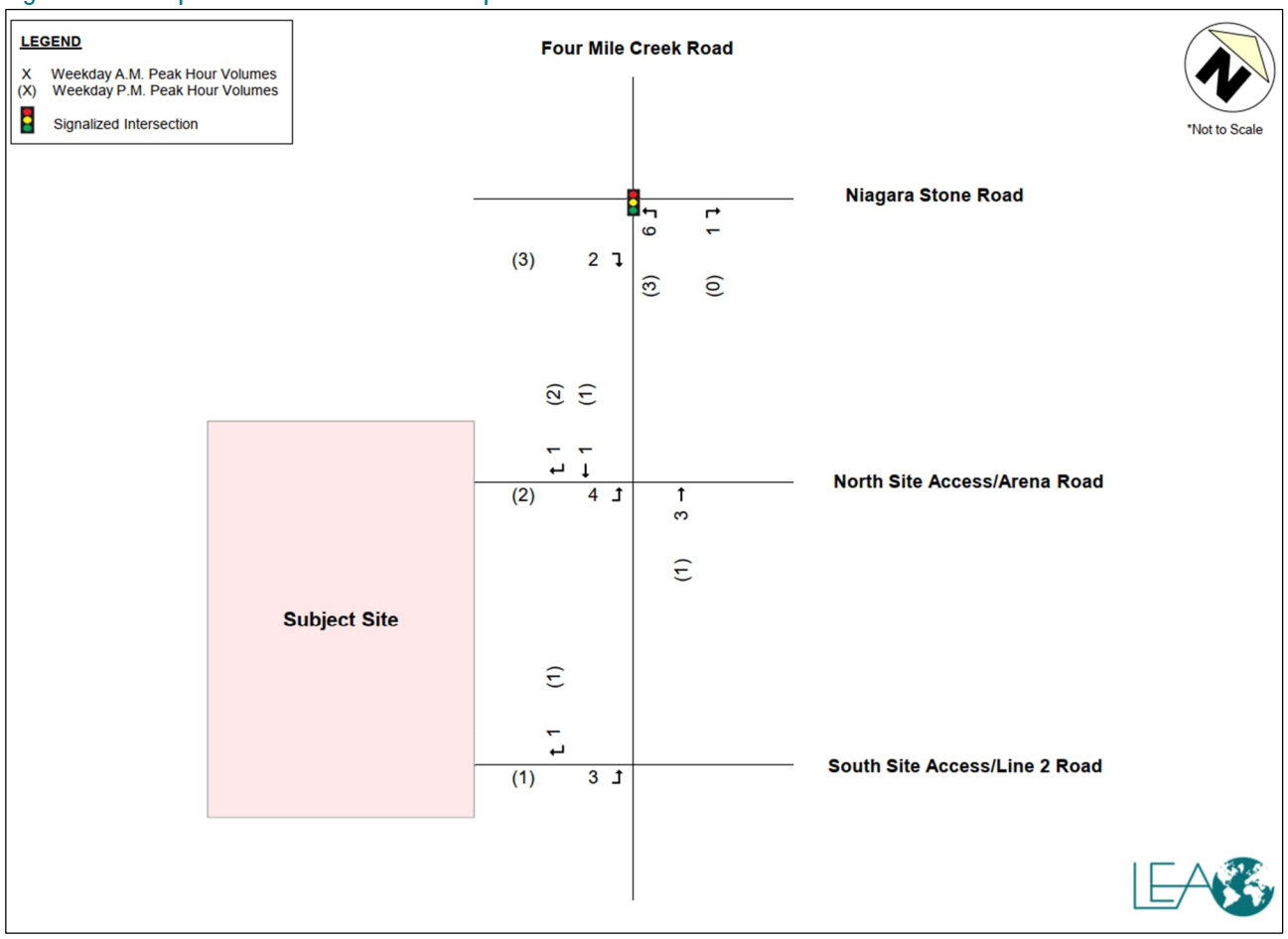


Figure 4-3: Proposed Retail Site Trip Traffic Volumes

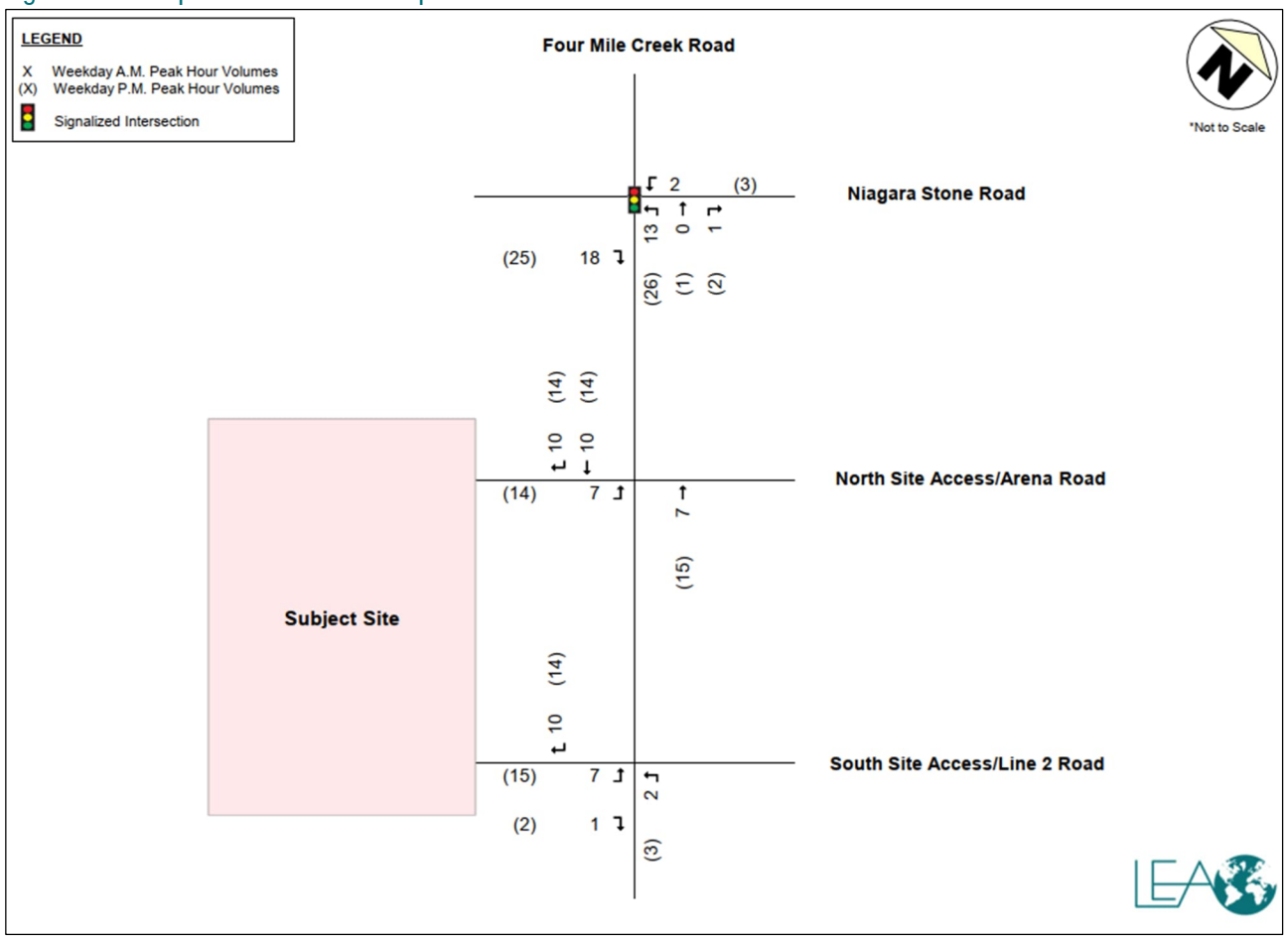


Figure 4-4: Proposed Office Site Trip Traffic Volumes

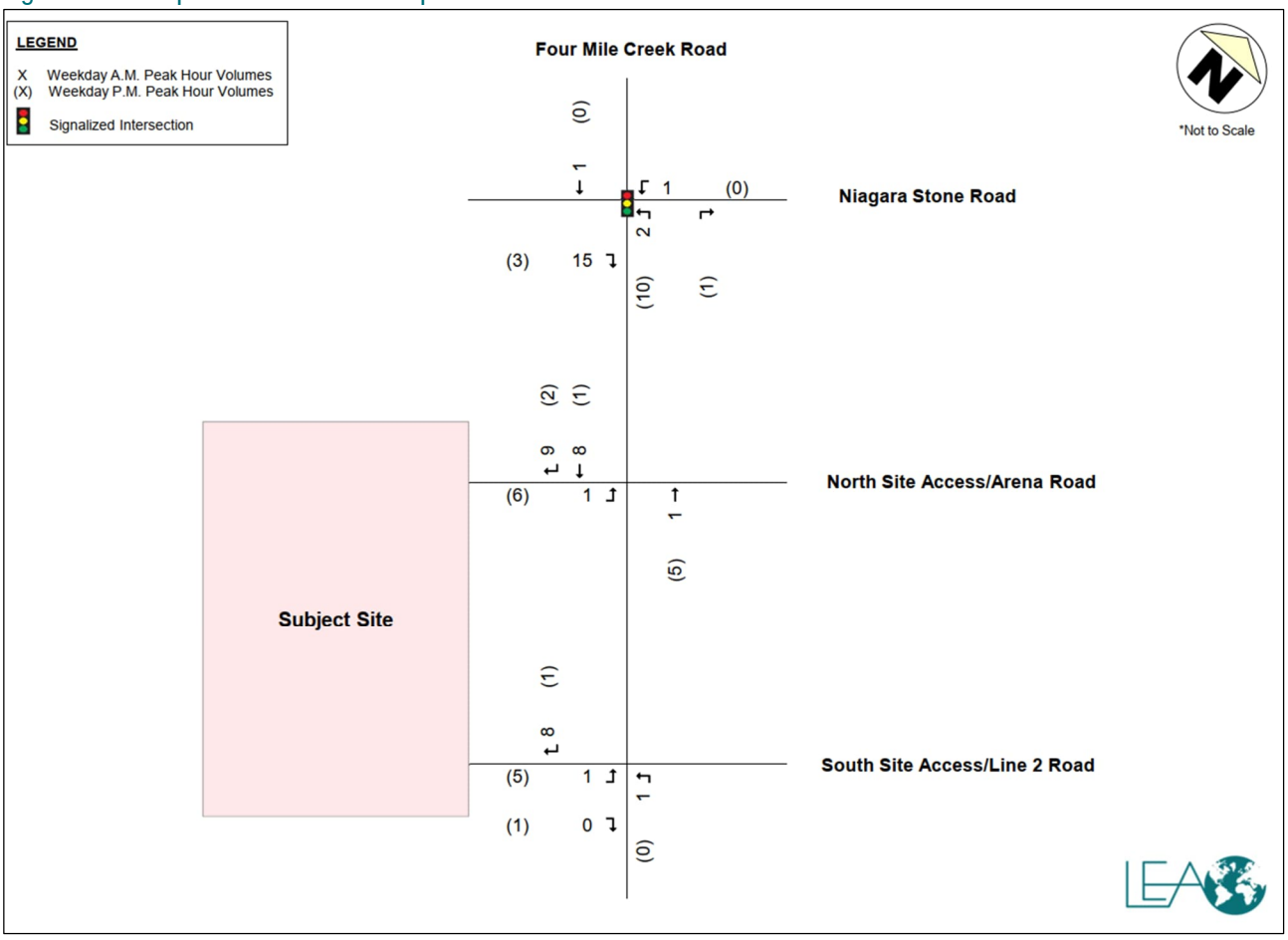


Figure 4-5: New Site Traffic Volumes

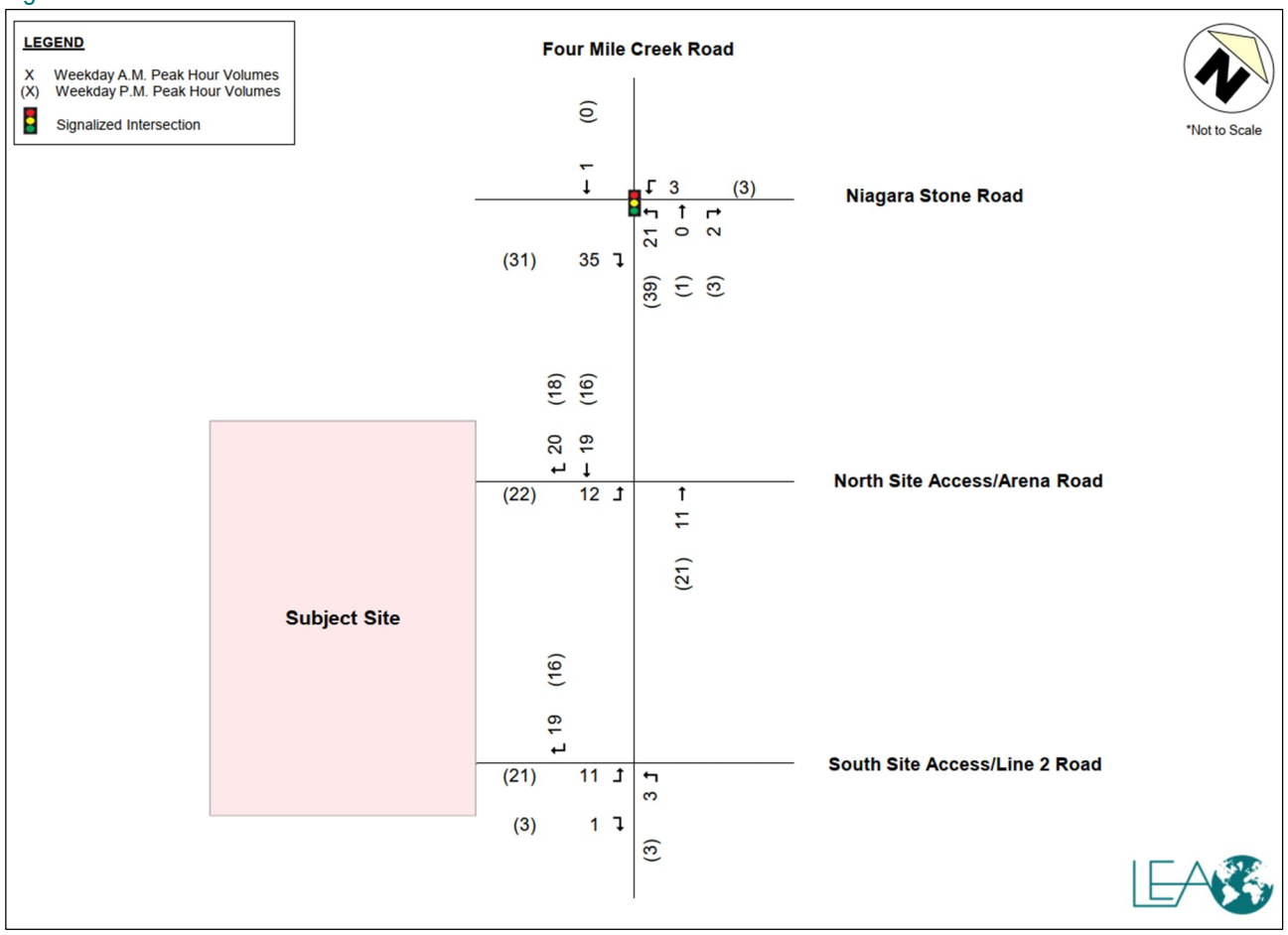
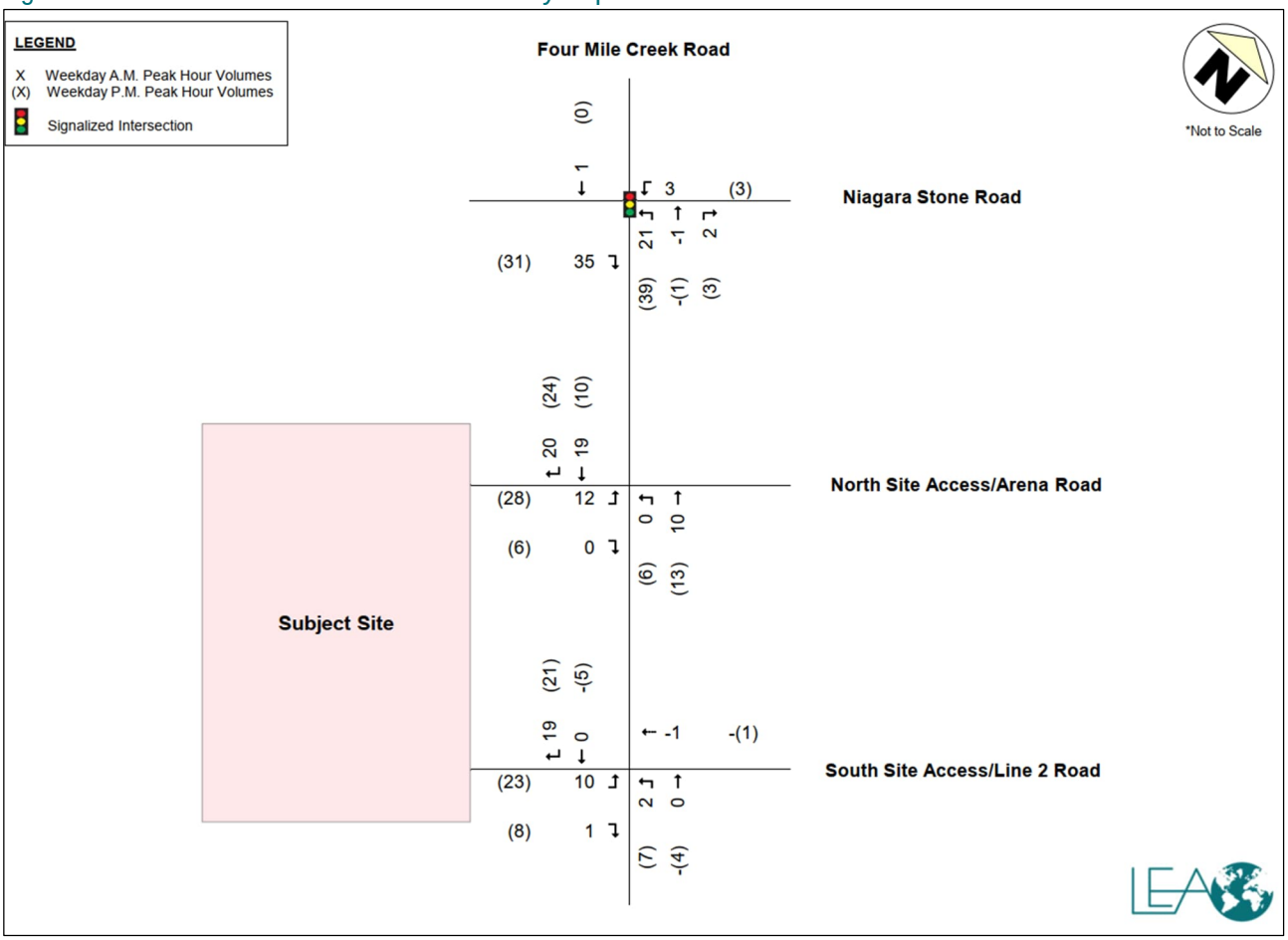


Figure 4-6: New Site Traffic Volumes + Pass By Trips



4.5 FUTURE TOTAL TRAFFIC VOLUMES

Future total traffic volumes were derived by adding the net site traffic volumes to the future background traffic volumes for each horizon year. Future total traffic volumes for the 2026 and 2031 horizon are provided in Figure 4-7 to Figure 4-8.

Figure 4-7: Future Total Traffic Volumes – 2026 Horizon

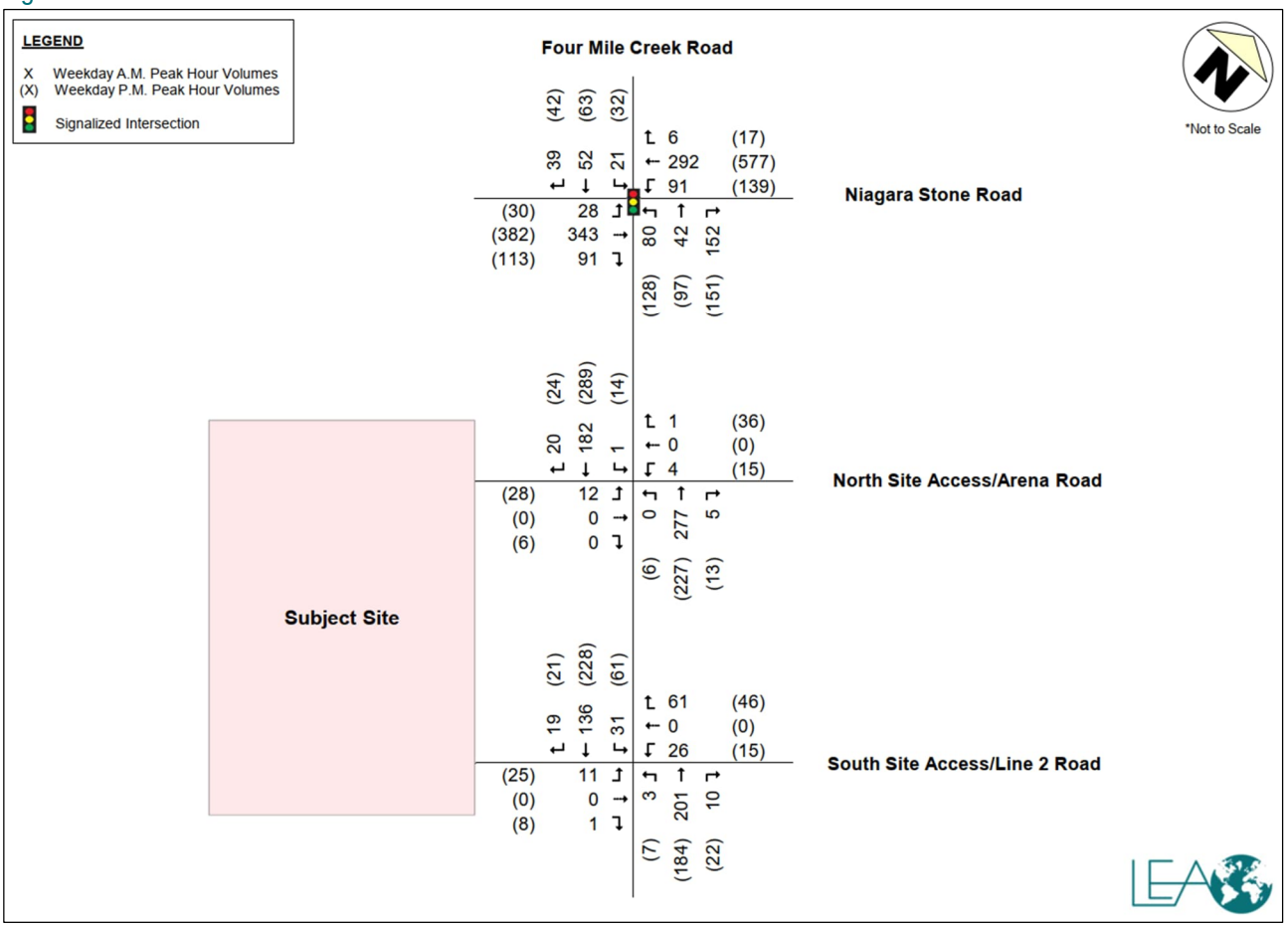
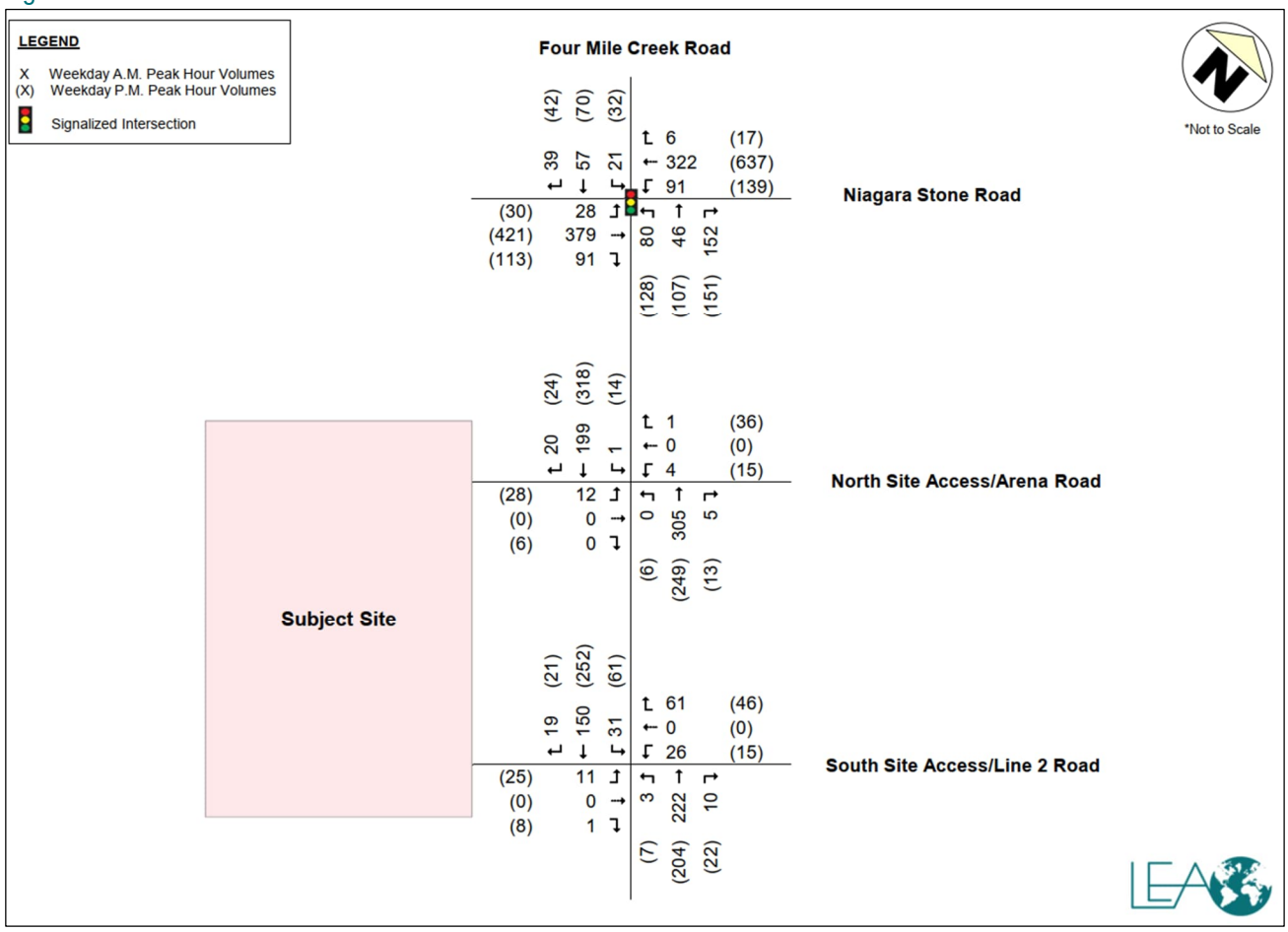


Figure 4-8: Future Total Traffic Volumes – 2031 Horizon



5 INTERSECTION CAPACITY ANALYSIS

The following sections provide an analysis of the intersection operations under existing, future background, and future total scenarios. The intersection capacity analysis for the study area was undertaken using Synchro version 11.0, which is based on the Highway Capacity Manual 2000 methodology. As per Niagara Region *Transportation Impact Assessment Guidelines* (July 2023) the definition of critical intersections/movements for the vehicle traffic analysis is as follows:

- At signalized intersections, movements with v/c ratio greater than 0.85 and/or LOS "E" or worse are deemed to be "critical" in terms of operations. Movements that exceed those thresholds shall be evaluated for possible operational improvements.
- At unsignalized intersections, movements expected to operate at LOS "D" or worse and/or where the estimated 95th percentile queue length for an individual movement exceeds the available queuing space.
- Any site accesses where entrance or egress is anticipated to be blocked by traffic queues from an upstream/downstream intersection
- An exclusive turning movement in which the 95th percentile queue will exceed the available storage space
- Exclusive left- and right turn lanes that are inaccessible due to the length of queues in the adjacent through lanes.

5.1 SIGNALIZED INTERSECTION – 2026

The results of the intersection capacity analysis for the signalized intersection under the 2026 horizon year compared to the existing year are summarized in the following tables below. Detailed results are provided in Appendix E.

5.1.1 Niagara Stone Road & Four Mile Creek Road Intersection

The intersection capacity analysis for the Niagara Stone Road & Four Mile Creek Road intersection is provided in Table 5-1.

Table 5-1: Niagara Stone Rd & Four Mile Creek Rd Intersection - Synchro Results - 2026

AM	Existing				Future Background 2026				Future Total 2026			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (m)	Vol	V/C	LOS (Delay)	Queues (50/95) (m)	Vol	V/C	LOS (Delay)	Queues (50/95) (m)
Overall	-	0.42	B (12)	-/-	-	0.43	B (12)	-/-	-	0.45	B (13)	-/-
EBL	28	0.10	B (10)	1/7	28	0.10	B (10)	1/7	28	0.10	B (10)	1/7
EBT	335	0.61	B (14)	17/54	343	0.62	B (14)	18/56	343	0.62	B (14)	18/58
EBR	56	0.04	A (10)	0/6	56	0.04	A (10)	0/6	91	0.07	B (10)	0/8
WBL	88	0.32	B (12)	4/18	88	0.33	B (12)	4/18	91	0.34	B (12)	4/19
WBT	282	0.51	B (12)	14/45	292	0.52	B (13)	15/46	292	0.52	B (13)	15/48
WBR	6	0.00	A (10)	0/0	6	0.00	A (10)	0/0	6	0.00	A (10)	0/0
NBL	59	0.21	B (13)	3/15	59	0.21	B (13)	3/15	80	0.27	B (13)	4/19
NBTR	192	0.21	B (13)	2/19	193	0.22	B (13)	2/19	194	0.21	B (13)	2/19
SBL	21	0.07	A (9)	1/4	21	0.07	A (9)	1/5	21	0.07	A (9)	1/5

SBTR	89	0.12	A (9)	2/11	90	0.12	A (9)	3/11	91	0.12	A (9)	3/12
PM	Existing				Future Background 2026				Future Total 2026			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (m)	Vol	V/C	LOS (Delay)	Queues (50/95) (m)	Vol	V/C	LOS (Delay)	Queues (50/95) (m)
Overall	-	0.60	B (15)	-/-	-	0.61	B (15)	-/-	-	0.61	B (16)	-/-
EBL	30	0.12	A (9)	2/9	30	0.12	A (9)	2/9	30	0.12	A (9)	2/9
EBT	371	0.42	B (11)	24/71	382	0.43	B (11)	25/74	382	0.43	B (11)	26/74
EBR	82	0.06	A (9)	0/8	82	0.06	A (9)	0/8	113	0.09	A (9)	0/9
WBL	136	0.34	B (11)	8/32	136	0.34	B (10)	9/32	139	0.35	B (11)	9/33
WBT	564	0.66	B (14)	43/123	577	0.66	B (14)	45/131	577	0.66	B (14)	45/131
WBR	17	0.01	A (8)	0/0	17	0.01	A (8)	0/0	17	0.01	A (8)	0/0
NBL	89	0.37	C (24)	10/26	89	0.38	C (25)	10/26	128	0.54	C (27)	15/36
NBTR	244	0.54	C (25)	18/47	246	0.56	C (27)	19/47	248	0.56	C (27)	19/48
SBL	32	0.13	B (17)	3/8	32	0.14	B (18)	3/8	32	0.14	B (18)	3/8
SBTR	104	0.16	B (18)	6/17	105	0.16	B (18)	7/17	105	0.16	B (18)	7/17

Existing (2025): Under existing conditions, the intersection of Four Mile Creek Road and Niagara Stone Road operates well during both weekday peak hours. During the weekday AM, the intersection operates with an overall LOS B with all movements operating with LOS B or better. During the weekday PM, the intersection operates with overall LOS B with all movements operating with LOS C or better. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes.

Future Background (2026): Under future background conditions, the intersection is expected to generally operate similar to existing conditions with acceptable increases in V/C ratios and delay. No critical movements are identified.

Future Total Conditions (2026): Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. All 95th percentile queues can be accommodated in their available storage space. No critical movements are identified. No intersection modifications are recommended.

5.2 UNSIGNALIZED INTERSECTIONS – 2026

The results of the intersection capacity analysis for the unsignalized intersections under the 2026 horizon year compared to the existing year are summarized in the following tables below. Detailed results are provided in Appendix E.

5.2.1 Four Mile Creek Road & Arena Road/North Site Access Intersection

The intersection capacity analysis for the Four Mile Creek Road & Arena Road/Site Access intersection is provided in Table 5-2.

Table 5-2: Four Mile Creek Rd & Arena Rd/North Site Access Intersection - Synchro Results - 2026

AM	Existing				Future Background 2026				Future Total 2026			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)
Overall	-	-	- (0)	-/-	-	-	- (0)	-/-	-	-	- (1)	-/-
NBL	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0
NBT	262	0.00	(0)	-/0	267	0.00	(0)	-/0	277	0.00	(0)	-/0
NBR	5	0.00	(0)	-/0	5	0.00	(0)	-/0	5	0.00	(0)	-/0
EBLTR	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	12	0.03	B (13)	-/0
WBLTR	5	0.01	B (13)	-/0	5	0.01	B (13)	-/0	5	0.01	B (14)	-/0
SBL	1	0.00	A (8)	-/0	1	0.00	A (8)	-/0	1	0.00	A (8)	-/0
SBT	160	0.00	A (0)	-/0	163	0.00	A (0)	-/0	182	0.00	A (0)	-/0
SBR	0	0.00	(0)	-/0	0	0.00	(0)	-/0	20	0.00	(0)	-/0
PM	**Existing**				**Future Background 2026**				**Future Total 2026**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)
Overall	-	-	- (1)	-/-	-	-	- (1)	-/-	-	-	- (2)	-/-
NBL	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	6	0.01	A (8)	-/0
NBT	210	0.00	(0)	-/0	214	0.00	(0)	-/0	227	0.00	A (0)	-/0
NBR	13	0.00	(0)	-/0	13	0.00	(0)	-/0	13	0.00	(0)	-/0
EBLTR	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	34	0.13	C (17)	-/0
WBLTR	51	0.11	B (12)	-/0	51	0.11	B (12)	-/0	51	0.12	B (13)	-/0
SBL	14	0.01	A (8)	-/0	14	0.01	A (8)	-/0	14	0.01	A (8)	-/0
SBT	274	0.00	A (0)	-/0	279	0.00	A (0)	-/0	289	0.00	A (0)	-/0
SBR	0	0.00	(0)	-/0	0	0.00	(0)	-/0	24	0.00	(0)	-/0

Existing (2025): Under existing conditions, the intersection of Four Mile Creek Road and Arena Road/North Site Access operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays operating at LOS B or better. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background (2026): Under future background conditions, the intersection is expected to generally operate similar to existing conditions with acceptable increases in V/C ratios and delay. No major constraints are noted.

Future Total Conditions (2026): Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. No intersection modifications are recommended.

5.2.2 Four Mile Creek Road & Line 2 Road/South Site Access Intersection

The intersection capacity analysis for the Four Mile Creek Road & Line 2 Road/South Site Access intersection is provided in Table 5-3.

Table 5-3: Four Mile Creek Rd & Line 2 Rd/South Site Access Intersection - Synchro Results - 2026

AM	Existing				Future Background 2026				Future Total 2026			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)
Overall	-	-	- (3)	-/-	-	-	- (3)	-/-	-	-	- (3)	-/-
NBL	1	0.00	A (8)	-/0	1	0.00	A (8)	-/0	3	0.00	A (8)	-/0
NBT	197	0.00	A (0)	-/0	201	0.00	A (0)	-/0	201	0.00	A (0)	-/0
NBR	10	0.00	(0)	-/0	10	0.00	(0)	-/0	10	0.00	(0)	-/0
EBLTR	1	0.00	B (13)	-/0	1	0.00	B (13)	-/0	12	0.03	B (13)	-/0
WBLTR	88	0.14	B (11)	-/1	88	0.14	B (11)	-/1	87	0.14	B (11)	-/1
SBL	31	0.03	A (8)	-/0	31	0.03	A (8)	-/0	31	0.03	A (8)	-/0
SBT	133	0.00	A (0)	-/0	136	0.00	A (0)	-/0	136	0.00	A (0)	-/0
SBR	0	0.00	(0)	-/0	0	0.00	(0)	-/0	19	0.00	(0)	-/0
PM	**Existing**				**Future Background 2026**				**Future Total 2026**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)
Overall	-	-	- (2)	-/-	-	-	- (2)	-/-	-	-	- (3)	-/-
NBL	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	7	0.01	A (8)	-/0
NBT	184	0.00	(0)	-/0	188	0.00	(0)	-/0	184	0.00	A (0)	-/0
NBR	22	0.00	(0)	-/0	22	0.00	(0)	-/0	22	0.00	(0)	-/0
EBLTR	2	0.01	C (16)	-/0	2	0.01	C (16)	-/0	33	0.10	C (16)	-/0
WBLTR	62	0.11	B (11)	-/0	62	0.11	B (12)	-/0	61	0.11	B (12)	-/0
SBL	61	0.05	A (8)	-/0	61	0.05	A (8)	-/0	61	0.05	A (8)	-/0
SBT	228	0.00	A (0)	-/0	233	0.00	A (0)	-/0	228	0.00	A (0)	-/0
SBR	0	0.00	(0)	-/0	0	0.00	(0)	-/0	21	0.00	(0)	-/0

Existing (2025): Under existing conditions, the intersection of Four Mile Creek Road and Line 2 Road/South Site Access operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays operating at LOS C or better. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background (2026): Under future background, the intersection is expected to generally operate similar to existing conditions with acceptable increases in V/C ratios and delay. No major constraints are noted.

Future Total Conditions (2026): Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. No intersection modifications are recommended.

5.3 SIGNALIZED INTERSECTION – 2031

The results of the intersection capacity analysis for the signalized intersections under the 2031 horizon year compared to the existing year are summarized in the following tables below. Detailed results are provided in Appendix E.

5.3.1 Niagara Stone Road & Four Mile Creek Road Intersection

The intersection capacity analysis for the Niagara Stone Road & Four Mile Creek Road intersection is provided in Table 5-4.

Table 5-4: Niagara Stone Rd & Four Mile Creek Rd Intersection - Synchro Results - 2031

AM	Existing				Future Background 2031				Future Total 2031			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (m)	Vol	V/C	LOS (Delay)	Queues (50/95) (m)	Vol	V/C	LOS (Delay)	Queues (50/95) (m)
Overall	-	0.42	B (12)	-/-	-	0.46	B (13)	-/-	-	0.47	B (13)	-/-
EBL	28	0.10	B (10)	1/7	28	0.10	A (10)	1/7	28	0.10	B (10)	1/7
EBT	335	0.61	B (14)	17/54	379	0.65	B (15)	20/62	379	0.64	B (14)	20/64
EBR	56	0.04	A (10)	0/6	56	0.04	A (10)	0/6	91	0.07	A (10)	0/8
WBL	88	0.32	B (12)	4/18	88	0.35	B (12)	4/18	91	0.35	B (12)	4/19
WBT	282	0.51	B (12)	14/45	322	0.55	B (13)	16/51	322	0.54	B (13)	16/53
WBR	6	0.00	A (10)	0/0	6	0.00	A (10)	0/0	6	0.00	A (10)	0/0
NBL	59	0.21	B (13)	3/15	59	0.22	B (13)	3/16	80	0.28	B (14)	4/21
NBTR	192	0.21	B (13)	2/19	197	0.23	B (13)	2/21	198	0.22	B (13)	2/21
SBL	21	0.07	A (9)	1/4	21	0.08	A (10)	1/5	21	0.08	A (10)	1/5
SBTR	89	0.12	A (9)	2/11	95	0.13	A (10)	3/13	96	0.13	B (10)	3/14
PM	**Existing**				**Future Background 2031**				**Future Total 2031**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (m)	Vol	V/C	LOS (Delay)	Queues (50/95) (m)	Vol	V/C	LOS (Delay)	Queues (50/95) (m)
Overall	-	0.60	B (15)	-/-	-	0.67	B (16)	-/-	-	0.67	B (17)	-/-
EBL	30	0.12	A (9)	2/9	30	0.15	A (9)	2/10	30	0.15	A (9)	2/10
EBT	371	0.42	B (11)	24/71	421	0.47	B (11)	30/85	421	0.47	B (11)	30/85
EBR	82	0.06	A (9)	0/8	82	0.06	A (9)	0/8	113	0.09	A (9)	0/10
WBL	136	0.34	B (11)	8/32	136	0.37	B (11)	9/34	139	0.38	B (11)	9/35
WBT	564	0.66	B (14)	43/123	637	0.73	B (16)	55/168	637	0.73	B (16)	55/169
WBR	17	0.01	A (8)	0/0	17	0.01	A (8)	0/0	17	0.01	A (9)	0/0
NBL	89	0.37	C (24)	10/26	89	0.37	C (25)	10/26	128	0.53	C (27)	15/36
NBTR	244	0.54	C (25)	18/47	256	0.60	C (28)	21/51	258	0.60	C (28)	21/51
SBL	32	0.13	B (17)	3/8	32	0.14	B (18)	3/8	32	0.14	B (18)	3/8
SBTR	104	0.16	B (18)	6/17	112	0.17	B (18)	7/18	112	0.17	B (19)	7/18

Future Background (2031): Under future background conditions, the intersection is expected to generally operate similar to existing conditions with acceptable increases in V/C ratios and delay. No critical movements are identified.

Future Total Conditions (2031): Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. All 95th percentile queues can be accommodated in their available storage space. No critical movements are identified. No intersection modifications are recommended.

5.4 UNSIGNALIZED INTERSECTIONS – 2031

The results of the intersection capacity analysis for the unsignalized intersections are summarized in the following tables below. Detailed results are provided in Appendix E.

5.4.1 Four Mile Creek Road & Arena Road/North Site Access Intersection

The intersection capacity analysis for the Four Mile Creek Road & Arena Road/Site Access intersection is provided in Table 5-5.

Table 5-5: Four Mile Creek Rd & Arena Rd/North Site Access Intersection - Synchro Results - 2031

AM	Existing				Future Background 2031				Future Total 2031			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)
Overall	-	-	- (0)	-/-	-	-	- (0)	-/-	-	-	- (0)	-/-
NBL	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0
NBT	262	0.00	(0)	-/0	295	0.00	(0)	-/0	305	0.00	(0)	-/0
NBR	5	0.00	(0)	-/0	5	0.00	(0)	-/0	5	0.00	(0)	-/0
EBLTR	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	12	0.03	B (14)	-/0
WBLTR	5	0.01	B (13)	-/0	5	0.01	B (14)	-/0	5	0.02	B (15)	-/0
SBL	1	0.00	A (8)	-/0	1	0.00	A (8)	-/0	1	0.00	A (8)	-/0
SBT	160	0.00	A (0)	-/0	180	0.00	A (0)	-/0	199	0.00	A (0)	-/0
SBR	0	0.00	(0)	-/0	0	0.00	(0)	-/0	20	0.00	(0)	-/0
PM	**Existing**				**Future Background 2031**				**Future Total 2031**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)
Overall	-	-	- (1)	-/-	-	-	- (1)	-/-	-	-	- (2)	-/-
NBL	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	6	0.01	A (8)	-/0
NBT	210	0.00	(0)	-/0	236	0.00	(0)	-/0	249	0.00	A (0)	-/0
NBR	13	0.00	(0)	-/0	13	0.00	(0)	-/0	13	0.00	(0)	-/0
EBLTR	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	34	0.14	C (19)	-/1
WBLTR	51	0.11	B (12)	-/0	51	0.12	B (13)	-/0	51	0.13	B (13)	-/0
SBL	14	0.01	A (8)	-/0	14	0.01	A (8)	-/0	14	0.01	A (8)	-/0
SBT	274	0.00	A (0)	-/0	308	0.00	A (0)	-/0	318	0.00	A (0)	-/0
SBR	0	0.00	(0)	-/0	0	0.00	(0)	-/0	24	0.00	(0)	-/0

Future Background (2031): Under future background conditions, the intersection is expected to generally operate similar to existing conditions with acceptable increases in V/C ratios and delay. No major constraints are noted.

Future Total Conditions (2031): Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. No intersection modifications are recommended.

5.4.2 Four Mile Creek Road & Line 2 Road/South Site Access Intersection

The intersection capacity analysis for the Four Mile Creek Road & Line 2 Road/Site Access intersection is provided in Table 5-6.

Table 5-6: Four Mile Creek Rd & Line 2 Rd/South Site Access Intersection - Synchro Results - 2031

AM	Existing				Future Background 2031				Future Total 2031			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)
Overall	-	-	- (3)	-/-	-	-	- (3)	-/-	-	-	- (3)	-/-
NBL	1	0.00	A (8)	-/0	1	0.00	A (8)	-/0	3	0.00	A (8)	-/0
NBT	197	0.00	A (0)	-/0	222	0.00	A (0)	-/0	222	0.00	A (0)	-/0
NBR	10	0.00	(0)	-/0	10	0.00	(0)	-/0	10	0.00	(0)	-/0
EBLTR	1	0.00	B (13)	-/0	1	0.00	B (14)	-/0	12	0.03	B (14)	-/0
WBLTR	88	0.14	B (11)	-/1	88	0.15	B (11)	-/1	87	0.15	B (12)	-/1
SBL	31	0.03	A (8)	-/0	31	0.03	A (8)	-/0	31	0.03	A (8)	-/0
SBT	133	0.00	A (0)	-/0	150	0.00	A (0)	-/0	150	0.00	A (0)	-/0
SBR	0	0.00	(0)	-/0	0	0.00	(0)	-/0	19	0.00	(0)	-/0
PM	**Existing**				**Future Background 2031**				**Future Total 2031**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)	Vol	V/C	LOS (Delay)	Queues (50/95) (veh)
Overall	-	-	- (2)	-/-	-	-	- (2)	-/-	-	-	- (3)	-/-
NBL	0	0.00	A (0)	-/0	0	0.00	A (0)	-/0	7	0.01	A (8)	-/0
NBT	184	0.00	(0)	-/0	208	0.00	(0)	-/0	204	0.00	A (0)	-/0
NBR	22	0.00	(0)	-/0	22	0.00	(0)	-/0	22	0.00	(0)	-/0
EBLTR	2	0.01	C (16)	-/0	2	0.01	C (17)	-/0	33	0.11	C (17)	-/0
WBLTR	62	0.11	B (11)	-/0	62	0.12	B (12)	-/0	61	0.12	B (12)	-/0
SBL	61	0.05	A (8)	-/0	61	0.05	A (8)	-/0	61	0.05	A (8)	-/0
SBT	228	0.00	A (0)	-/0	257	0.00	A (0)	-/0	252	0.00	A (0)	-/0
SBR	0	0.00	(0)	-/0	0	0.00	(0)	-/0	21	0.00	(0)	-/0

Future Background (2031): Under future background conditions, the intersection is expected to generally operate similar to existing conditions with acceptable increases in V/C ratios and delay. No major constraints are noted.

Future Total Conditions (2031): Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. No intersection modifications are recommended.

5.5 ANALYSIS CONCLUSION

Both signalized and unsignalized intersections under a 2026 and 2031 horizon year are not expected to show critical movements and are expected to operate at acceptable levels with no delays. Thus, the proposed development is expected to have an acceptable impact on the surrounding study area road and transportation networks.

6 PARKING AND LOADING REVIEW

The following section will review the applicable parking standards for the proposed development based on current zoning by-law requirements.

6.1 VEHICLE PARKING REVIEW

Vehicle parking for the proposed development was assessed against Niagara-on-the-Lake Comprehensive By-law 4316-09. The proposed and required vehicle parking supply for the subject development is summarized in Table 6-1.

Table 6-1: Niagara-on-the-Lake Comprehensive By-law 4316-09 - Vehicle Parking Summary

Use	Units/GFA	By-law 4316-09		Proposed Supply
		Parking Rate	Min. Requirements	
Dwelling Units	29 Units	1 sp./unit	29 Spaces	34 Spaces
Commercial	1,670 m^2	1 sp./18.5 m^2	90 Spaces	90 Spaces
Outdoor Patio (Commercial Restaurant)	390 m^2	1 sp./30 m^2	13 Spaces	13 Spaces
Office	1,749 m^2	1 sp./28 m^2	63 Spaces	63 Spaces
		Total	**195** Spaces	**200** Spaces

As detailed in Table 6-1, By-law 4316-09 requires a minimum vehicle parking supply of 195 spaces. The development proposes an overall parking supply of 200 total vehicle parking spaces (34 residential, 90 commercial, 13 patio, and 63 office spaces) complies with the overall minimum parking requirements outlined in the Town of Niagara-on-the-Lake By-law 4316-09 and is acceptable.

6.2 ACCESS PARKING REVIEW

Accessible parking for the proposed development was assessed against the Niagara-on-the-Lake Comprehensive By-law 4316-09. The required and proposed accessible parking supply for the proposed development is summarized in Table 6-2.

Table 6-2: Niagara-on-the-Lake Comprehensive By-law 4316-09 - Accessible Parking Summary

Use	Total Required Supply	Required Accessible Spaces Rate	Accessible Spaces Required	Spaces Provided
Apartment	195	Between 151 and 200 parking spaces	6 Spaces	6 Spaces
Commercial				
outdoor Patio				
Office				
		Total	**6 Spaces**	**6 Spaces**

As detailed in Table 6-2, By-law 4316-09 requires a minimum accessible vehicle parking supply of six (6) spaces. The proposed accessible parking supply of six (6) accessible vehicle parking spaces complies with the minimum parking requirements outlined in the Town of Niagara-on-the-Lake By-law 4316-09 and is acceptable.

6.3 BICYCLE PARKING SUPPLY

Bicycle parking for the proposed development was assessed against the Niagara-on-the-Lake Comprehensive By-law 4316-09. The required and proposed bicycle parking supply for the proposed development are summarized in Table 6-3.

Table 6-3: Niagara-on-the-Lake Comprehensive By-law 4316-09 - Bicycle Parking Summary

Use	GFA	Required Number of Accessible Spaces Rate	Minimum Supply	Spaces Provided
Commercial	1,670 m^2	1 sp./ 200 m^2	9	8
Restaurant Take Out	390 m^2	2 sp./100 m^2	6	21
Office	1,749 m^2	1 sp./ 250 m^2	7	7
		Total	**22**	**36**

As detailed in Table 6-3, By-law 4316-09 requires a minimum bicycle parking supply of 22 spaces. The proposed bicycle parking supply of 36 parking spaces meets the overal minimum parking requirements outlined in the Town of Niagara-on-the-Lake By-law 4316-09. The provision of bicycle parking spaces will be coordinated through subsequent applications.

6.4 LOADING REVIEW

Loading requirements for the proposed development were assessed against the Niagara-on-the-Lake Comprehensive By-law 4316-09. The required and proposed loading supply for the proposed development are summarized in Table 6-4.

Table 6-4: Niagara-on-the-Lake Comprehensive By-law 4316-09 - Loading Summary

Use	GFA	Non-Residential GFA Requirements	Loading Required	Loading Proposed
Non-Residential	3,809 m^2	930 m^2 to 4645 m^2	2 spaces	2 spaces

As detailed in Table 6-4, By-law 4316-09 requires a minimum loading supply of two (2) spaces. The proposed loading supply of two (2) loading spaces complies with the minimum requirements outlined in the Town of Niagara-on-the-Lake By-law 4316-09.

6.5 FUNCTIONAL DESIGN REVIEW

In support of the site plan for the proposed development a functional design review has been provided, which includes swept path drawings for waste collection vehicles and loading vehicles, the proposed fire route, and provides review of the parking and ramp geometry.

This review demonstrates that the site plan is compliant with all zoning by-law requirements and confirms that vehicles can safely and effectively circulate the driveway, access the proposed loading spaces, and enter/exit the proposed parking ramp. Functional design review drawings for the proposed development are provided in Appendix F.

7 TRANSPORTATION DEMAND MANAGEMENT PLAN

The purpose of Transportation Demand Management (TDM) is to modify travel behaviour to improve the efficiency of the existing transportation and parking systems. Modifying travel behaviour can be accomplished by influencing the types of transportation people use to travel and commute such as cars, public transit, or active transportation (cycling and walking), when people choose to travel, and the places where people travel too. Modifying travel behaviour is an important component of reducing greenhouse gas emissions which will support the overall sustainable goals of the Town of Niagara on-the-Lake.

In support of the Town's objectives to improve transportation and parking efficiency, the proposed TDM plan for the proposed development includes the following suggested measures.

7.1 CYCLING-BASED STRATEGIES

The proposed development is in an area that has been identified for future cycling facilities. Cycling strategies to encourage biking as a mode of travel include:

- Avoid barriers to cyclists such as curbs or stairs, where possible.
- Provide cycling infrastructure and end-of-trip infrastructure such as secure bicycle racks, bicycle storage, and shower and change room facilities.
- Provide cyclists with sheltered and secure bicycle storage facilities.

7.2 PEDSTRIAN-BASED STRATEGIES

Pedestrian-based strategies should ensure safe, comfortable, and convenient pedestrian connections to key destinations within the surrounding area. Pedestrian strategies to encourage walking as a mode of travel include:

- Orient the developments entrance close to the street with direction connections to pedestrian pathways.
- Provide landscaping and pedestrian amenities such as trees, sidewalks, benches, and marked crossings to create an attractive public realm and encourage walking.
- Provide open/park spaces and outdoor amenities that are within convenient walking distance,

7.3 TRANSIT-BASED STRATEGIES

The development's transit-based strategies should prioritize connections and access to transit while encouraging transit as a desirable mode choice. Transit strategies to encourage transit trips include:

- Enhance the comfort of outdoor pedestrian waiting areas by using year-round planting that provide shelter from the wind in the winter months and shade during the summer months.

8 CONCLUSIONS AND RECOMMENDATIONS

- The site, which is currently occupied by an existing single detached residential building, will be replaced with the proposed mixed-use development containing a total of 29 residential units, 1,670 m^2 of commercial GFA (which includes a commercial restaurant), and 1,749 m^2 of office GFA. The development will be accompanied by 200 vehicle parking spaces across a one (1) level underground parking garage and a surface level parking lot. Vehicle and loading access to the site will be provided via two (2) unsignalized full-moves along Four Mile Creek Road.
- The subject site is in an area that has limited access to the existing public transit network operated by Niagara Regional Transit. The nearest Niagara Regional transit services are located at the Outlet Collection of Niagara approximately a 10-minute drive south from the site. In support of alternative transportation modes, active transportation facilities such as cycling facilities and pedestrian sidewalks are available nearby within the study area to provide future site users access to nearby amenities and destinations.
- The proposed development is anticipated to generate a total of 63 two-way (40 inbound, 23 outbound) and 122 two-way (57 inbound, 65 outbound) net auto trips during the weekday AM and PM peak hours, respectively.
- Both signalized and unsignalized intersections under both a 2026 and 2031 future horizon year are not expected to show critical movements and are expected to operate at acceptable levels with no delays under future total conditions following the addition of site traffic to the network.
- The total proposed parking supply of 200 vehicle parking spaces complies with the minimum parking requirements outlined in the Town of Niagara-on-the-Lake By-law 4316-09.
- By-law 4316-09 permits a minimum bicycle parking supply of 22 spaces. The proposed bicycle parking supply of 36 parking spaces is one (1) space short of minimum parking requirements outlined in the Town of Niagara-on-the-Lake By-law 4316-09.
- The proposed supply of two (2) loading spaces complies with the minimum loading requirements outlined in the Town of Niagara-on-the-Lake By-law 4316-09
- In support of the Town's objectives to improve transportation and parking system efficiency, a number of Transportation Demand Management (TDM) measures have been suggested for the proposed development which include recommendations for transit and active transportation measures to reduce reliance on single occupancy vehicle travel.

APPENDIX A

Terms of Reference

Eric Gilmour

From: Dunsmore, Susan <Susan.Dunsmore@niagararegion.ca>
Sent: January 13, 2025 8:54 AM
To: Eric Gilmour
Cc: Marci Weston (mweston@notl.org); Biba, Philippe; Wilson, Josh
Subject: FW: Terms of Reference - 1544 & 1546 Four Mile Creek Road, Niagara-on-the-Lake

External Sender

Good Morning Eric

Thank you for circulating the Region. In the future if you would please send these requests to Josh Wilson we will have the required staff review and respond, this way we can add the information into our development tracking system. Our transportation staff have reviewed the terms of reference and the only comment they have is that the TIS is to include the analysis for left/right turns and the southerly entrance is recommended to line up with Line 2 Road.

If you require regional traffic data please use the following link: Traffic Data Request Application Forms - Niagara Region, Ontario. As noted below if there are any improvements required to the Regional Road a functional design is to be included in the TIS.

Thank you

Susan M. Dunsmore, P.Eng.
ACTING DIRECTOR, INFRASTRUCTURE PLANNING & DEVELOPMENT ENGINEERING
Niagara Region, 1815 Sir Isaac Brock Way, Thorold, ON, L2V 4T7

P : (905) 980 - 6000 ext. 3661
W : www.niagararegion.ca
E : susan.dunsmore@niagararegion.ca

From: Eric Gilmour <egilmour@lea.ca>
Sent: Monday, December 16, 2024 2:28 PM
To: Siyam, Waad <Waad.Siyam@niagararegion.ca>
Cc: Jocelyn Wallen <JWallen@lea.ca>
Subject: Terms of Reference - 1544 & 1546 Four Mile Creek Road, Niagara-on-the-Lake

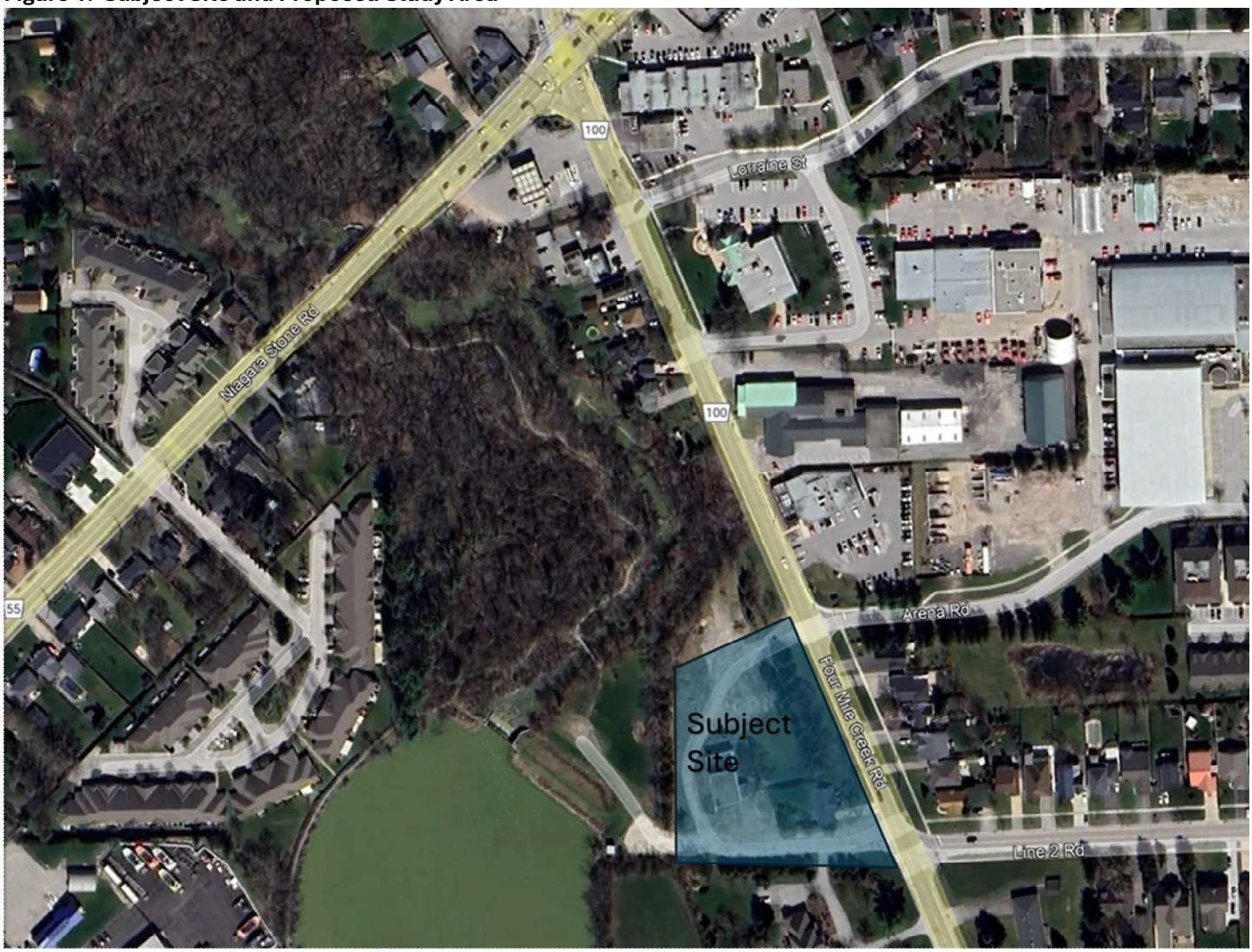
Niagara Region Security Warning:	This is an external email, use caution when opening attachments or clicking links

Hi Waad,

Hoping you're the right person to send this to, but if not I'd appreciate it if you could point us in the right direction.

We wish to confirm the following work plan for a Transportation Impact Study Brief (TIS Brief) in support of a Zoning Bylaw Amendment (ZBA) for the proposed mixed-use development located at 1544 & 1546 Four Mile Creek Road in the town of Niagara-on-the-Lake (herein referred to as the "subject site"). **Figure 1** below illustrates the subject site.

Figure 1: Subject Site and Proposed Study Area



The TIS will be conducted following the *Niagara Region Transportation Impact Assessment Guidelines (July 2023)*. The following outlines the proposes Terms of Reference for the TIS Brief for your review and approval.

Proposed Development

The subject site is currently occupied by a residential building. The proposed development will replace the existing uses on-site with two buildings, a 2-storey office and retail use space, and a 4-storey residential building. The retail/office building will feature 1,658m2 of retail space on the first floor, and

1,749m2 of office space on the second floor, and the entire development will have access via Four Mile Creek Road. The site is expected to be built over one phase with substantial completion in 2026.

Transportation Impact Study

LEA will review the existing conditions f the proposed study area, including the existing road, active transportation, and transit networks. Turning Movement Counts will be collected for the following intersections:

- Niagara Stone Road / Four Mile Creek Road
- Four Mile Creek Road / Arena Road / Site Access
- Four Mile Creek Road / Line 2 Road / Site Access

Trip distribution will be calculated using existing traffic distribution and the TTS 2016 survey data. If no growth data or background development data is available, we will assume a 2% per year growth rate for background traffic.

Trip generation for the proposed development will be forecasted based on the ITE Trip Generation Manual 11th Edition for the proposed land uses. A Transportation Demand Management (TDM) Plan will be provided to promote alternative modes of transportation to and from the proposed development.

Horizon years will consider existing conditions, buildout year (estimated 2026), and a 5 year horizon year (2031).

Vehicle and Bicycle Parking & Loading

A parking and loading assessment will be undertaken to assess that the proposed supply based on the zoning by-law requirements for vehicle parking and bicycle parking. If deficient, a justification will be provided to demonstrate adequacy of the proposed supply.

Functional Design Review

A functional design will be conducted to confirm that the site plan is functionally sound and will accommodate all vehicles in an acceptable manner. LEA will investigate if vehicles can effectively access, circulate, and perform loading activities on-site. LEA will also review and assess the layout and design of the surface and underground parking lot. This will involve plotting swept paths of the subject vehicles using AutoTurn, identifying points of conflict, and providing mitigation measures.

Please let me know if you have any questions or concerns with the terms of reference.

Thanks,

Eric Gilmour, B.Eng.
Project Coordinator
T: 905 470 0015 ext. 402 **E:** egilmour@lea.ca **W:** www.LEA.ca
LEA Consulting Ltd.

Upcoming Vacation Notice: December 24th through January 1st

APPENDIX B

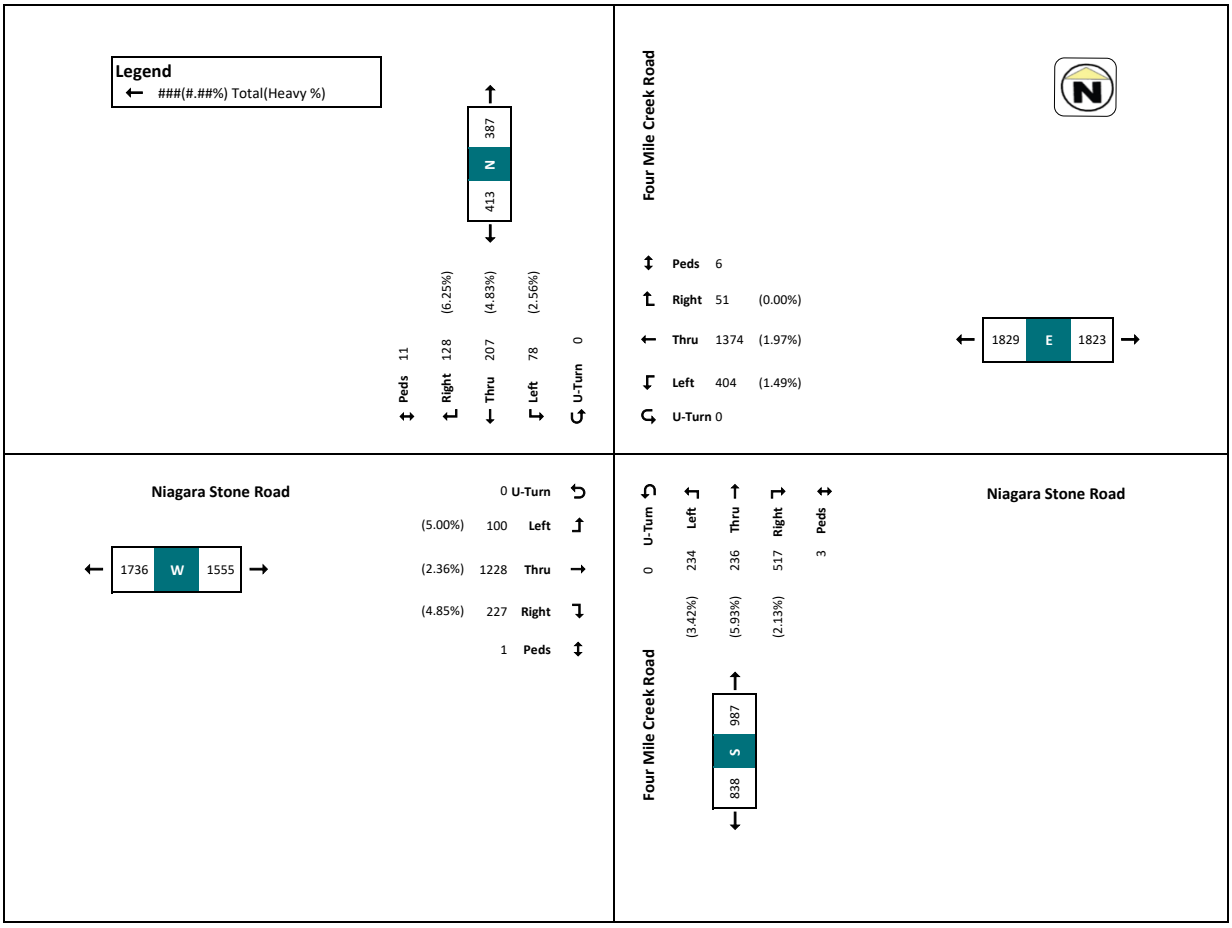
Turning Moving Counts

LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Four Mile Creek Road & Niagara Stone Road
Survey Date : December 17, 2024
Project No. : 25253.01
Count ID : 24465

Turning Movement Count - Four Mile Creek Road & Niagara Stone Road

	Four Mile Creek Road Southbound						Niagara Stone Road Westbound						Four Mile Creek Road Northbound						Niagara Stone Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:00	0	0	6	5	1	11	0	4	25	1	0	30	0	2	7	5	0	14	0	3	33	2	0	38	93
7:15	0	2	8	3	0	13	0	11	33	4	0	48	0	4	10	21	0	35	0	5	41	4	0	50	146
7:30	0	4	9	5	0	18	0	15	33	1	0	49	0	6	11	31	0	48	0	3	50	14	0	67	182
7:45	0	2	11	4	0	17	0	11	34	2	1	47	0	13	11	33	1	57	0	5	63	5	0	73	194
Hourly Total	0	8	34	17	1	59	0	41	125	8	1	174	0	25	39	90	1	154	0	16	187	25	0	228	615
8:00	0	2	10	5	0	17	0	9	42	0	0	51	0	9	7	18	0	34	0	4	49	6	0	59	161
8:15	0	3	9	6	0	18	0	12	49	4	0	65	0	13	10	16	0	39	0	3	71	17	0	91	213
8:30	0	5	10	8	0	23	0	15	51	3	2	69	0	9	7	19	0	35	0	2	64	11	0	77	204
8:45	0	3	11	7	0	21	0	20	66	0	0	86	0	14	11	35	0	60	0	7	72	9	0	88	255
Hourly Total	0	13	40	26	0	79	0	56	208	7	2	271	0	45	35	88	0	168	0	16	256	43	0	315	833
9:00	0	1	6	11	2	18	0	21	59	1	0	81	0	11	11	33	0	55	0	10	72	16	0	98	252
9:15	0	8	14	6	0	28	0	17	59	1	0	77	0	15	6	38	0	59	0	4	71	10	0	85	249
Hourly Total	0	9	20	17	2	46	0	38	118	2	0	158	0	26	17	71	0	114	0	14	143	26	0	183	501
												* Break *													
16:00	0	6	15	11	0	32	0	31	105	6	0	142	0	28	26	35	1	89	0	6	92	12	1	110	373
16:15	0	3	8	12	0	23	0	38	160	2	0	200	0	12	11	25	0	48	0	5	78	19	0	102	373
16:30	0	9	16	8	0	33	0	22	114	2	0	138	0	26	21	41	0	88	0	4	73	20	0	97	356
16:45	0	8	12	4	1	24	0	22	91	4	0	117	0	8	22	22	0	52	0	10	66	17	0	93	286
Hourly Total	0	26	51	35	1	112	0	113	470	14	0	597	0	74	80	123	1	277	0	25	309	68	1	402	1388
17:00	0	4	21	6	0	31	0	40	108	5	1	153	0	19	9	26	0	54	0	11	66	15	0	92	330
17:15	0	5	16	8	2	29	0	34	103	2	1	139	0	14	13	27	0	54	0	7	71	10	0	88	310
17:30	0	6	8	1	0	15	0	26	86	4	1	116	0	7	9	21	1	37	0	2	57	10	0	69	237
17:45	0	0	9	5	3	14	0	21	55	1	0	77	0	7	19	24	0	50	0	5	54	7	0	66	207
Hourly Total	0	15	54	20	5	89	0	121	352	12	3	485	0	47	50	98	1	195	0	25	248	42	0	315	1084
18:00	0	2	4	10	1	16	0	22	56	6	0	84	0	6	11	21	0	38	0	4	52	14	0	70	208
18:15	0	5	4	3	1	12	0	13	45	2	0	60	0	11	4	26	0	41	0	0	33	9	0	42	155
Hourly Total	0	7	8	13	2	28	0	35	101	8	0	144	0	17	15	47	0	79	0	4	85	23	0	112	363
Grand Total	0	78	207	128	11	413	0	404	1374	51	6	1829	0	234	236	517	3	987	0	100	1228	227	1	1555	4784
Approach %	0.0%	18.9%	50.1%	31.0%	-	-	0.0%	22.1%	75.1%	2.8%	-	-	0.0%	23.7%	23.9%	52.4%	-	-	0.0%	6.4%	79.0%	14.6%	-	-	-
Total %	0.0%	1.6%	4.3%	2.7%	-	8.6%	0.0%	8.4%	28.7%	1.1%	-	38.2%	0.0%	4.9%	4.9%	10.8%	-	20.6%	0.0%	2.1%	25.7%	4.7%	-	32.5%	-
Lights	0	76	197	120	-	393	0	398	1347	51	-	1796	0	226	222	506	-	954	0	95	1199	216	-	1510	4653
% Lights	-	97.4%	95.2%	93.8%	-	95.2%	-	98.5%	98.0%	100.0%	-	98.2%	-	96.6%	94.1%	97.9%	-	96.7%	-	95.0%	97.6%	95.2%	-	97.1%	97.3%
Buses	-	0	3	4	-	7	-	1	11	0	-	12	-	2	2	3	-	7	-	1	8	4	-	13	39
% Buses	-	0.0%	1.4%	3.1%	-	1.7%	-	0.2%	0.8%	0.0%	-	0.7%	-	0.9%	0.8%	0.6%	-	0.7%	-	1.0%	0.7%	1.8%	-	0.8%	0.8%
Trucks	-	2	7	4	-	13	-	5	16	0	-	21	-	6	12	8	-	26	-	4	21	7	-	32	92
% Trucks	-	2.6%	3.4%	-	-	3.1%	-	1.2%	1.2%	0.0%	-	1.1%	-	2.6%	5.1%	1.5%	-	2.6%	-	4.0%	1.7%	3.1%	-	2.1%	1.9%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	11	-	-	-	-	-	6	-	-	-	-	-	3	-	-	-	-	-	1	-	21

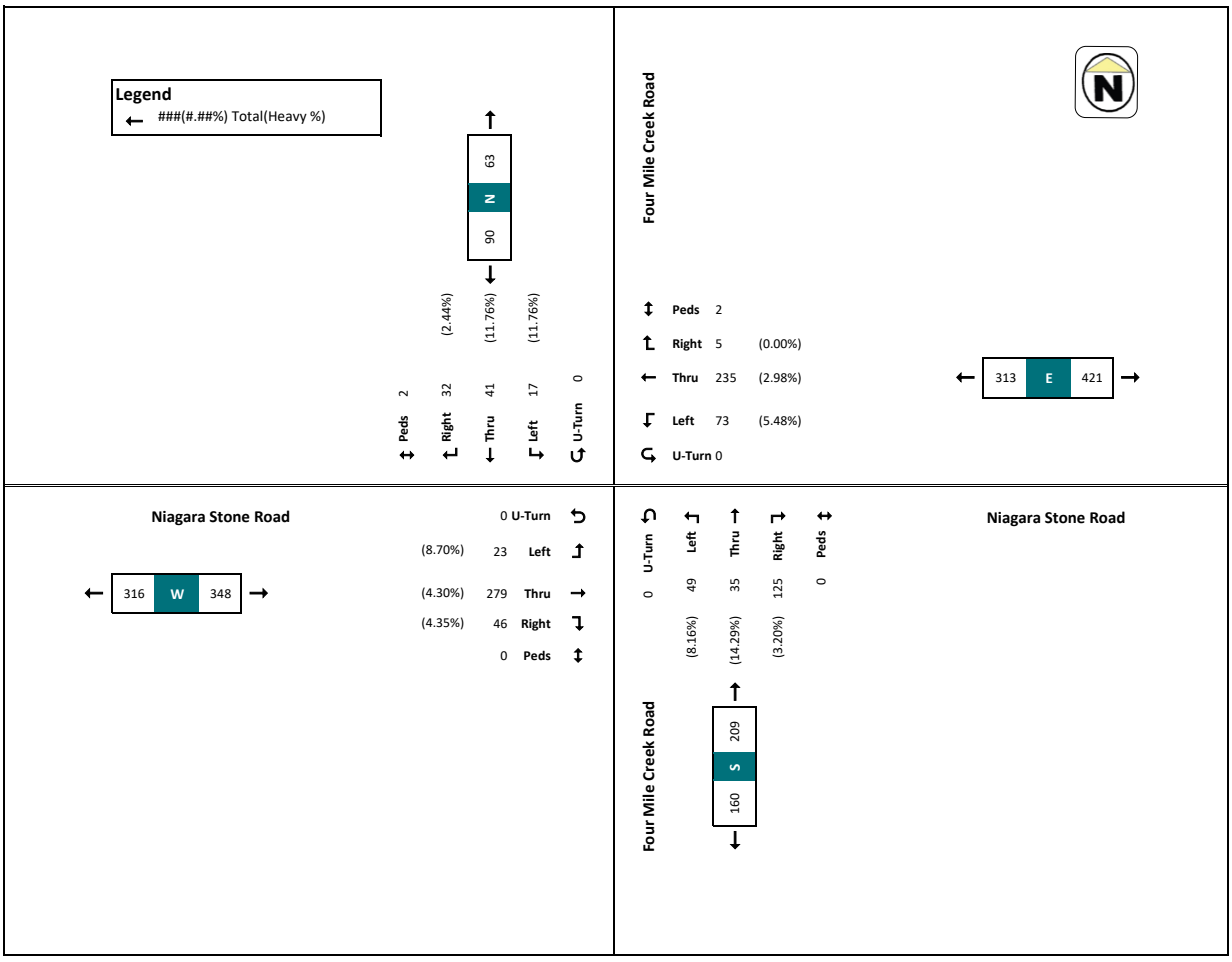


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Four Mile Creek Road & Niagara Stone Road
Survey Date : December 17, 2024
Project No. : 25253
Count ID : 24465

AM Peak Hour - Four Mile Creek Road & Niagara Stone Road

	Four Mile Creek Road Southbound						Niagara Stone Road Westbound						Four Mile Creek Road Northbound						Niagara Stone Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:30	0	5	10	8	0	23	0	15	51	3	2	69	0	9	7	19	0	35	0	2	64	11	0	77	204
8:45	0	3	11	7	0	21	0	20	66	0	0	86	0	14	11	35	0	60	0	7	72	9	0	88	255
9:00	0	1	6	11	2	18	0	21	59	1	0	81	0	11	11	33	0	55	0	10	72	16	0	98	252
9:15	0	8	14	6	0	28	0	17	59	1	0	77	0	15	6	38	0	59	0	4	71	10	0	85	249
Hourly Total	0	17	41	32	2	90	0	73	235	5	2	313	0	49	35	125	0	209	0	23	279	46	0	348	960
Approach %	0.0%	18.9%	45.6%	35.6%	-	-	0.0%	23.3%	75.1%	1.6%	-	-	0.0%	23.4%	16.7%	59.8%	-	-	0.0%	6.6%	80.2%	13.2%	-	-	-
Total %	0.0%	1.8%	4.3%	3.3%	-	9.4%	0.0%	7.6%	24.5%	0.5%	-	32.6%	0.0%	5.1%	3.6%	13.0%	-	21.8%	0.0%	2.4%	29.1%	4.8%	-	36.3%	-
PHF	0	0.53	0.73	0.73	-	0.8	0	0.87	0.89	0.42	-	0.91	0	0.82	0.8	0.82	-	0.87	0	0.58	0.97	0.72	-	0.89	0.94
Lights	0	15	40	27	-	82	0	69	228	5	-	302	0	45	30	121	-	196	0	21	267	44	-	332	912
% Lights	-	88.2%	97.6%	84.4%	-	91.1%	-	94.5%	97.0%	100.0%	-	96.5%	-	91.8%	85.7%	96.8%	-	93.8%	-	91.3%	95.7%	95.7%	-	95.4%	95.0%
Buses	-	0	0	2	-	2	-	0	4	0	-	4	-	1	1	0	-	2	-	0	2	2	-	4	12
% Buses	-	0.0%	0.0%	6.3%	-	2.2%	-	0.0%	1.7%	0.0%	-	1.3%	-	2.0%	2.9%	0.0%	-	1.0%	-	0.0%	0.7%	4.3%	-	1.1%	1.3%
Trucks	-	2	1	3	-	6	-	4	3	0	-	7	-	3	4	4	-	11	-	2	10	0	-	12	36
% Trucks	-	11.8%	2.4%	9.4%	-	6.7%	-	5.5%	1.3%	0.0%	-	2.2%	-	6.1%	11.4%	3.2%	-	5.3%	-	8.7%	3.6%	0.0%	-	3.4%	3.8%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	4

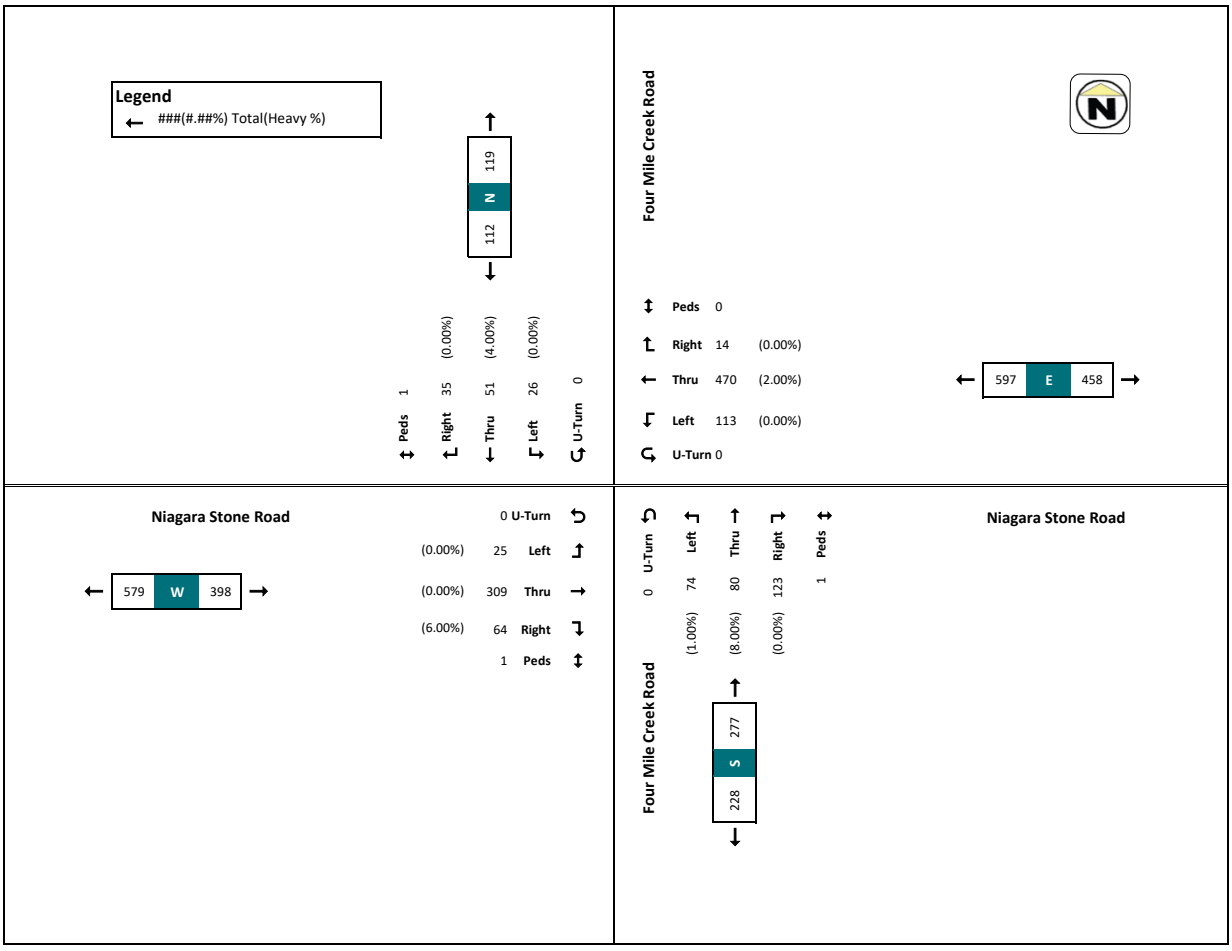


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Four Mile Creek Road & Niagara Stone Road
Survey Date : December 17, 2024
Project No. : 25253
Count ID : 24465

PM Peak Hour - Four Mile Creek Road & Niagara Stone Road

	Four Mile Creek Road Southbound						Niagara Stone Road Westbound						Four Mile Creek Road Northbound						Niagara Stone Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
16:00	0	6	15	11	0	32	0	31	105	6	0	142	0	28	26	35	1	89	0	6	92	12	1	110	373
16:15	0	3	8	12	0	23	0	38	160	2	0	200	0	12	11	25	0	48	0	5	78	19	0	102	373
16:30	0	9	16	8	0	33	0	22	114	2	0	138	0	26	21	41	0	88	0	4	73	20	0	97	356
16:45	0	8	12	4	1	24	0	22	91	4	0	117	0	8	22	22	0	52	0	10	66	17	0	93	286
Hourly Total	0	26	51	35	1	112	0	113	470	14	0	597	0	74	80	123	1	277	0	25	309	68	1	402	1388
Approach %	0.0%	23.2%	45.5%	31.3%	-	-	0.0%	18.9%	78.7%	2.3%	-	-	0.0%	26.7%	28.9%	44.4%	-	-	0.0%	6.2%	76.9%	16.9%	-	-	-
Total %	0.0%	1.9%	3.7%	2.5%	-	8.1%	0.0%	11.8%	49.0%	1.0%	-	43.0%	0.0%	7.7%	8.3%	12.8%	-	20.0%	0.0%	2.6%	32.2%	7.1%	-	29.0%	-
PHF	0	0.72	0.8	0.73	-	0.85	0	0.74	0.73	0.58	-	0.75	0	0.66	0.77	0.75	-	0.78	0	0.63	0.84	0.85	-	0.91	0.93
Lights	0	26	49	35	-	110	0	113	461	14	-	588	0	73	74	123	-	270	0	25	309	64	-	398	1366
% Lights	-	100.0%	96.1%	100.0%	-	98.2%	-	100.0%	98.1%	100.0%	-	98.5%	-	98.6%	92.5%	100.0%	-	97.5%	-	100.0%	100.0%	94.1%	-	99.0%	98.4%
Buses	-	0	0	0	-	0	-	0	3	0	-	3	-	0	1	0	-	1	-	0	0	1	-	1	5
% Buses	-	0.0%	0.0%	0.0%	-	0.0%	-	0.0%	0.6%	0.0%	-	0.5%	-	0.0%	1.3%	0.0%	-	0.4%	-	0.0%	0.0%	1.5%	-	0.2%	0.4%
Trucks	-	0	1	0	-	1	-	0	6	0	-	6	-	1	5	0	-	6	-	0	0	3	-	3	16
% Trucks	-	0.0%	2.0%	0.0%	-	0.9%	-	0.0%	1.3%	0.0%	-	1.0%	-	1.4%	6.3%	0.0%	-	2.2%	-	0.0%	0.0%	4.4%	-	0.7%	1.2%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	1

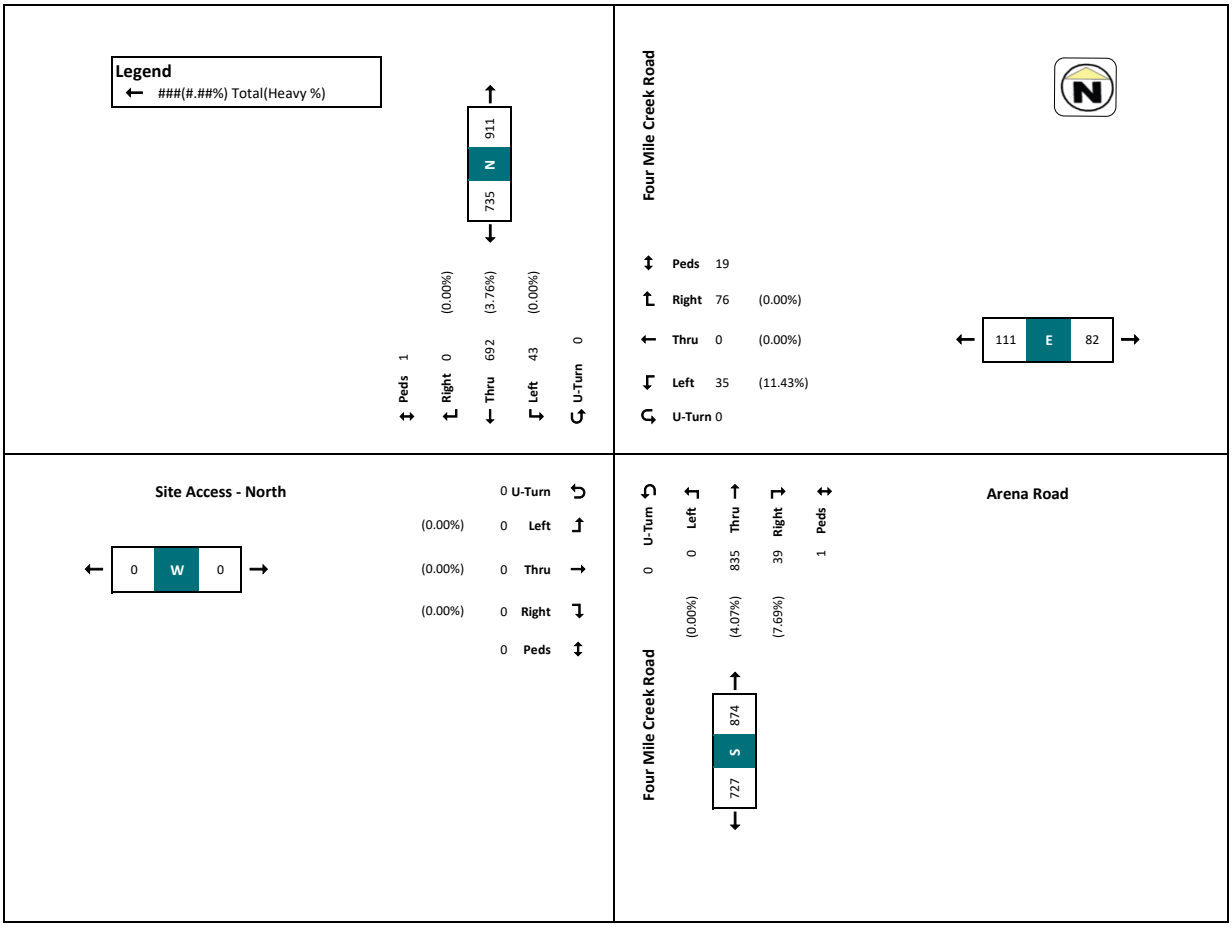


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Four Mile Creek Road & Site Access - North
Survey Date : December 17, 2024
Project No. : 25253.01
Count ID : 24466

Turning Movement Count - Four Mile Creek Road & Site Access - North

	Four Mile Creek Road Southbound						Arena Road Westbound						Four Mile Creek Road Northbound						Site Access - North Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:00	0	0	15	0	0	15	0	0	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	0	29
7:15	0	3	17	0	0	20	0	1	0	0	2	1	0	0	33	3	0	36	0	0	0	0	0	0	57
7:30	0	1	29	0	0	30	0	0	0	1	1	1	0	0	39	0	0	39	0	0	0	0	0	0	70
7:45	0	2	20	0	0	22	0	1	0	1	1	2	0	0	57	0	0	57	0	0	0	0	0	0	81
Hourly Total	0	6	81	0	0	87	0	2	0	2	4	4	0	0	143	3	0	146	0	0	0	0	0	0	237
8:00	0	2	22	0	0	24	0	1	0	2	0	3	0	0	35	0	0	35	0	0	0	0	0	0	62
8:15	0	3	28	0	1	31	0	0	0	1	3	1	0	0	42	3	0	45	0	0	0	0	0	0	77
8:30	0	1	27	0	0	28	0	2	0	0	1	2	0	0	42	0	0	42	0	0	0	0	0	0	72
8:45	0	0	26	0	0	26	0	0	0	0	1	0	0	0	64	0	0	64	0	0	0	0	0	0	90
Hourly Total	0	6	103	0	1	109	0	3	0	3	5	6	0	0	183	3	0	186	0	0	0	0	0	0	301
9:00	0	0	31	0	0	31	0	0	0	1	0	1	0	0	51	3	0	54	0	0	0	0	0	0	86
9:15	0	0	37	0	0	37	0	2	0	0	0	2	0	0	61	1	0	62	0	0	0	0	0	0	101
Hourly Total	0	0	68	0	0	68	0	2	0	1	0	3	0	0	112	4	0	116	0	0	0	0	0	0	187
* Break *																									
16:00	0	3	45	0	0	48	0	10	0	27	0	37	0	0	49	1	0	50	0	0	0	0	0	0	135
16:15	0	2	59	0	0	61	0	2	0	4	1	6	0	0	38	3	0	41	0	0	0	0	0	0	108
16:30	0	1	44	0	0	45	0	0	0	4	2	4	0	0	47	3	0	50	0	0	0	0	0	0	99
16:45	0	6	36	0	0	42	0	0	0	1	2	1	0	0	41	4	1	45	0	0	0	0	0	0	88
Hourly Total	0	12	184	0	0	196	0	12	0	36	5	48	0	0	175	11	1	186	0	0	0	0	0	0	430
17:00	0	3	71	0	0	74	0	1	0	4	0	5	0	0	42	4	0	46	0	0	0	0	0	0	125
17:15	0	6	52	0	0	58	0	2	0	6	1	8	0	0	44	1	0	45	0	0	0	0	0	0	111
17:30	0	6	36	0	0	42	0	0	0	7	1	7	0	0	43	6	0	49	0	0	0	0	0	0	98
17:45	0	1	28	0	0	29	0	2	0	6	1	8	0	0	35	6	0	41	0	0	0	0	0	0	78
Hourly Total	0	16	187	0	0	203	0	5	0	23	3	28	0	0	164	17	0	181	0	0	0	0	0	0	412
18:00	0	1	40	0	0	41	0	8	0	7	0	15	0	0	32	0	0	32	0	0	0	0	0	0	88
18:15	0	2	29	0	0	31	0	3	0	4	2	7	0	0	26	1	0	27	0	0	0	0	0	0	65
Hourly Total	0	3	69	0	0	72	0	11	0	11	2	22	0	0	58	1	0	59	0	0	0	0	0	0	153
Grand Total	0	43	692	0	1	735	0	35	0	76	19	111	0	0	835	39	1	874	0	0	0	0	0	0	1720
Approach %	0.0%	5.9%	94.1%	0.0%	-	-	0.0%	31.5%	0.0%	68.5%	-	-	0.0%	0.0%	95.5%	4.5%	-	-	-	-	-	-	-	-	-
Total %	0.0%	2.5%	40.2%	0.0%	-	42.7%	0.0%	2.0%	0.0%	4.4%	-	6.5%	0.0%	0.0%	48.5%	2.3%	-	50.8%	0.0%	0.0%	0.0%	0.0%	-	0.0%	-
Lights	0	43	666	0	-	709	0	31	0	76	-	107	0	0	801	36	-	837	0	0	0	0	-	0	1653
% Lights	-	100.0%	96.2%	-	-	96.5%	-	88.6%	-	100.0%	-	96.4%	-	-	95.9%	92.3%	-	95.8%	-	-	-	-	-	-	96.1%
Buses	-	0	1	0	-	1	-	0	0	0	-	0	-	0	0	0	-	0	-	0	0	0	-	0	1
% Buses	-	0.0%	0.1%	-	-	0.1%	-	0.0%	-	0.0%	-	0.0%	-	-	0.0%	0.0%	-	0.0%	-	-	-	-	-	-	0.1%
Trucks	-	0	25	0	-	25	-	4	0	0	-	4	-	0	34	3	-	37	-	0	0	0	-	0	66
% Trucks	-	0.0%	3.6%	-	-	3.4%	-	11.4%	-	0.0%	-	3.6%	-	-	4.1%	7.7%	-	4.2%	-	-	-	-	-	-	3.8%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	1	-	-	-	-	-	19	-	-	-	-	-	1	-	-	-	-	-	0	-	21

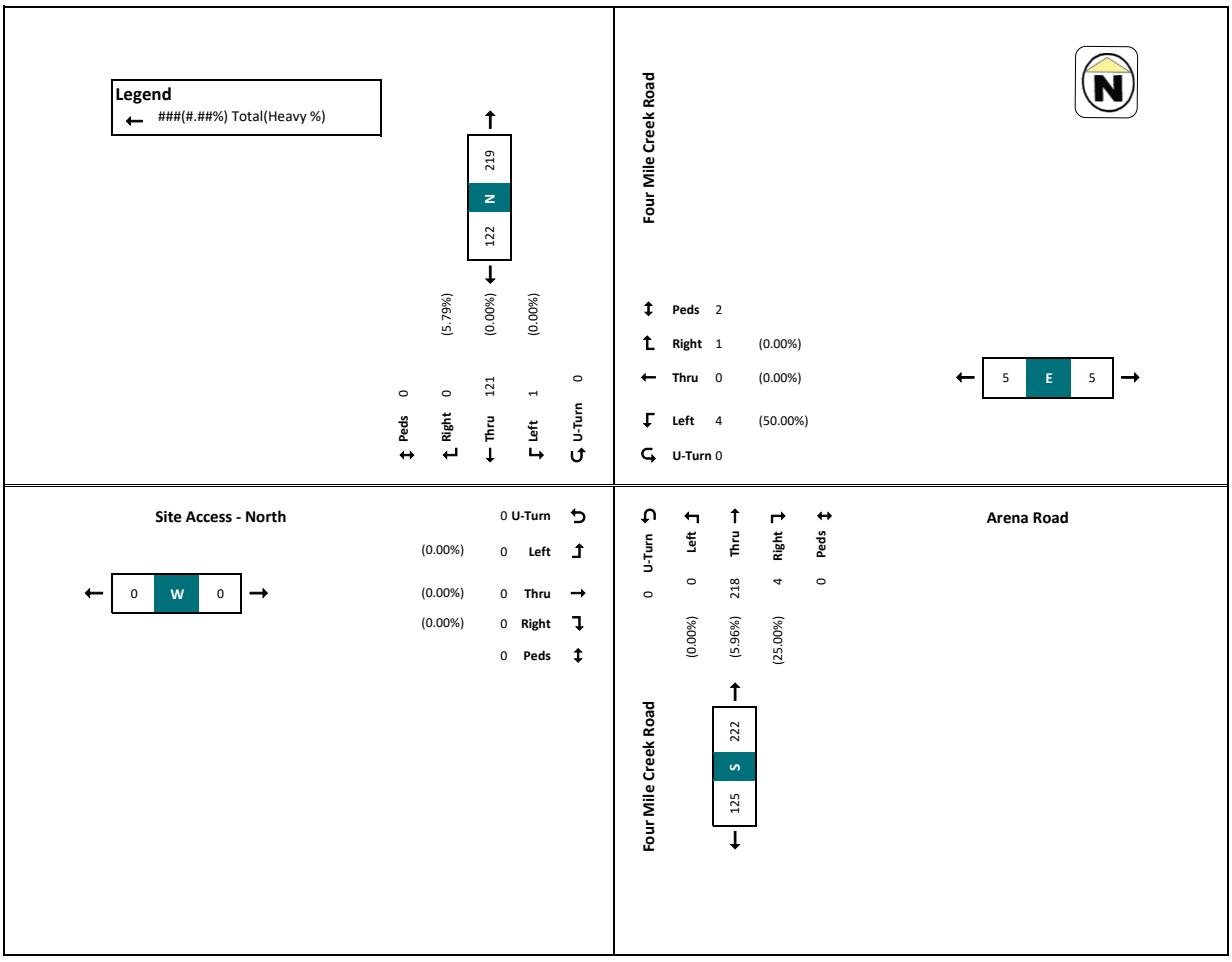


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Four Mile Creek Road & Site Access - North
Survey Date : December 17, 2024
Project No. : 25253
Count ID : 24466

AM Peak Hour - Four Mile Creek Road & Site Access - North

	Four Mile Creek Road Southbound						Arena Road Westbound						Four Mile Creek Road Northbound						Site Access - North Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:30	0	1	27	0	0	28	0	2	0	0	1	2	0	0	42	0	0	42	0	0	0	0	0	0	72
8:45	0	0	26	0	0	26	0	0	0	0	1	0	0	0	64	0	0	64	0	0	0	0	0	0	90
9:00	0	0	31	0	0	31	0	0	0	1	0	1	0	0	51	3	0	54	0	0	0	0	0	0	86
9:15	0	0	37	0	0	37	0	2	0	0	0	2	0	0	61	1	0	62	0	0	0	0	0	0	101
Hourly Total	0	1	121	0	0	122	0	4	0	1	2	5	0	0	218	4	0	222	0	0	0	0	0	0	349
Approach %	0.0%	0.8%	99.2%	0.0%	-	-	0.0%	80.0%	0.0%	20.0%	-	-	0.0%	0.0%	98.2%	1.8%	-	-	-	-	-	-	-	-	-
Total %	0.0%	0.3%	34.7%	0.0%	-	35.0%	0.0%	1.1%	0.0%	0.3%	-	1.4%	0.0%	0.0%	62.5%	1.1%	-	63.6%	0.0%	0.0%	0.0%	0.0%	-	0.0%	-
PHF	0	0.25	0.82	0	-	0.82	0	0.5	0	0.25	-	0.63	0	0	0.85	0.33	-	0.87	0	0	0	0	-	0	0.86
Lights	0	1	114	0	-	115	0	2	0	1	-	3	0	0	205	3	-	208	0	0	0	0	-	0	326
% Lights	-	100.0%	94.2%	-	-	94.3%	-	50.0%	-	100.0%	-	60.0%	-	-	94.0%	75.0%	-	93.7%	-	-	-	-	-	-	93.4%
Buses	-	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%
Trucks	-	0	7	0	-	7	-	2	0	0	-	2	-	0	13	1	-	14	-	0	0	0	-	0	23
% Trucks	-	0.0%	5.8%	-	-	5.7%	-	50.0%	-	0.0%	-	40.0%	-	-	6.0%	25.0%	-	6.3%	-	-	-	-	-	-	6.6%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	2

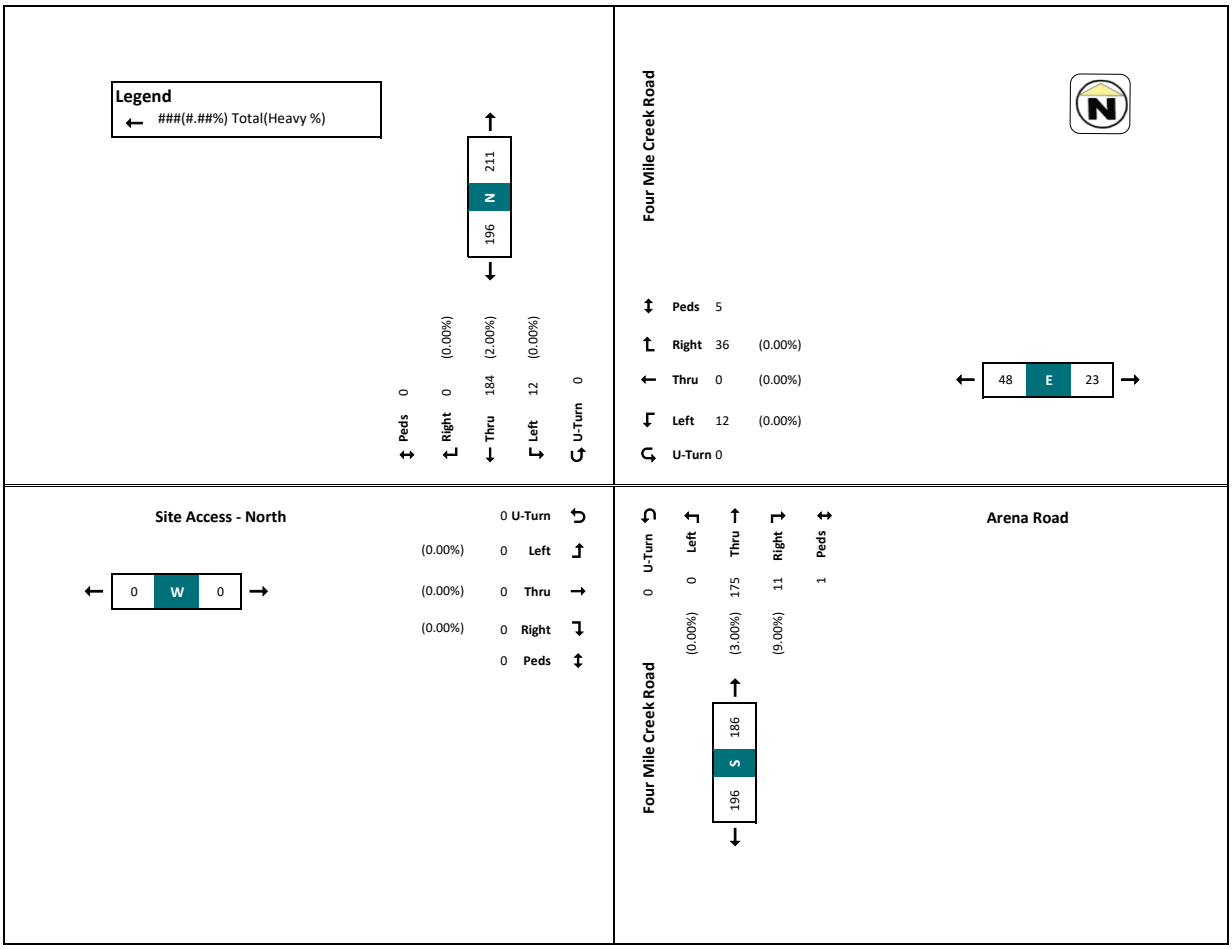


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Four Mile Creek Road & Site Access - North
Survey Date : December 17, 2024
Project No. : 25253
Count ID : 24466

PM Peak Hour - Four Mile Creek Road & Site Access - North

	Four Mile Creek Road Southbound						Arena Road Westbound						Four Mile Creek Road Northbound						Site Access - North Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
16:00	0	3	45	0	0	48	0	10	0	27	0	37	0	0	49	1	0	50	0	0	0	0	0	0	135
16:15	0	2	59	0	0	61	0	2	0	4	1	6	0	0	38	3	0	41	0	0	0	0	0	0	108
16:30	0	1	44	0	0	45	0	0	0	4	2	4	0	0	47	3	0	50	0	0	0	0	0	0	99
16:45	0	6	36	0	0	42	0	0	0	1	2	1	0	0	41	4	1	45	0	0	0	0	0	0	88
Hourly Total	0	12	184	0	0	196	0	12	0	36	5	48	0	0	175	11	1	186	0	0	0	0	0	0	430
Approach %	0.0%	6.1%	93.9%	0.0%	-	-	0.0%	25.0%	0.0%	75.0%	-	-	0.0%	0.0%	94.1%	5.9%	-	-	-	-	-	-	-	-	-
Total %	0.0%	2.8%	42.8%	0.0%	-	45.6%	0.0%	3.4%	0.0%	8.4%	-	11.2%	0.0%	0.0%	50.1%	3.2%	-	43.3%	0.0%	0.0%	0.0%	0.0%	-	0.0%	
PHF	0	0.5	0.78	0	-	0.8	0	0.3	0	0.33	-	0.32	0	0	0.89	0.69	-	0.93	0	0	0	0	-	0	0.8
Lights	0	12	180	0	-	192	0	12	0	36	-	48	0	0	170	10	-	180	0	0	0	0	-	0	420
% Lights	-	100.0%	97.8%	-	-	98.0%	-	100.0%	-	100.0%	-	100.0%	-	-	97.1%	90.9%	-	96.8%	-	-	-	-	-	-	97.7%
Buses	-	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%
Trucks	-	0	3	0	-	3	-	0	0	0	-	0	-	0	5	1	-	6	-	0	0	0	-	0	9
% Trucks	-	0.0%	1.6%	-	-	1.5%	-	0.0%	-	0.0%	-	0.0%	-	-	2.9%	9.1%	-	3.2%	-	-	-	-	-	-	2.1%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0

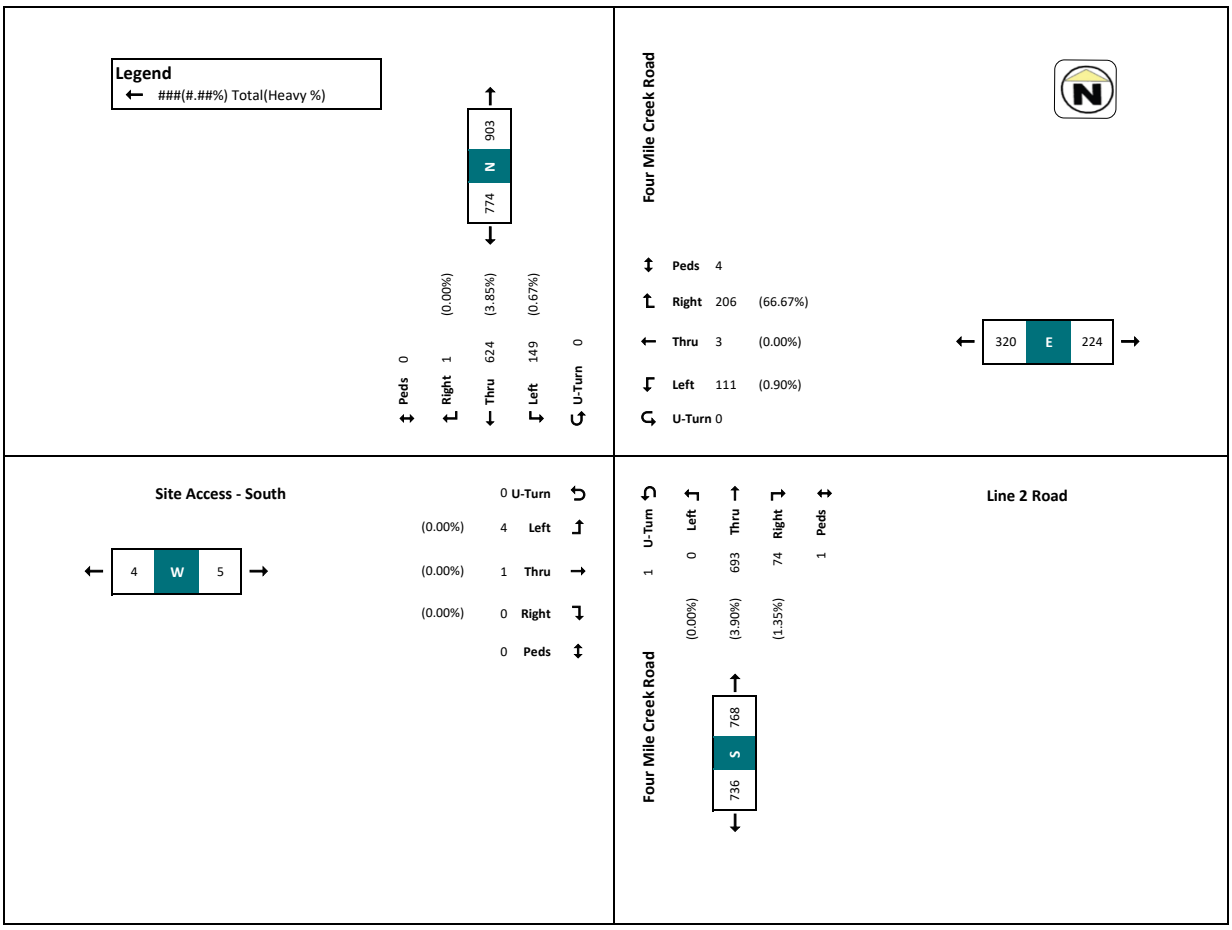


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Four Mile Creek Road & Site Access - South
Survey Date : December 17, 2024
Project No. : 25253.01
Count ID : 24467

Turning Movement Count - Four Mile Creek Road & Site Access - South

	Four Mile Creek Road Southbound						Line 2 Road Westbound						Four Mile Creek Road Northbound						Site Access - South Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:00	0	0	15	0	0	15	0	3	0	3	0	6	0	0	14	1	0	15	0	0	0	0	0	0	36
7:15	0	1	16	0	0	17	0	5	0	4	0	9	0	0	25	0	0	25	0	0	0	0	0	0	51
7:30	0	2	25	1	0	28	0	4	0	5	0	9	0	0	41	2	0	43	0	1	0	0	0	1	81
7:45	0	5	18	0	0	23	0	8	1	17	0	26	0	0	38	2	0	40	0	0	1	0	0	1	90
Hourly Total	0	8	74	1	0	83	0	20	1	29	0	50	0	0	118	5	0	123	0	1	1	0	0	2	258
8:00	0	9	15	0	0	24	0	11	0	5	0	16	0	0	30	5	0	35	0	0	0	0	0	0	75
8:15	0	5	22	0	0	27	0	11	0	14	0	25	0	0	29	5	0	34	0	0	0	0	0	0	86
8:30	0	4	26	0	0	30	0	6	1	11	2	18	1	0	34	3	0	38	0	0	0	0	0	0	86
8:45	0	4	26	0	0	30	0	6	0	19	0	25	0	0	42	2	0	44	0	0	0	0	0	0	99
Hourly Total	0	22	89	0	0	111	0	34	1	49	2	84	1	0	135	15	0	151	0	0	0	0	0	0	346
9:00	0	8	28	0	0	36	0	8	0	18	0	26	0	0	40	1	0	41	0	1	0	0	0	1	104
9:15	0	10	31	0	0	41	0	6	0	13	0	19	0	0	48	2	0	50	0	0	0	0	0	0	110
Hourly Total	0	18	60	0	0	78	0	14	0	31	0	45	0	0	91	3	0	94	0	1	0	0	0	1	218
* Break *																									
16:00	0	9	51	0	0	60	0	5	0	12	0	17	0	0	41	5	0	46	0	0	0	0	0	0	123
16:15	0	11	54	0	0	65	0	2	0	16	0	18	0	0	31	5	0	36	0	1	0	0	0	1	120
16:30	0	14	53	0	0	67	0	2	0	7	0	9	0	0	55	6	0	61	0	0	0	0	0	0	137
16:45	0	9	29	0	0	38	0	5	1	7	0	13	0	0	38	4	0	42	0	0	0	0	0	0	93
Hourly Total	0	43	187	0	0	230	0	14	1	42	0	57	0	0	165	20	0	185	0	1	0	0	0	1	473
17:00	0	17	54	0	0	71	0	6	0	16	0	22	0	0	29	3	0	32	0	1	0	0	0	1	126
17:15	0	10	47	0	0	57	0	6	0	5	1	11	0	0	40	7	1	47	0	0	0	0	0	0	115
17:30	0	6	28	0	0	34	0	7	0	11	0	18	0	0	36	3	0	39	0	0	0	0	0	0	91
17:45	0	6	27	0	0	33	0	4	0	7	0	11	0	0	33	9	0	42	0	0	0	0	0	0	86
Hourly Total	0	39	156	0	0	195	0	23	0	39	2	62	0	0	138	22	1	160	0	1	0	0	0	1	418
18:00	0	13	35	0	0	48	0	2	0	10	0	12	0	0	20	4	0	24	0	0	0	0	0	0	84
18:15	0	6	23	0	0	29	0	4	0	6	0	10	0	0	26	5	0	31	0	0	0	0	0	0	70
Hourly Total	0	19	58	0	0	77	0	6	0	16	0	22	0	0	46	9	0	55	0	0	0	0	0	0	154
Grand Total	0	149	624	1	0	774	0	111	3	206	4	320	1	0	693	74	1	768	0	4	1	0	0	5	1867
Approach %	0.0%	19.3%	80.6%	0.1%	-	-	0.0%	34.7%	0.9%	64.4%	-	-	0.1%	0.0%	90.2%	9.6%	-	-	0.0%	80.0%	20.0%	0.0%	-	-	-
Total %	0.0%	8.0%	33.4%	0.1%	-	41.5%	0.0%	5.9%	0.2%	11.0%	-	17.1%	0.1%	0.0%	37.1%	4.0%	-	41.1%	0.0%	0.2%	0.1%	0.0%	-	0.3%	-
Lights	0	148	600	1	-	749	0	110	3	204	-	317	1	0	666	73	-	740	0	4	1	0	-	5	1811
% Lights	-	99.3%	96.2%	100.0%	-	96.8%	-	99.1%	100.0%	99.0%	-	99.1%	100.0%	-	96.1%	98.6%	-	96.4%	-	100.0%	100.0%	-	-	100.0%	97.0%
Buses	-	1	3	0	-	4	-	1	0	1	-	2	-	0	5	1	-	6	-	0	0	0	-	0	12
% Buses	-	0.7%	0.5%	0.0%	-	0.5%	-	0.9%	0.0%	0.5%	-	0.6%	-	-	0.7%	1.4%	-	0.8%	-	0.0%	0.0%	-	-	0.0%	0.6%
Trucks	-	0	21	0	-	21	-	0	0	1	-	1	-	0	22	0	-	22	-	0	0	0	-	0	44
% Trucks	-	0.0%	3.4%	-	-	2.7%	-	0.0%	0.0%	0.5%	-	0.3%	-	-	3.2%	0.0%	-	2.9%	-	0.0%	0.0%	-	-	0.0%	2.4%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	0	-	5

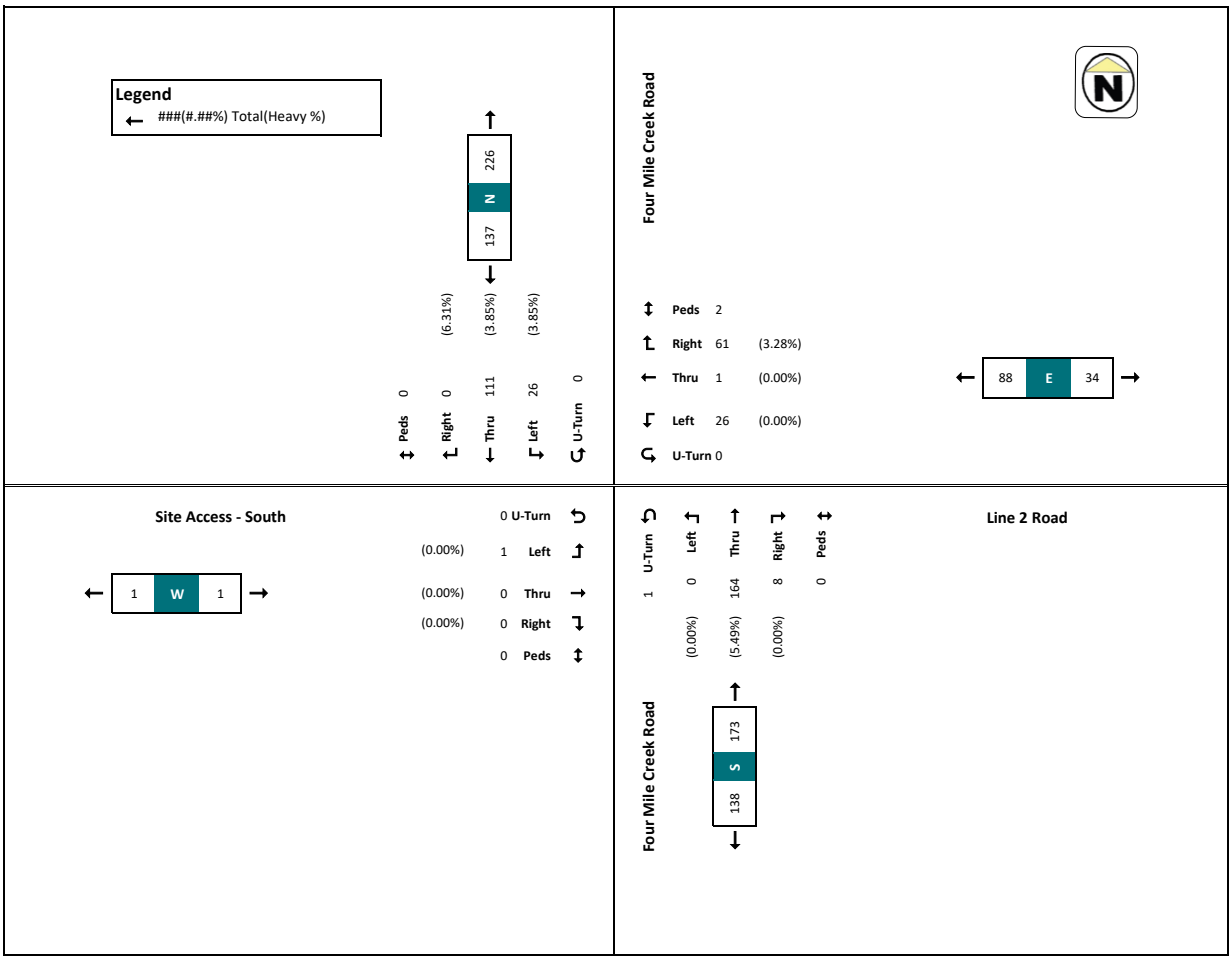


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Four Mile Creek Road & Site Access - South
Survey Date : December 17, 2024
Project No. : 25253
Count ID : 24467

AM Peak Hour - Four Mile Creek Road & Site Access - South

	Four Mile Creek Road Southbound						Line 2 Road Westbound						Four Mile Creek Road Northbound						Site Access - South Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:30	0	4	26	0	0	30	0	6	1	11	2	18	1	0	34	3	0	38	0	0	0	0	0	0	86
8:45	0	4	26	0	0	30	0	6	0	19	0	25	0	0	42	2	0	44	0	0	0	0	0	0	99
9:00	0	8	28	0	0	36	0	8	0	18	0	26	0	0	40	1	0	41	0	1	0	0	0	1	104
9:15	0	10	31	0	0	41	0	6	0	13	0	19	0	0	48	2	0	50	0	0	0	0	0	0	110
Hourly Total	0	26	111	0	0	137	0	26	1	61	2	88	1	0	164	8	0	173	0	1	0	0	0	1	399
Approach %	0.0%	19.0%	81.0%	0.0%	-	-	0.0%	29.5%	1.1%	69.3%	-	-	0.6%	0.0%	94.8%	4.6%	-	-	0.0%	100.0%	0.0%	0.0%	-	-	-
Total %	0.0%	6.5%	27.8%	0.0%	-	34.3%	0.0%	6.5%	0.3%	15.3%	-	22.1%	0.3%	0.0%	41.1%	2.0%	-	43.4%	0.0%	0.3%	0.0%	0.0%	-	0.3%	-
PHF	0	0.65	0.9	0	-	0.84	0	0.81	0.25	0.8	-	0.85	0	0	0.85	0.67	-	0.87	0	0.25	0	0	-	0.25	0.91
Lights	0	25	104	0	-	129	0	26	1	59	-	86	1	0	155	8	-	164	0	1	0	0	-	1	380
% Lights	-	96.2%	93.7%	-	-	94.2%	-	100.0%	100.0%	96.7%	-	97.7%	-	-	94.5%	100.0%	-	94.8%	-	100.0%	-	-	-	100.0%	95.2%
Buses	-	1	1	0	-	2	-	0	0	1	-	1	-	0	1	0	-	1	-	0	0	0	-	0	4
% Buses	-	3.8%	0.9%	-	-	1.5%	-	0.0%	0.0%	1.6%	-	1.1%	-	-	0.6%	0.0%	-	0.6%	-	0.0%	-	-	-	0.0%	1.0%
Trucks	-	0	6	0	-	6	-	0	0	1	-	1	-	0	8	0	-	8	-	0	0	0	-	0	15
% Trucks	-	0.0%	5.4%	-	-	4.4%	-	0.0%	0.0%	1.6%	-	1.1%	#VALUE!	-	4.9%	0.0%	-	4.6%	-	0.0%	-	-	-	0.0%	3.8%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	0	-	3



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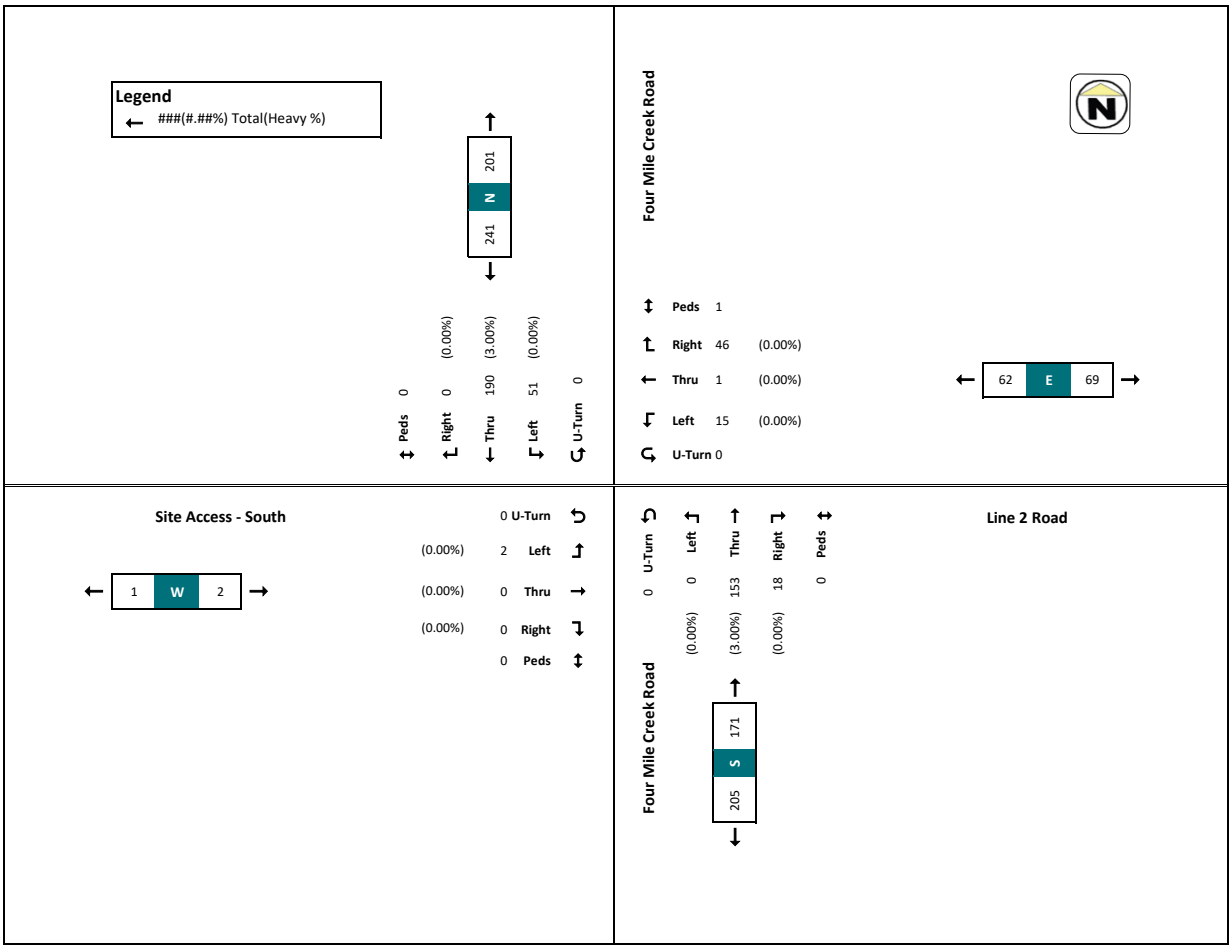
Intersection : Four Mile Creek Road & Site Access - South
Survey Date : December 17, 2024
Project No. : 25253
Count ID : 24467

PM Peak Hour - Four Mile Creek Road & Site Access - South

	Four Mile Creek Road Southbound						Line 2 Road Westbound						Four Mile Creek Road Northbound						Site Access - South Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
16:15	0	11	54	0	0	65	0	2	0	16	0	18	0	0	31	5	0	36	0	1	0	0	0	1	120
16:30	0	14	53	0	0	67	0	2	0	7	0	9	0	0	55	6	0	61	0	0	0	0	0	0	137
16:45	0	9	29	0	0	38	0	5	1	7	0	13	0	0	38	4	0	42	0	0	0	0	0	0	93
17:00	0	17	54	0	0	71	0	6	0	16	1	22	0	0	29	3	0	32	0	1	0	0	0	1	126
Hourly Total	0	51	190	0	0	241	0	15	1	46	1	62	0	0	153	18	0	171	0	2	0	0	0	2	476
Approach %	0.0%	21.2%	78.8%	0.0%	-	-	0.0%	24.2%	1.6%	74.2%	-	-	0.0%	0.0%	89.5%	10.5%	-	-	0.0%	100.0%	0.0%	0.0%	-	-	-
Total %	0.0%	10.7%	39.9%	0.0%	-	50.6%	0.0%	3.8%	0.3%	9.7%	-	13.0%	0.0%	0.0%	38.3%	4.5%	-	35.9%	0.0%	0.5%	0.0%	0.0%	-	0.4%	
PHF	0	0.75	0.88	0	-	0.85	0	0.63	0.25	0.72	-	0.7	0	0	0.7	0.75	-	0.7	0	0.5	0	0	-	0.5	0.87
Lights	0	51	185	0	-	236	0	15	1	46	-	62	0	0	148	18	-	166	0	2	0	0	-	2	466
% Lights	-	100.0%	97.4%	-	-	97.9%	-	100.0%	100.0%	100.0%	-	100.0%	-	-	96.7%	100.0%	-	97.1%	-	100.0%	-	-	-	100.0%	97.9%
Buses	-	0	1	0	-	1	-	0	0	0	-	0	-	0	0	0	-	0	-	0	0	0	-	0	1
% Buses	-	0.0%	0.5%	-	-	0.4%	-	0.0%	0.0%	0.0%	-	0.0%	-	-	0.0%	0.0%	-	0.0%	-	0.0%	-	-	-	0.0%	0.2%
Trucks	-	0	5	0	-	5	-	0	0	0	-	0	-	0	5	0	-	5	-	0	0	0	-	0	10
% Trucks	-	0.0%	2.6%	-	-	2.1%	-	0.0%	0.0%	0.0%	-	0.0%	-	-	3.3%	0.0%	-	2.9%	-	0.0%	-	-	-	0.0%	2.1%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0



Ontario

Ministry of Transportation | Highway Standards Branch | Traffic Office

Provincial Highways

Traffic Volumes 1988-2019, 2021

King's Highways / Secondary Highways / Tertiary Roads

Ministry Contact:
Provincial Traffic Office (905)-704-2960

Abstract:
This annual publication contains averaged traffic volume information and collision rate information for each of the sections of highway under MTO jurisdiction.

Key Words:
Annual Average Daily Traffic volume (AADT), Summer Average Daily Traffic volume (SADT), Summer Average Weekday Traffic volume (SAWDT), Winter Average Daily Traffic volume (WADT), Collision Rate (CR)

PREFACE

Traffic volume information is used by many people to assist them in assessing the viability of business proposals, land use options, marketing, advertising, and a host of other activities. This publication, **Provincial Highways Traffic Volumes 1988-2019, 2021**, provides traffic volumes on an annual and seasonal average basis for selected links in the provincial highway network. The traffic pattern type and accident rates on the selected links are also indicated.

The Ministry will not be publishing 2020 traffic volumes. The COVID-19 pandemic significantly altered traffic patterns and behaviours, and as a result 2020 is considered an outlier year.

Although 2020 traffic volumes will not be published, the Ministry did collect traffic data throughout the entirety of 2020. This data remains available for use and, provides valuable insights into traffic trends and patterns during an outlier year.

This information is available upon request, please contact MTO INFO at 1-800-268-4686 for the appropriate regional phone number or Email: mtoinfo@ontario.ca.

The Highway 407 ETR is maintained by 407 ETR Concession Company Ltd. and is not included in this publication. For information contact the 407 ETR Traffic Department at (905) 265-4070.

Some highway routes which have not yet been assigned an official highway number, are included under the title Selected 7000 Series Highways.

The statistics contained herein have been prepared based on data (both electronic and otherwise) obtained from sources considered to be reliable. The Ministry makes no representation or warranty, expressed or implied with respect to its accuracy or completeness.

This publication also supersedes any previously published publications.

TABLE OF CONTENTS PAGE NO.

TRAFFIC VOLUME INFORMATION

INTRODUCTION

This publication contains information pertaining to traffic volumes on roads under Provincial jurisdiction as of December 31, 2021. The publication is divided into two parts.

OVERALL SYSTEM SUMMARIES

The information in this section is included for policy analysis and program planning purposes. It includes summaries about the overall Provincial Highways system. The system indicators are developed from travel experience, accident data and highway geometrics.

TRAFFIC VOLUME INFORMATION

A detailed listing outlining the 33 year history (1988-2019, 2021) of traffic volumes on Provincial Highways (King's, Secondary, Tertiary Roads and the 7000 series highways) is provided.

The highway network is divided into approximately 1865 sections for reporting purposes. Seasonal traffic volume variations are estimated for each section reported. Although local conditions cause variations in the volume within the sections, the volumes shown are considered to adequately represent the section.

On highways that overlap another highway, for instance Highway 35 and Highway 115, the volume information is referenced to the lower number highway. When an overlap occurs between a freeway and non-freeway, reference is made to the freeway number. The freeways are Highway 400 to Highway 427 and the QEW.

The following are definitions to reading the listings:

Location Description: A statement identifying the start or ending point of a section. Some frequently used abbreviations include:

BDY	boundary
BR	bridge
C	concession
C/L	connecting link
CTY	county
DIST	district
KM	kilometres
AVE	avenue
REG	regional
HWY	highway
IC	interchange
JCT	junction
L	lot
LN	line
LTS	limits
NA	non assumed*
OH	overhead
OP	overpass
PKWY	parkway
R	river
RD	road
ST	street
TWP	township
UP	underpass

*Non Assumed – indicates that the roadway is not under provincial jurisdiction therefore contact the corresponding regional municipality for traffic volume information.

Distance (KM)

The length of the section in kilometres reported to one decimal place.

Pattern Type

One of 14 pattern types that represent the seasonal variation of the traffic flow on the section indicated. A graphical presentation of these pattern types has been included on the following page.

The 14 pattern types represent the traffic flow variation on the whole network. They include:

Variation Types

	UC	urban commuter
LOW	**SC**	suburban commuter
	C	commuter
	IC	intermediate commuter
	CR	commuter recreation
INTER	**IR**	intermediate recreation
	CTR	commuter tourist recreation
	IT	intermediate tourist
	LT	low tourist
	T	tourist
HIGH	**HT**	high tourist
	LR	low recreation
	R	recreation
	HR	high recreation
	UNKN	unknown
	UNCL	unclassified
	NEW	new volume section

The first three are generally referred to as Low Variation Curves (or commuter travel); the next five as Intermediate Variation Curves (a blend of all types of traffic); and the last six as High Variation Curves. For the last group, the first three represent tourist travel and the second three, recreational travel; this sub-grouping is distinguished by the relationship of weekend to weekday traffic.

There are two additional codes in the pattern type column. "UNC" indicates that the AADT was calculated using adjustment factors from an unclassified (i.e. new) permanent counting station. "NEW" indicates that this is a new volume section and there is insufficient data to assign a pattern type.

AADT

Annual Average Daily Traffic; defined as the average twenty four hour, two way traffic for the period January 1st to December 31st.

SADT

Summer Average Daily Traffic; defined as the average twenty four hour, two way traffic for the period July 1st to August 31st including weekends.

SAWDT

Summer Average Weekday Traffic; defined as the average twenty four hour, two way traffic for the period July 1st to August 31st, excluding weekends.

WADT

Winter Average Daily Traffic; defined as the average twenty four hour, two way traffic for the period January 1st to March 31st, plus December 1st to December 31st, including weekends.

NOTES:

(a) The user of this publication should realize that the reported data are 'estimated values'. Since traffic volumes are not static, direct field measurements are accurate only for the time of the count. Also, the size of the Provincial Highway network makes it impractical to measure each section annually. Thus, approximately one third of the reported sections are counted each year. The following three methods of measuring traffic volumes are employed:

1. Permanent Data Counting Stations: At designated locations across the Province counts are taken for each hour of the year.
2. Inventory Counting Stations: Each unique volume section has a set location where traffic volumes are sampled on a cyclical basis by season and year.
3. Request Counting Stations: Traffic volumes are measured at random locations as needed to address operational or planning concerns.

Using the available traffic volume information and historical trends, estimates are made for each highway section.

(b) The abbreviation "N/A" (Not Available) refers to a new volume section or where no data is available. Data for these sections should be available in future publication once collected.

(c) There may be some missing or incorrect traffic sections, and distances, due to highway realignment, highway transfers, renumbering, or sections which have been recently built.

CR

Collision Rate is defined as the number of reportable collisions occurring annually on a particular highway section for every million vehicle kilometres (MVKM) travelled on that section during the same period. "Reportable Collisions" are those causing any death, injury or property damage exceeding a certain established amount.

The collision rate is calculated as follows:

CR = the number of collisions for a given year divided by the MVKM, noting the following:

The MVKM is calculated as follows:

$$= \frac{\text{AADT} \times \#\text{ of Days in year} \times \text{Section Length (DIST-km)}}{1{,}000{,}000}$$

Notes:

(a) Multiple vehicle collisions (i.e., chain reactions are generally considered as one collision unless the reporting police officer decides otherwise).
(b) Collisions on freeway ramps are totally excluded from sectional and total system accident rate calculations. After 1996, highway ramps have also been excluded.
(c) If no collisions have occurred on a given section, the collision rate is shown as zero.

TRAFFIC VOLUME INFORMATION

The King's Highways	- Queen Elizabeth Way (Q.E.W.)
	- Highway 2 to Highway 148
	- The 400 series (Highway 400 to Highway 427)
The Secondary Highways	- Highway 502 to Highway 673
The Tertiary Roads	- Highway 802 to Highway 811
Selected 7000 Series Highways	- Highway 7025 to Highway 7910

NOTE:

Highway 407 ETR is maintained by 407 ETR Concession Company Ltd. For information contact the 407 ETR Traffic Department at (905) 265-4070.

Year	Highway	Location Description	Dist (KM)	Pattern Type	AADT	SADT	SWADT	WADT	Truck AADT	Total Collisions	Total CR	Trucks Collisions	Truck CR
2010	QEW			IR	75,000	89,300	81,700	63,800	11,200	9	0.2	2	0.1
2011	QEW			IR	82,700	98,700	96,600	70,600	12,400	13	0.3	4	0.1
2012	QEW			IC	83,800	92,800	90,000	74,400	12,600	20	0.5	2	0.0
2013	QEW			IC	84,900	94,000	93,400	75,300	12,700	14	0.3	3	0.1
2014	QEW			IC	85,900	95,100	94,600	76,200	12,900	26	0.6	5	0.1
2015	QEW			CR	87,000	102,500	101,900	74,100	13,000	21	0.5	3	0.1
2016	QEW			CR	88,100	103,800	103,200	75,000	13,200	14	0.3	6	0.1
2017	QEW			CR	89,100	103,300	103,900	80,200	13,400	21	0.5	5	0.1
2018	QEW			CR	90,200	104,800	105,500	81,000	13,500	19	0.4	3	0.1
2019	QEW			CR	91,300	105,900	106,600	81,900	13,700	28	0.6	3	0.1
2021	QEW			CR	93,400	107,500	108,200	84,300	14,000	22	0.5	4	0.1
1988	QEW	GLENDALE AV IC-38	4.9	CTR	49,800	64,700	60,800	41,800	7,450	49	0.6	8	0.1
1989	QEW			CTR	52,300	66,400	63,300	45,000	7,850	67	0.7	13	0.1
1990	QEW			CTR	54,700	68,400	64,500	47,600	8,200	49	0.5	9	0.1
1991	QEW			CTR	55,400	69,800	69,200	48,200	8,300	73	0.7	14	0.1
1992	QEW			CTR	55,300	68,000	65,800	48,100	8,300	63	0.6	13	0.1
1993	QEW			CTR	55,900	70,400	67,600	47,500	8,400	49	0.5	11	0.1
1994	QEW			CTR	57,000	73,000	69,500	47,900	8,550	79	0.8	17	0.2
1995	QEW			CTR	58,200	74,700	71,600	48,800	8,750	58	0.6	23	0.2
1996	QEW			CTR	59,300	75,900	73,000	49,800	8,900	61	0.6	11	0.1
1997	QEW			CTR	62,500	80,000	76,900	52,500	9,400	56	0.5	13	0.1
1998	QEW			CTR	65,100	82,700	79,400	54,700	9,750	59	0.5	16	0.1
1999	QEW			CTR	67,200	84,700	81,300	56,400	10,100	59	0.5	11	0.1
2000	QEW			CTR	70,300	88,600	85,100	59,100	10,500	62	0.5	17	0.1
2001	QEW			IR	72,000	89,000	79,800	60,900	9,350	50	0.4	11	0.1
2002	QEW			IR	73,700	90,900	81,700	62,700	9,600	92	0.7	25	0.2
2003	QEW			IR	75,300	91,400	82,800	63,900	9,050	57	0.4	24	0.2
2004	QEW			IR	78,100	96,500	86,500	66,000	9,350	59	0.4	11	0.1
2005	QEW			IR	75,200	90,800	82,400	64,100	9,000	70	0.5	14	0.1
2006	QEW			IR	76,700	92,500	83,800	65,100	9,200	38	0.3	10	0.1
2007	QEW			IR	78,100	94,600	94,300	66,200	9,350	69	0.5	19	0.1
2008	QEW			IR	79,600	96,400	94,600	68,000	9,550	60	0.4	17	0.1
2009	QEW			CTR	73,000	89,100	86,100	62,000	8,750	35	0.3	5	0.0
2010	QEW			CTR	82,500	100,400	96,500	70,100	9,900	38	0.3	6	0.0
2011	QEW			CTR	84,000	102,200	98,300	71,300	10,100	49	0.3	11	0.1
2012	QEW			IC	82,800	91,700	88,900	73,500	9,950	34	0.2	1	0.0
2013	QEW			IC	85,800	95,000	94,400	76,100	10,300	35	0.2	8	0.1
2014	QEW			IC	87,500	96,900	96,400	77,600	7,700	63	0.4	10	0.1
2015	QEW			IC	88,500	98,000	97,500	78,500	7,800	50	0.3	11	0.1
2016	QEW			IC	89,900	99,500	99,100	79,700	7,900	62	0.4	9	0.1
2017	QEW			IR	89,200	108,200	107,500	76,000	8,050	67	0.4	12	0.1

Year	Highway	Location Description	Dist (KM)	Pattern Type	AADT	SADT	SWADT	WADT	Truck AADT	Total Collisions	Total CR	Trucks Collisions	Truck CR
2018	QEW			IR	92,700	112,500	111,900	78,800	8,350	54	0.3	3	0.0
2019	QEW			IR	94,000	114,300	113,800	80,100	8,450	61	0.4	12	0.1
2021	QEW			IR	96,800	115,900	115,500	82,600	8,700	44	0.3	6	0.0
1988	QEW	NIAGARA ST SERVICE RDS	1.2	CTR	38,900	50,600	47,500	32,700	6,200	7	0.4	2	0.1
1989	QEW			CTR	40,800	51,800	49,400	35,100	6,550	14	0.8	2	0.1
1990	QEW			CTR	42,400	53,000	50,000	36,900	6,800	12	0.6	1	0.1
1991	QEW			CTR	43,300	54,600	54,100	37,700	6,950	8	0.4	1	0.1
1992	QEW			CTR	43,200	53,100	51,400	37,600	6,900	11	0.6	2	0.1
1993	QEW			CTR	43,800	55,200	53,000	37,200	7,000	5	0.3	0	0.0
1994	QEW			CTR	45,000	57,600	54,900	37,800	7,200	20	1.0	5	0.2
1995	QEW			CTR	47,100	60,400	57,900	39,500	7,550	13	0.6	4	0.2
1996	QEW			CTR	49,200	62,900	60,500	41,300	7,850	13	0.6	2	0.1
1997	QEW			CTR	51,300	65,700	63,100	43,100	8,200	6	0.3	0	0.0
1998	QEW			CTR	53,300	67,700	65,000	44,800	8,550	17	0.7	2	0.1
1999	QEW			CTR	54,100	68,200	65,500	45,400	8,650	14	0.6	7	0.3
2000	QEW			CTR	55,800	70,300	67,500	46,900	8,950	13	0.5	5	0.2
2001	QEW			CTR	56,700	71,600	68,600	47,800	9,050	17	0.7	3	0.1
2002	QEW			CTR	57,900	73,000	70,100	48,900	9,250	16	0.6	7	0.3
2003	QEW			CTR	59,400	73,800	70,900	50,400	9,500	16	0.6	6	0.2
2004	QEW			CTR	60,800	76,700	73,600	51,300	7,300	12	0.4	2	0.1
2005	QEW			CTR	61,500	76,200	73,100	52,200	7,400	15	0.5	2	0.1
2006	QEW			CTR	63,900	79,100	75,800	54,200	7,650	15	0.5	8	0.3
2007	QEW			CTR	65,400	81,000	80,300	55,400	7,850	22	0.7	6	0.2
2008	QEW			CTR	66,900	82,800	81,200	56,900	8,050	13	0.4	4	0.1
2009	QEW			CTR	68,300	83,300	80,600	58,100	8,200	9	0.3	3	0.1
2010	QEW			CTR	69,800	85,000	81,700	59,300	8,400	19	0.6	2	0.1
2011	QEW			CTR	71,300	86,800	83,400	60,500	8,550	16	0.5	5	0.2
2012	QEW			CTR	72,700	88,200	87,100	61,900	8,700	7	0.2	1	0.0
2013	QEW			CTR	74,200	90,300	93,300	63,000	8,900	12	0.4	1	0.0
2014	QEW			CTR	75,700	92,400	93,100	64,300	9,100	17	0.5	1	0.0
2015	QEW			CTR	77,200	94,200	95,000	65,600	9,250	3	0.1	0	0.0
2016	QEW			CTR	78,600	95,900	96,700	66,800	9,450	6	0.2	2	0.1
2017	QEW			CTR	80,100	107,000	106,500	65,300	9,600	6	0.2	2	0.1
2018	QEW			CTR	81,600	109,000	108,500	66,500	9,800	6	0.2	1	0.0
2019	QEW			CTR	83,100	110,700	110,200	67,600	9,950	7	0.2	1	0.0
2021	QEW			CTR	86,000	112,100	111,500	70,200	10,300	4	0.1	1	0.0
1988	QEW	NIAGARA ST IC-44	1.7	CTR	52,000	67,600	63,400	43,700	8,850	25	0.8	10	0.3
1989	QEW			CTR	54,000	68,600	65,300	46,400	9,200	17	0.5	0	0.0
1990	QEW			CTR	56,200	70,200	66,300	48,900	9,550	19	0.5	5	0.1
1991	QEW			CTR	57,300	72,200	71,600	49,900	9,750	33	0.9	7	0.2
1992	QEW			CTR	57,200	70,400	68,100	49,800	9,700	44	1.2	17	0.5

Signal Timing Plans

Signal Code: 055100

Intersection: RR55(Niagara Stone Rd.) & RR100(4 Mile Creek)

Municipality: notl

Owner: region

Last Modified: 2025-01-20 11:33:19 AM

Timing Parameters	SBD NIAGARA STONE ADV	NBD & SBD NIAGARA STONE RD.	WBD & EBD FOUR MILE CREEK	n/a	n/a	n/a
Min Green	6	10	8	0	0	0
Walk	0	8	8	0	0	0
Ped Clearance	0	12	10	0	0	0
Vehicle Ext.	2.5	4	3	0	0	0
Max Green	12	45	35	0	0	0
Yellow	3	4.1	4.1	0	0	0
All Red	0	2.7	2.6	0	0	0

		Offset
Minimum Cycle	31.5	0
Pedestrian Cycle	51.5	
Maximum Cycle	108.5	0
Operation	FA	

Installed On:	2011-09-30
Count Date:	--/--/----

FA = Fully Actuated SA = Semi Actuated FT = Fixed Time

APPENDIX C

Background Developments

Traffic Impact Brief

1570 Niagara Stone Road

Niagara-on-the-Lake, Ontario

Prepared for: Hummel Properties Inc.

Prepared by: SLBC Inc.

2023-09-21

Executive Summary

SLBC Inc. has been retained by Hummel Properties Inc. to complete a Traffic Impact Brief for the proposed residential townhouse and apartment development at 1570 Niagara Stone Road, in the Town of Niagara-on-the-Lake.

The subject development lands are currently a portion of the parking lot and grassy area of the existing Cornerstone Community Church located at the same address. The church will remain in operation post build-out of the subject development. The development lands have road frontage on Elden Street, between Field Road and Penner Street. The primary arterial road through this area is Niagara Stone Road (Regional Road 55), which is oriented in a southwest-to-northeast alignment. There are a variety of land uses in the immediate area, including residential, institution, commercial, retail, and agricultural uses.

The proposed residential development will consist of 14 townhouse dwelling units with a dedicated driveway off Elden Street, and 24 apartment units in a single four-storey apartment building with a dedicated driveway off Elden Street as well**.** All parking will be on-site and at ground level.

Based on the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th edition), the proposed residential development is projected to generate approximately 11 two-way trips during the weekday a.m. peak hour (2 inbound and 9 outbound), and 14 two-way trips during the weekday p.m. peak hour (9 inbound and 5 outbound).

This level of estimated peak hour traffic generation by the proposed development is expected to be nominal. This added traffic is not expected to result in any operational or capacity concerns on the Town's or Region's road network and will not warrant the need for roadway infrastructure or traffic control improvements on the surrounding road network to maintain an acceptable level of service. The only two proposed roadway improvements required will be the introduction of the two new site driveways, which will not noticeably impact traffic operations on Elden Street.

There are no recommended improvements to the surrounding road network in response to the estimated traffic generation from the proposed development.

SLBC Inc.

Adam Mildenberger, BA, CET
Principal, Transportation Advisory Services

Table of Contents

1 Introduction

SLBC Inc. has been retained by Hummel Properties Inc. to complete a Traffic Impact Brief for the proposed residential townhouse and apartment development at 1570 Niagara Stone Road, in the Town of Niagara-on-the-Lake.

The primary objectives of the Traffic Impact Brief include:

- Review the study area and proposed development;
- Estimate trip generation from the proposed development;
- Provide an opinion on the anticipated traffic operational impacts of the proposed development, and whether improvements to the surrounding transportation network may be required to maintain an acceptable level of service.

2 Existing Road Network

Niagara Stone Road (Regional Road 55) is an arterial roadway under the jurisdiction of Niagara Region, with a two-lane urban cross-section and an assumed speed limit of 50km/h. In the vicinity of the site, there are no identifiable horizontal or vertical curves in the road's alignment requiring review. At its signalized intersection with Penner Street, there are auxiliary left-turn lanes for northbound and southbound traffic. At its signalized T-intersection with Field Road, there is an auxiliary left-turn lane for northbound traffic.

Penner Street is an east-west collector roadway under the jurisdiction of the Town of Niagara-on-the-Lake, with a two-lane urban cross-section and a posted speed limit of 40km/h. In the vicinity of the site, there are no identifiable horizontal or vertical curves in the road's alignment requiring review. At its all-way stop-controlled intersection with Elden Street it has no auxiliary turn lanes. At its signalized intersection with Niagara Stone Road, there are no auxiliary turn lanes.

Elden Street is a north-south local roadway under the jurisdiction of the Town of Niagara-on-the-Lake, with a two-lane urban cross-section and a posted speed limit of 40km/h. In the vicinity of the site, there are no identifiable horizontal or vertical curves in the road's alignment requiring review. It is stop controlled at both Penner Street to the north and Field Road to the south, with no auxiliary turn lanes.

Field Road is an east-west local roadway under the jurisdiction of the Town of Niagara-on-the-Lake, with a two-lane urban cross-section and a posted speed limit of 40km/h. In the vicinity of the site, there are no identifiable horizontal or vertical curves in the road's alignment requiring review. At its signalized T-intersection with Niagara Stone Road it has no auxiliary turn lanes.

3 Proposed Development

The subject development lands are currently a portion of the parking lot and grassy area of the existing Cornerstone Community Church located at the same address, as shown in **Figure 1**. The church will remain in operation post build-out of the subject development. The development lands have road frontage on Elden Street, between Field Road and Penner Street. The primary arterial road through this area is Niagara Stone Road (Regional Road 55), which is oriented in a southwest-to-northeast alignment. There are a variety of land uses in the immediate area, including residential, institution, commercial, retail, and agricultural uses.

The proposed residential development will consist of 14 townhouse dwelling units with a dedicated driveway off Elden Street, and 24 apartment units in a single four-storey apartment building with a dedicated driveway off Elden Street as well**.** All parking will be on-site and at ground level. A copy of the site plan is provided in **Appendix A**.

Figure 1: Study Area

4 Trip Generation

Automobile trip generation for the proposed development during the peak periods of the adjacent street traffic was estimated by using the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th edition) methodology for Single-family Attached Housing (ITE Land Use Code #215) for the townhomes and Multifamily Housing Mid-rise (ITE Land Use Code #221) for the apartments. Trip Generation datasheets are provided in **Appendix B**. As presented in **Table 1**, the proposed residential development is projected to generate approximately 11 two-way trips during the weekday a.m. peak hour (2 inbound and 9 outbound), and 14 two-way trips during the weekday p.m. peak hour (9 inbound and 5 outbound). As a conservative approach, the impacts of telecommuting or potentially elevated retirement levels of this community have not been considered in the trip generation estimates.

Table 1: Trip Generation Calculations

ITE Land Use	# of Units	Peak Hours	Total Site Trips	Directional Distribution		Directional Site Trips	
				In	Out	In	Out
Single-family Attached Housing (215)	14	AM	2	25%	75%	0	2
		PM	4	59%	41%	3	1
Multifamily Housing Mid-Rise (221)	24	AM	9	23%	77%	2	7
		PM	10	61%	39%	6	4
Total	38	AM	11	-	-	2	9
		PM	14	-	-	9	5

5 Trip Distribution and Trip Assignment

Given the majority of trips generated by the site during the weekday a.m. and p.m. peak hours will primarily be commuter trips and given the residential nature of the development, Transportation Tomorrow Survey (TTS) commuter data was reviewed to estimate the distribution of the site generated traffic to the surrounding road network. Based on the TTS data (provided in **Appendix C**), it is estimated approximately 50% of future employed residents of the subject site will commute within the Town Niagara-on-the-Lake area, and 50% will commute outside of the Town.

The site generated traffic has been assigned to individual turning movements at the study area intersections based on the aforementioned trip generation estimates and trip distribution assumptions, with approximately 50% travelling to/from the north and 50% to/from the south. The assignment of the estimated peak hour site generated traffic for the proposed residential development is shown in **Figure 2**.

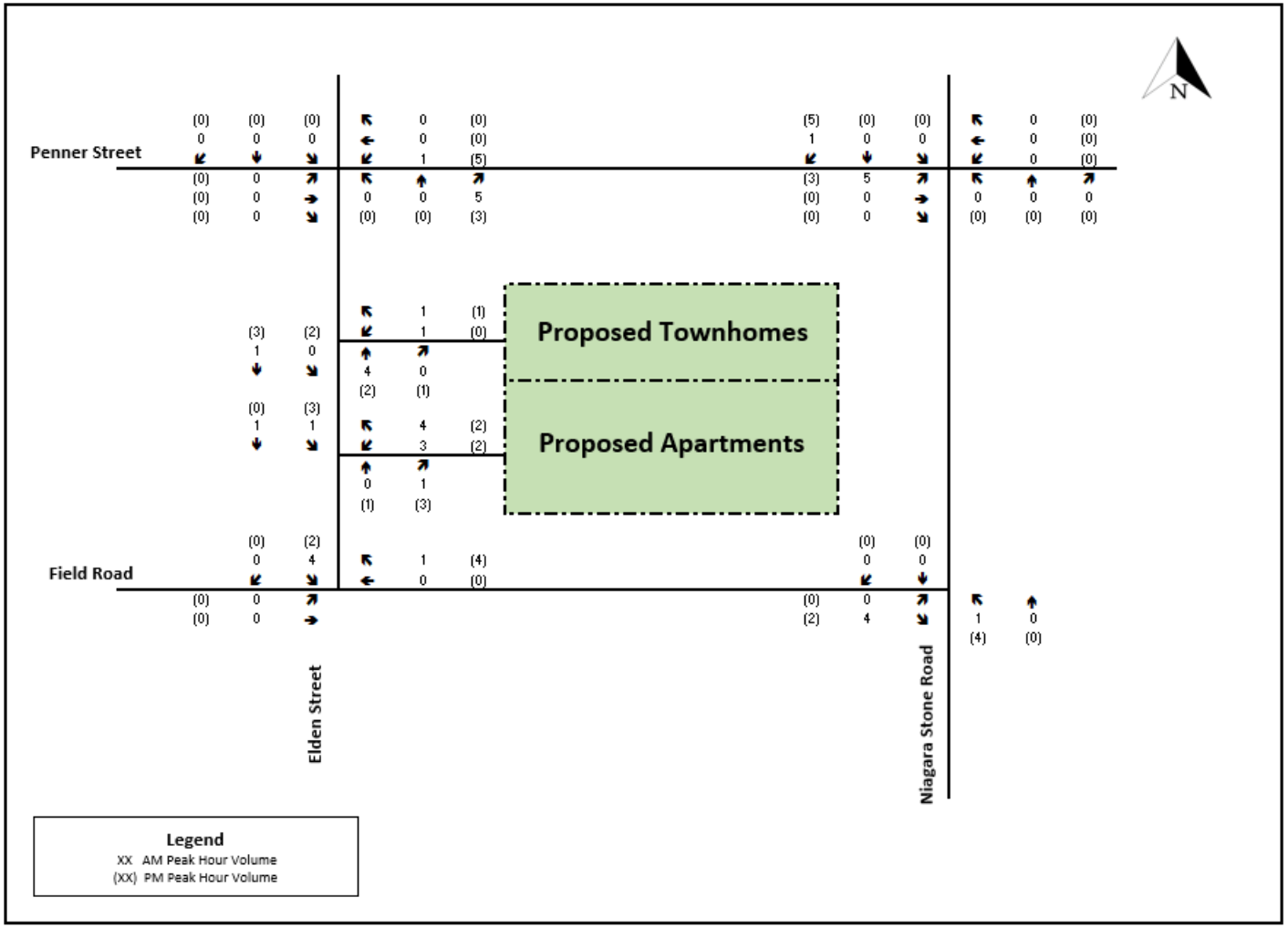


Figure 2: Trip Assignment

6 Anticipated Operational Impacts

This level of estimated peak hour traffic generation by the proposed development is expected to be nominal. This added traffic is not expected to result in any operational or capacity concerns on the Town's or Region's road network and will not warrant the need for roadway infrastructure or traffic control improvements on the surrounding road network to maintain an acceptable level of service. Both of the primary connection points to Niagara-Stone-Road (Penner Street and Field Road) are signalized intersections, which are expected to have sufficient capacity to accommodate the added traffic from the subject development, with auxiliary turn lanes already provided on Niagara-Stone-Road. As shown in the trip assignment estimates shown above, once the site generated traffic is distributed to individual turning movements at the surrounding intersections, the volume of added peak hour traffic is very low and may not be identifiable from a driver's perspective. This also represents worst-case (peak hour) conditions, with periods outside these two hours having notably less site generated traffic.

7 Summary of Findings and Recommendations

7.1 Summary of Findings

The findings of this traffic study can be summarized as follows:

- The proposed residential development will consist of 38 dwelling units (14 townhouse dwelling units and 24 apartment units)**;**
- The proposed residential development is projected to generate approximately 11 two-way trips during the weekday a.m. peak hour (2 inbound and 9 outbound), and 14 two-way trips during the weekday p.m. peak hour (9 inbound and 5 outbound);
- This level of estimated peak hour traffic generation by the proposed development is not expected to result in any operational or capacity concerns on the Town's or Region's road network and will not warrant the need for roadway infrastructure or traffic control improvements on the surrounding road network to maintain an acceptable level of service; and
- The only two proposed roadway improvements required will be the introduction of the two new site driveways, which will not noticeably impact traffic operations on Elden Street.

7.2 Recommendation

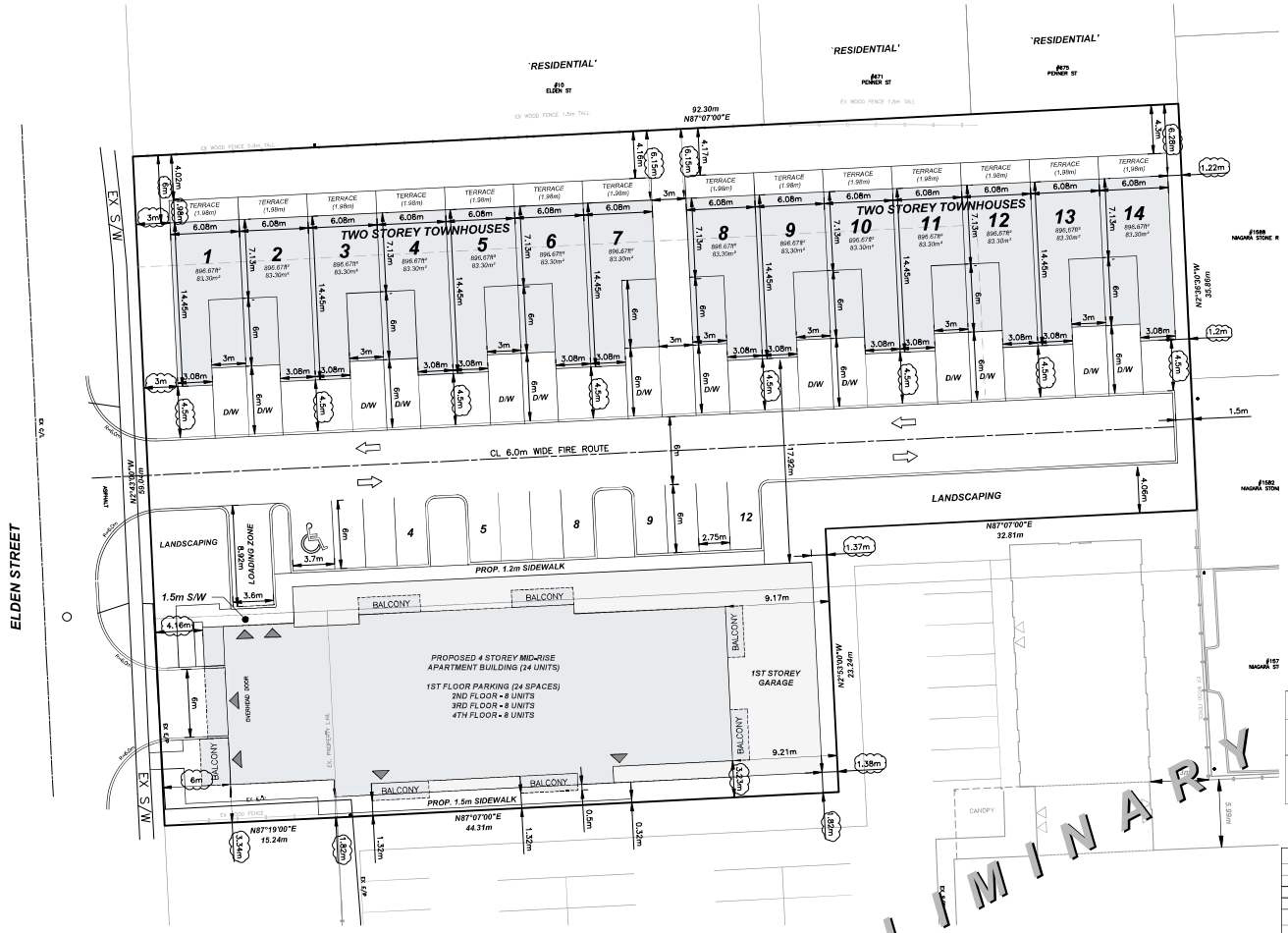
There are no recommended improvements to the surrounding road network in response to the estimated traffic generation from the proposed development. The only two proposed roadway improvements required will be the introduction of the two new site driveways, which will not noticeably impact traffic operations on Elden Street.

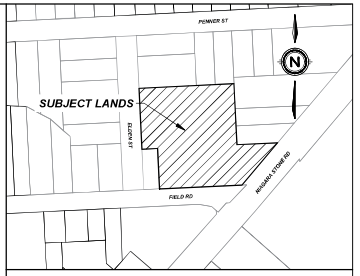
SLBC Inc.

Adam Mildenberger, BA, CET
Principal, Transportation Advisory Services

Appendix A
Site Plan

1570 NIAGARA STONE ROAD
TOWN OF NIAGARA-ON-THE-LAKE





KEY PLAN
N.T.S.

ZONING BY-LAW

ZONING MATRIX (RM1) - RESIDENTIAL MULTIPLE		
PERMITTED USES	(a) accessory buildings and structures in accordance with Section 6.1. (b) bed and breakfast establishment in an existing detached dwelling in accordance with Section 6.5. (c) fourplex or quadraplex dwelling (d) existing single detached dwelling (e) group home in accordance with Section 6.20 (f) public use (g) townhouse dwelling (h) triplex dwelling	
PROPOSE USES	APARTMENT BUILDING AND BLOCK TOWNHOUSES	
PROVISION	REQUIRED	PROPOSED
Minimum lot frontage	30.0m (100 ft)	59.07m
Minimum lot area per unit	285m² (3067.81 ft²)	723.48m²
Maximum lot coverage	35%	45%
Minimum landscaped open space	30%	37%
Minimum front yard setback	7.5 m (24.6 ft)	3m TOWNHOUSE, 4.16m APARTMENT BUILDING
Minimum interior side yard setback	7.5 m (24.6 ft)	6.0m TOWNHOUSE, 1.82m APARTMENT BUILDING
Minimum exterior side yard setback	7.5 m (24.6 ft)	N/A
Minimum rear yard setback	7.5 m (24.6 ft)	1.0m TOWNHOUSE, 1.38m APARTMENT BUILDING
Minimum distance between buildings located on the same lot of 3.0 m (9.84 ft) between walls not containing windows to a habitable room, and 9.0 m (29.53 ft) between walls where one wall contains a window to a habitable room, and 15.0 m between walls where both walls contain a window to a habitable room.		17.92m
Minimum distance between any townhouse dwelling and a private roadway and parking area	6.0 m (19.69 ft)	4.5m/ 6.0m
Minimum dwelling unit area	80 m² (861.14 ft²)	84.40m²
Maximum building height	10.0 m (32.8 ft)	10.88m
Minimum accessory building yards setback	0.5 m (1.64 ft)	N/A
Minimum setback of uncovered, unenclosed or covered patio or deck form requires a side yard setback of 0.6 m (2 ft)		N/A
Minimum accessory building exterior side yard setback	7.5 m (24.6 ft)	N/A
Minimum interior side yard setback of 6.0 m (19.69 ft), except that where the interior lot line is adjacent to a Residential 1 (R1) Zone, Residential 2 (R2) Zone or Residential 3 (R3) Zone in the Virgil Community Zoning District, a minimum interior side yard equal to the building height is required, whichever is greater.		1.37m
Minimum rear yard setback of 7.5 m (24.6 ft), except that where the rear lot line is adjacent to a Residential 1 (R1) Zone, Residential 2 (R2) Zone or Residential 3 (R3) Zone in the Virgil Community Zoning District, a minimum rear yard equal to the building height is required, whichever is greater.		N/A
Minimum dwelling unit area: (i) Bachelor unit (ii) 1 bedroom unit (iii) 2 bedroom unit (iv) 3 bedroom unit	37 m 2 (398.28 ft 2) 41 m 2 (441.33 ft 2) 69 m 2 (742.73 ft 2) 80 m 2 (861.14 ft 2)	TBD

SEC. 6.44. PERMITTED YARD PROJECTIONS AND ENCROACHMENTS

STRUCTURE TYPE	YARDS (FRONT, REAR & SIDES)	MAXIMUM PROJECTION INTO REQUIRED YARD	PROPOSED
Unenclosed and uncovered porch, deck, balcony, patio or steps	Front or Rear Yard	1.5m (5ft)	2.65m TOWNHOUSE
	Side Yard	0.6m (2ft)	0.5m APARTMENT

LAND USE SCHEDULE

LAND USE	# OF UNITS	AREA(ha)	AREA(%)
TOWNHOUSES	12	0.118	25%
APARTMENT BUILDING	24	0.094	20%
ROADWAY/PARKING		0.082	17%
LANDSCAPE		0.175	38%
TOTAL	12	0.4712	100%

DEVELOPABLE AREA = 0.469ha
DEVELOPABLE DENSITY = 81.00 units/ha

MIN. PARKING REQUIRED (TOWNHOUSE) 2 PER UNIT = 24 SPACES
PROVIDED PARKING = 24 SPACES

MIN. PARKING REQUIRED (APARTMENT) 1 PER UNIT = 24 SPACES
PROVIDED PARKING = 24 SPACES

TOTAL PARKING REQUIRED = 48 SPACES
PROVIDED PARKING = 48 SPACES

#	REVISION	DATE	INIT
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.	.	.	.
0	ISSUED FOR REVIEW	2023-07-25	JO

UPPER CANADA CONSULTANTS
ENGINEERS / PLANNERS

DRAWING TITLE
CONCEPT PLAN

DRAFTING	JO
DATE	JULY 25, 2023
PRINTED	JULY 25, 2023
SCALE	1:200
DWG No.	22115-CP
REV	0

DRAWING FILE: F:\22115\Planning\22115_CP_2023_07_07.dwg PLOTTED: Jul 25, 2023 - 4:41pm PLOTTED BY: Jouellet

Appendix B
ITE Trip Generation

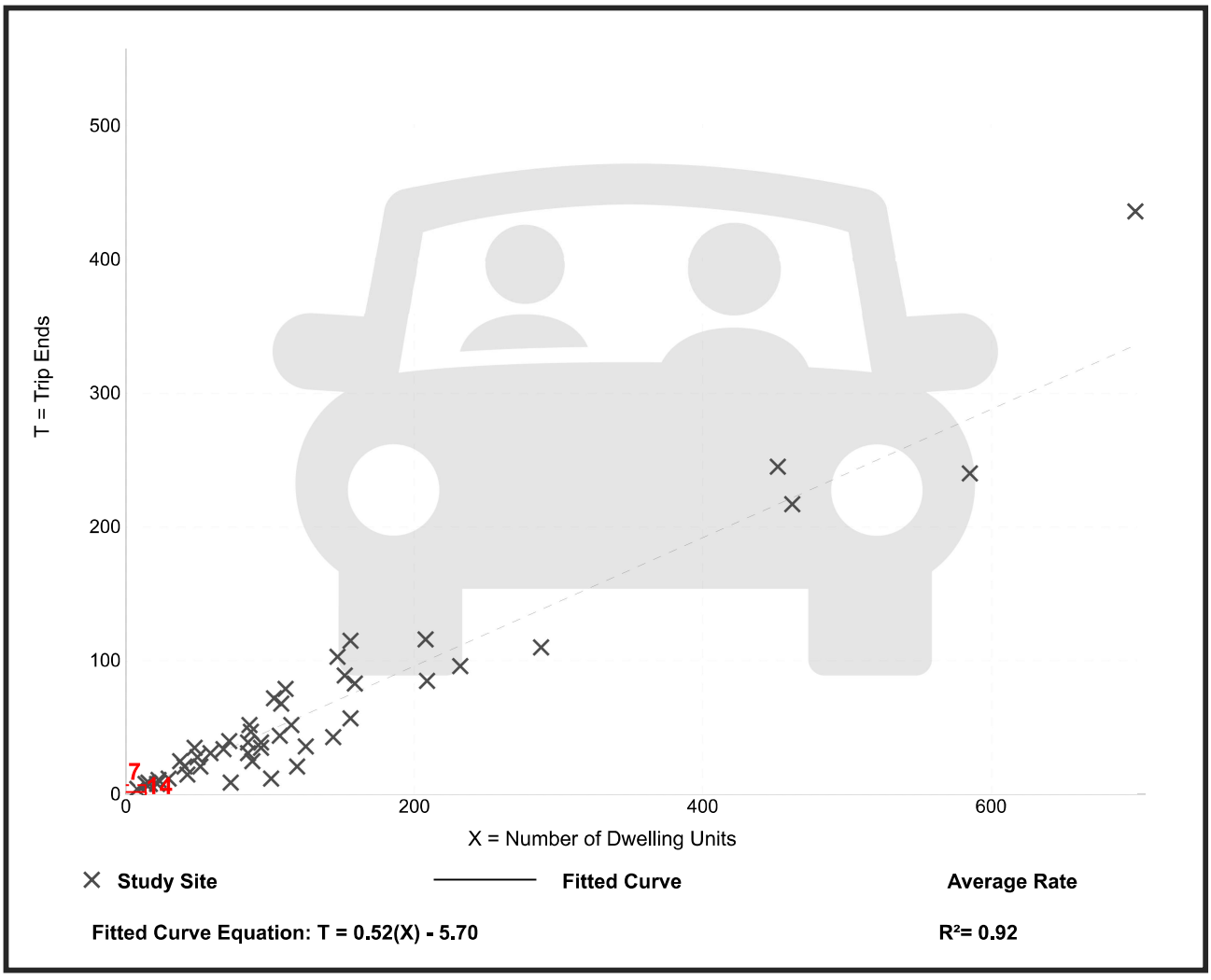
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 46
Avg. Num. of Dwelling Units: 135
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

Data Plot and Equation



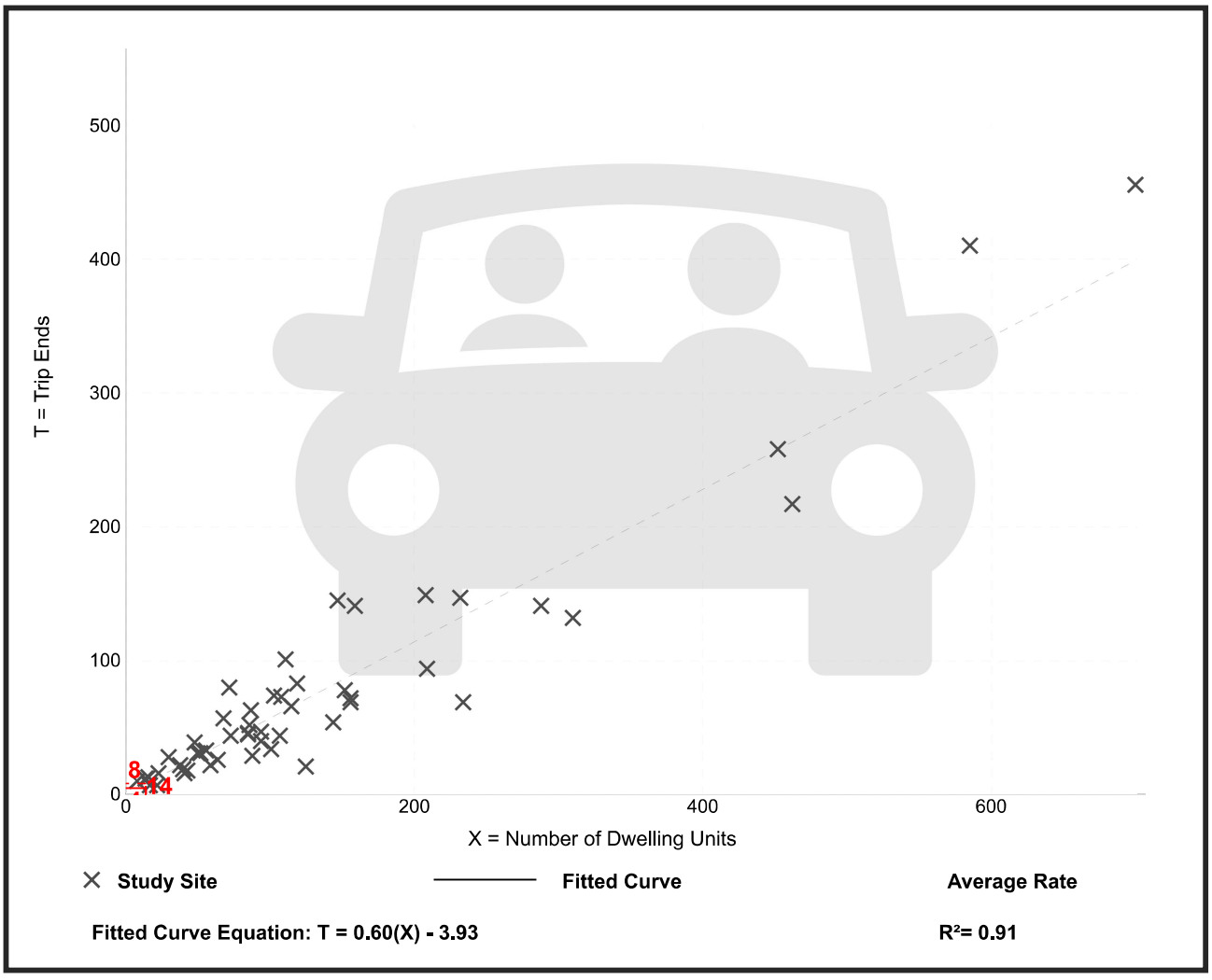
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 51
Avg. Num. of Dwelling Units: 136
Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

Data Plot and Equation



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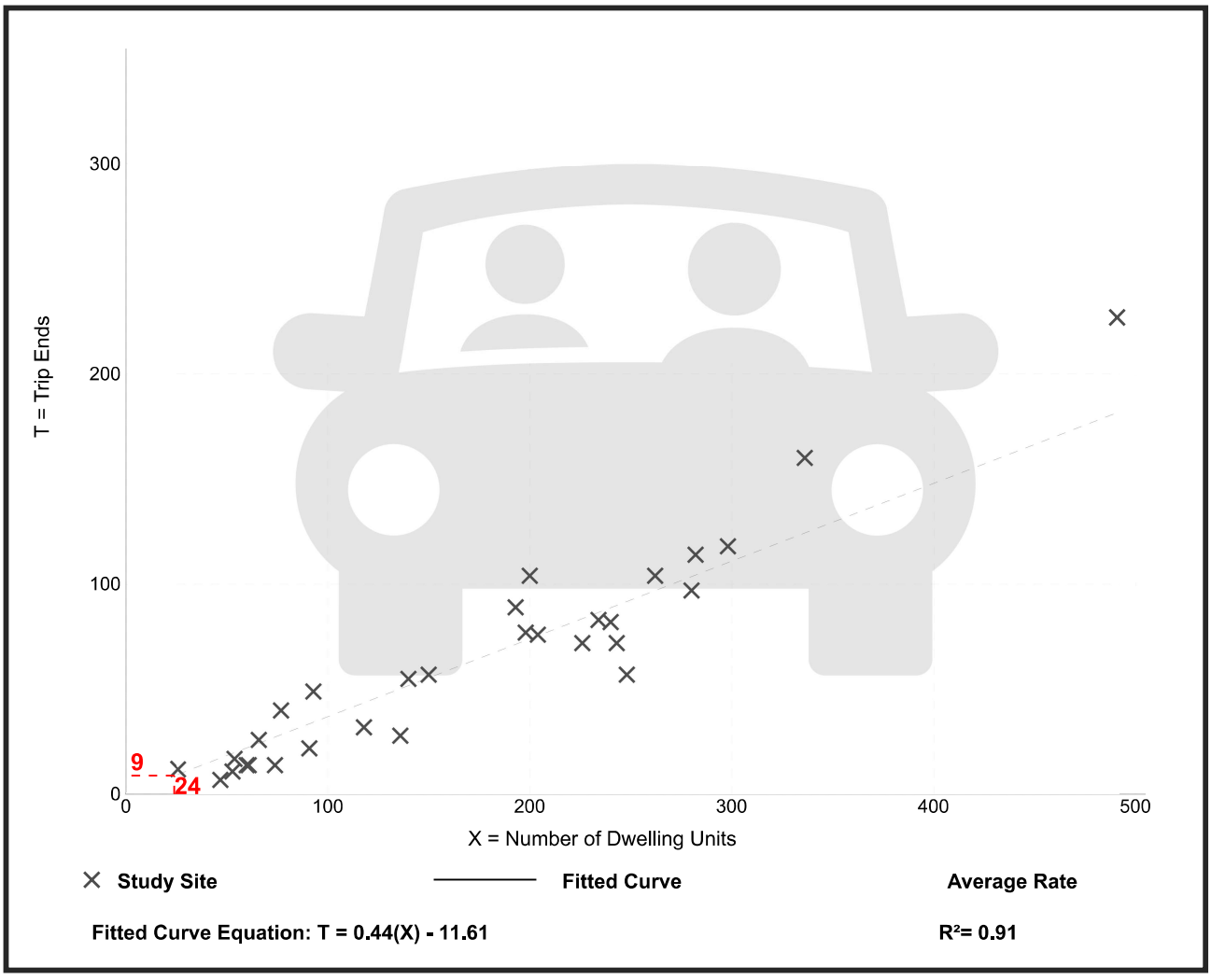
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

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

Vehicle Trip Generation per Dwelling Unit

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

Data Plot and Equation



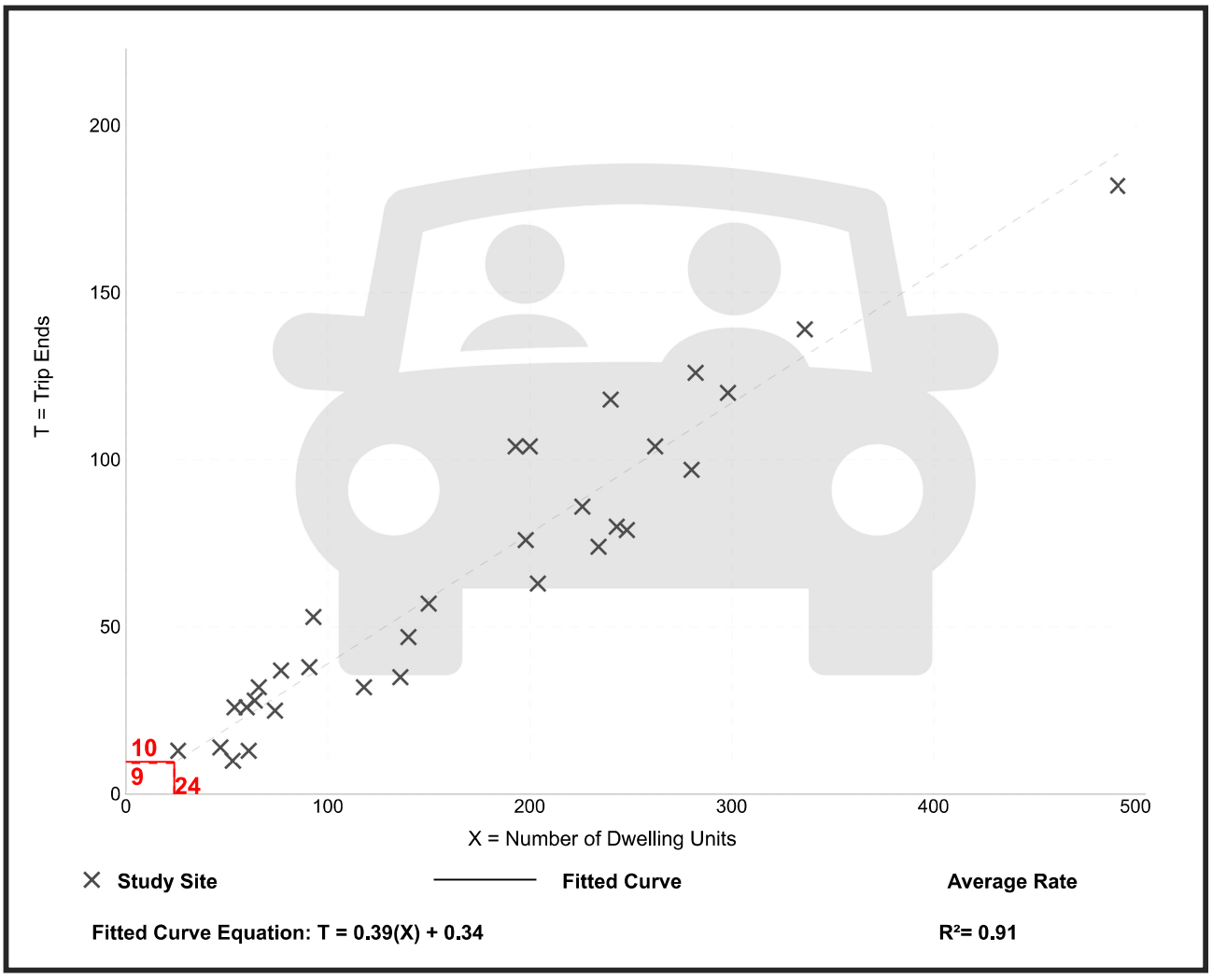
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

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

Vehicle Trip Generation per Dwelling Unit

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

Data Plot and Equation



Appendix C
Transportation Tomorrow Survey

Wed Aug 09 2023 09:56:58 GMT-0400 (Eastern Daylight Time) - Run Time: 1615ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig

Column: Planning district of employment - pd_emp

RowG:(54)

ColG:

TblG:

Filters:

2006 GTA zone of household - gta06_hhld In 6047

Trip 2016

Table:

	Grimsby	Lincoln	Niagara-on	St. Catharii	Thorold	Niagara Fa	Welland	Kawartha Lakes	
1	13	177	829	348	26	158	13	44	1608
	1%	11%	52%	22%	2%	10%	1%	3%	100%

	IN(T)	OUT(T)	Total
AM	2	9	11
PM	9	5	14

Site Total

ROUTES		TRIP PROP.	AM IN	AM OUT	PM IN	PM OUT
A	Niagara Stone Rd N	52%	1	5	5	3
B	Niagara Stone Rd S	48%	1	4	4	2
	TOTAL	**100%**	**2**	**9**	**9**	**5**
		Check	**2**	**9**	**9**	**5**

	IN(T)	OUT(T)	Total
AM	0	2	2
PM	3	1	4

Townhouse (215)

ROUTES		TRIP PROP.	AM IN	AM OUT	PM IN	PM OUT
A	Niagara Stone Rd N	52%	0	1	2	1
B	Niagara Stone Rd S	48%	0	1	1	0
	TOTAL	**100%**	**0**	**2**	**3**	**1**
		Check	**0**	**2**	**3**	**1**

	IN(T)	OUT(T)	Total
AM	2	7	9
PM	6	4	10

Apartments (221)

ROUTES		TRIP PROP.	AM IN	AM OUT	PM IN	PM OUT
A	Niagara Stone Rd N	52%	1	4	3	2
B	Niagara Stone Rd S	48%	1	3	3	2
	TOTAL	**100%**	**2**	**7**	**6**	**4**
		Check	**2**	**7**	**6**	**4**

APPENDIX D

2022 TTS Data

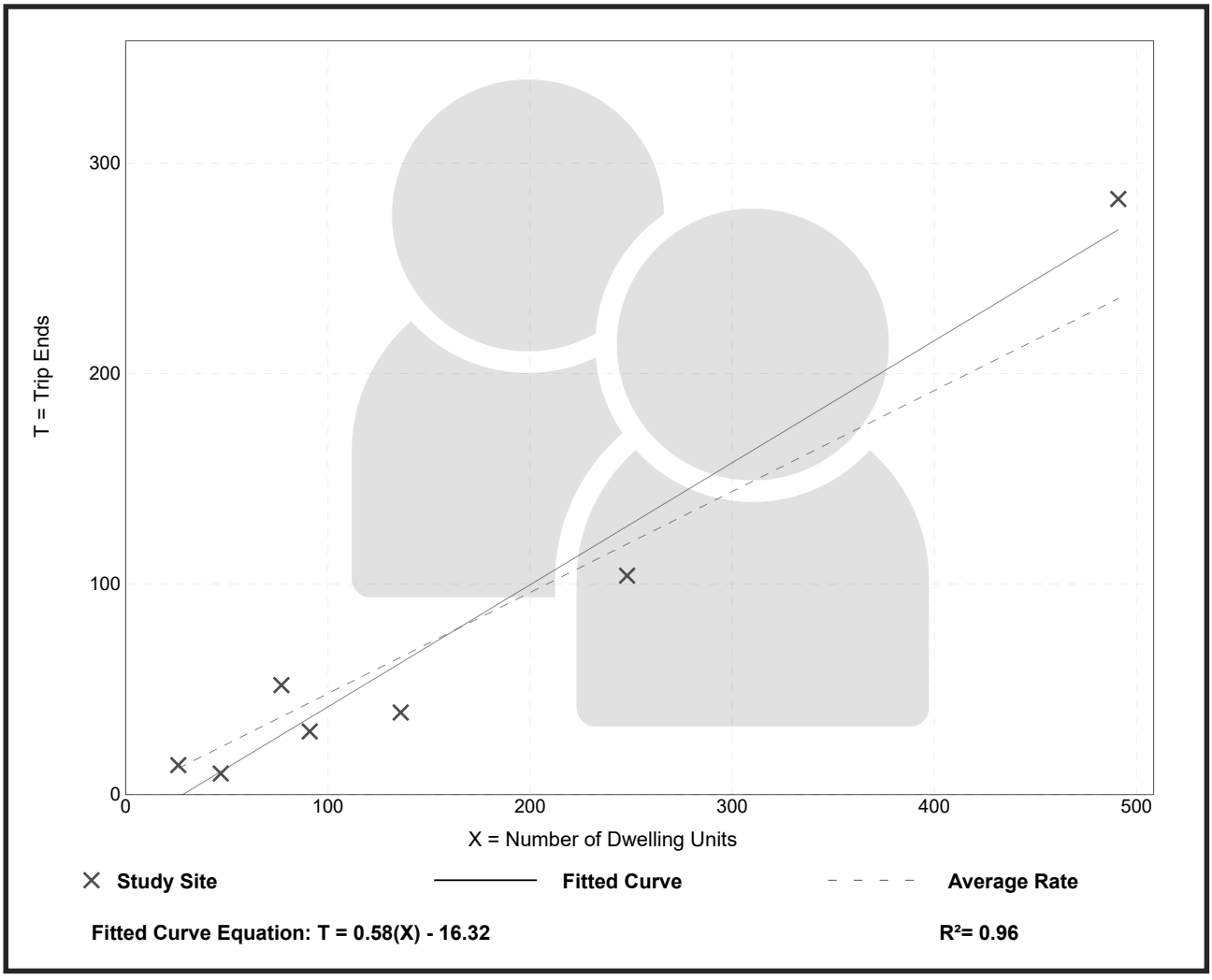
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Person Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 7
Avg. Num. of Dwelling Units: 159
Directional Distribution: 23% entering, 77% exiting

Person Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.21 - 0.68	0.14

Data Plot and Equation



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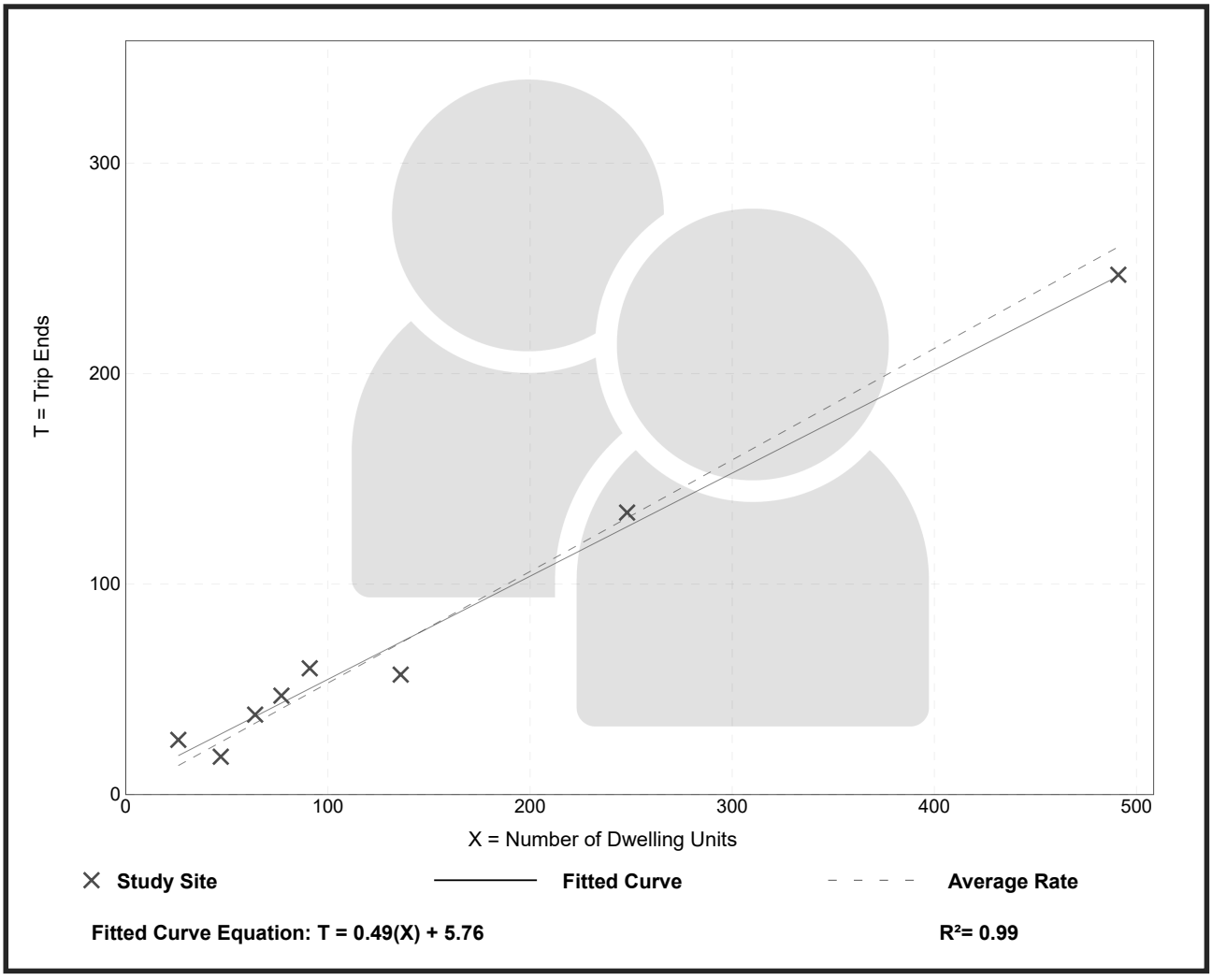
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Person Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 8
Avg. Num. of Dwelling Units: 148
Directional Distribution: 59% entering, 41% exiting

Person Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.53	0.38 - 1.00	0.10

Data Plot and Equation



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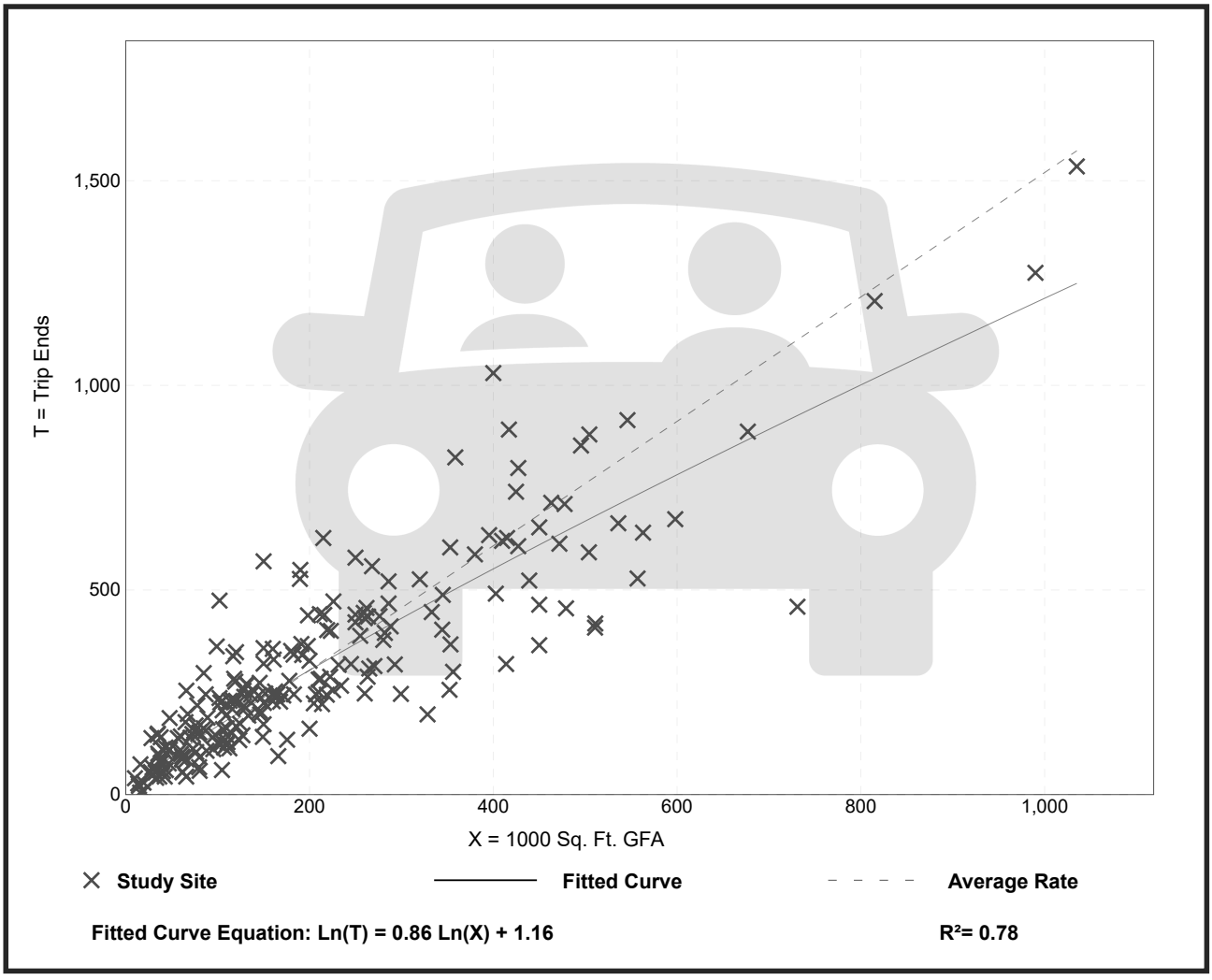
General Office Building
(710)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 221
Avg. 1000 Sq. Ft. GFA: 201
Directional Distribution: 88% entering, 12% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.52	0.32 - 4.93	0.58

Data Plot and Equation



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

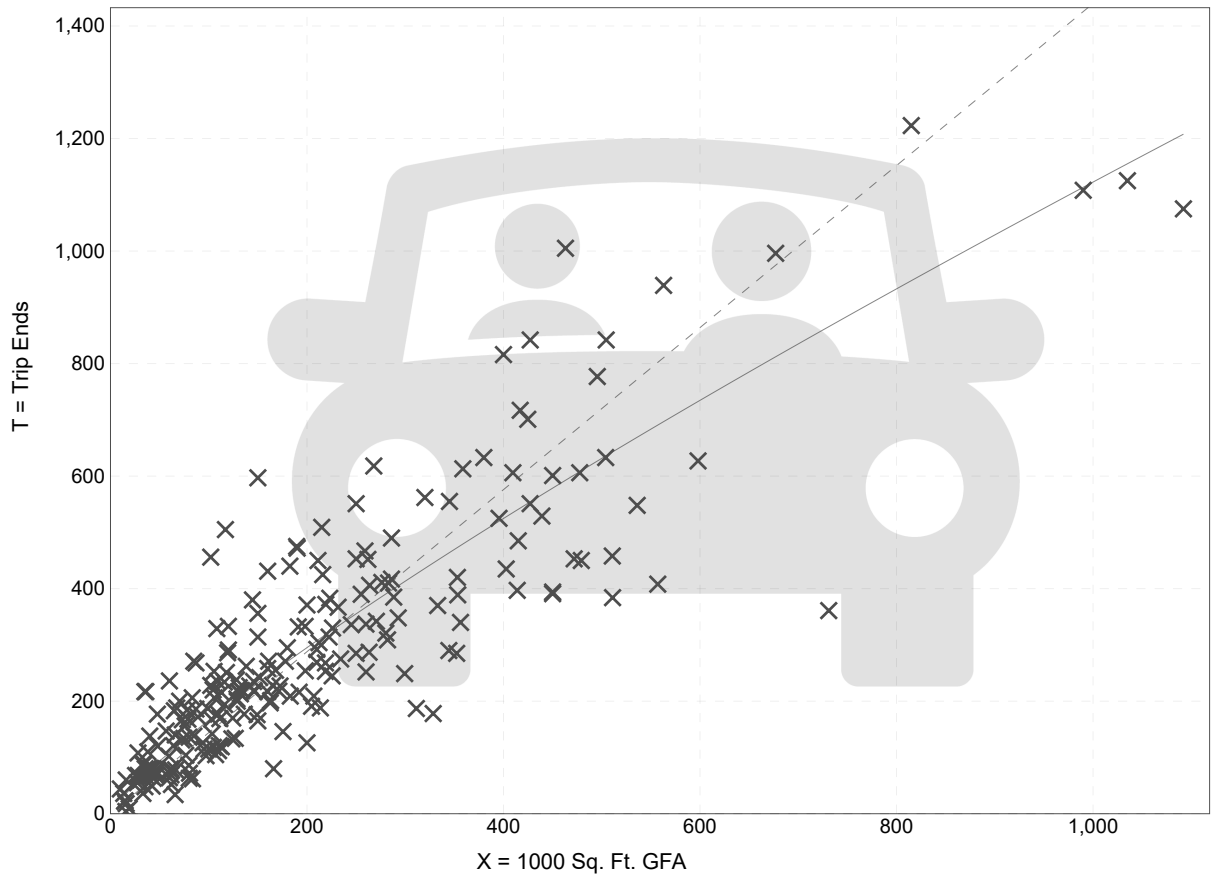
General Office Building
(710)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 232
Avg. 1000 Sq. Ft. GFA: 199
Directional Distribution: 17% entering, 83% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.44	0.26 - 6.20	0.60

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.83 Ln(X) + 1.29 **R^2= 0.77**

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Strip Retail Plaza (<40k)
(822)

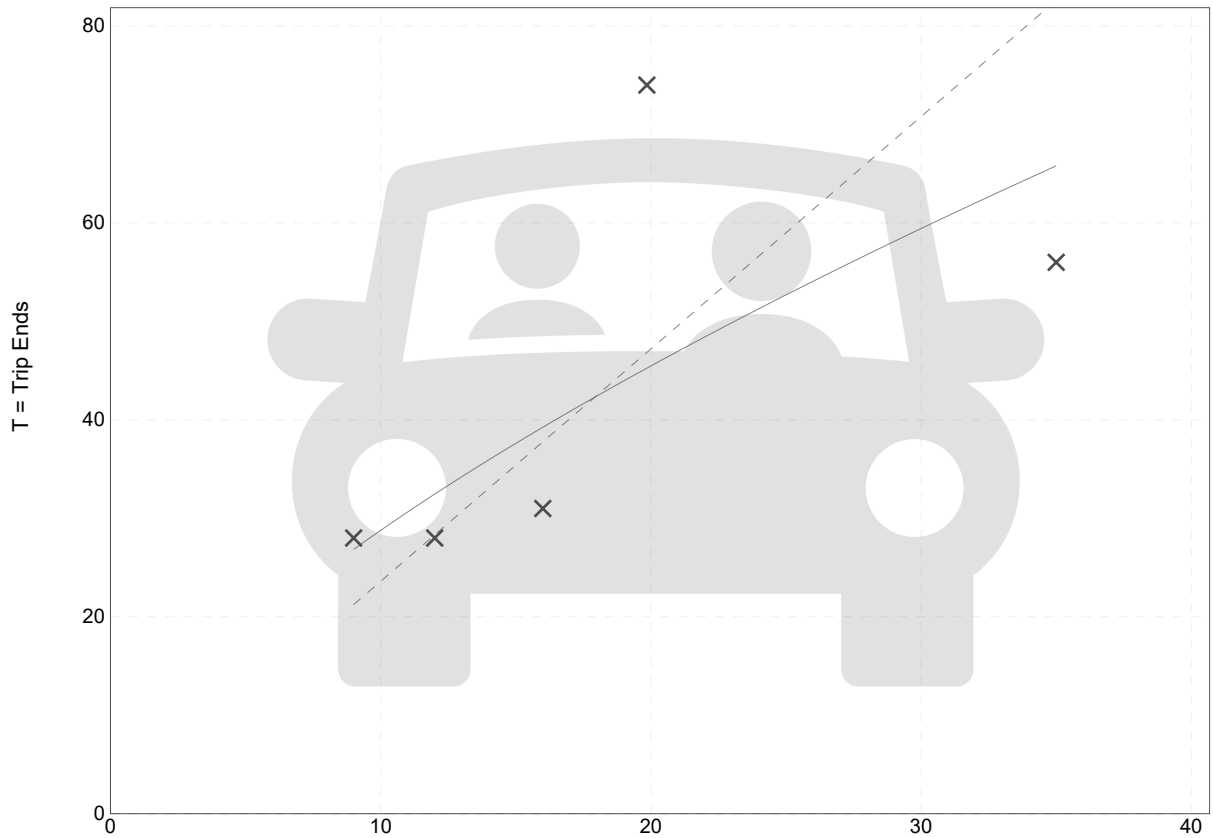
Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
Avg. 1000 Sq. Ft. GLA: 18
Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Ln(T) = 0.66 Ln(X) + 1.84

R^2= 0.57

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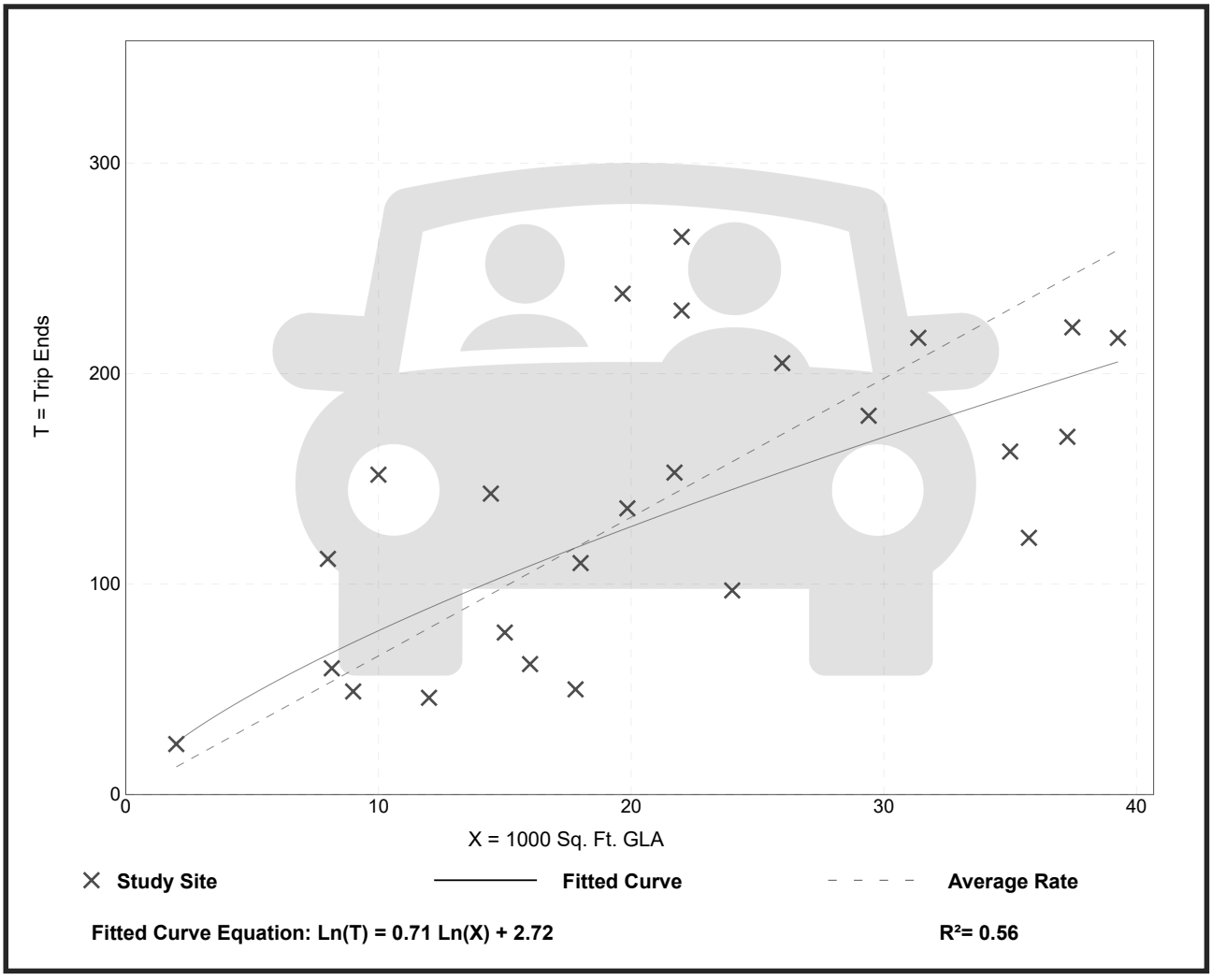
Strip Retail Plaza (<40k)
(822)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 25
Avg. 1000 Sq. Ft. GLA: 21
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.59	2.81 - 15.20	2.94

Data Plot and Equation



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Mode Split for Residential and Work Trips

Sun Jan 19 2025 21:08:30 GMT-0500 (Eastern Standard Time) - Run Time: 3004ms

Cross Tabulation Query Form - Trip - 2022

Row: Type of dwelling unit - dwell_type
Column: Primary travel mode of trip - mode_prime

Filters:
2006 GTA zone of household - gta06_hhld In 6042-6051, 6190-6200
and
Trip purpose - trip_purp In 1, 2

Trip 2022
Table:

	Transit excluding GO rail	Auto driver	Joint GO rail and local transit	Motorcycle	Other	Auto passenger	School bus	Paid rideshare	Walk
House	281	14274	12	10	0	4052	2290	0	1461
Apartment	0	645	0	0	0	74	0	59	8
Townhouse	0	1382	0	0	13	361	39	0	0
SUM	281	16301	12	10	13	4487	2329	59	1469
								GRAND SUM	24961

Mode	%
Auto Driver	65%
Passenger	18%
Transit	11%
Pedestrian	6%
Cycling	0%
Total	100%

Mode Split for Retail Trips

Sun Jan 19 2025 21:13:14 GMT-0500 (Eastern Standard Time) - Run Time: 3353ms

Cross Tabulation Query Form - Trip - 2022

Row: Type of dwelling unit - dwell_type
Column: Primary travel mode of trip - mode_prime

Filters:
2006 GTA zone of household - gta06_hhld In 6042-6051, 6190-6200
and
Trip purpose - trip_purp In 1, 3,

Trip 2022
Table:

	Transit excluding GO rail	Cycle	Auto driver	Joint GO rail and local transit	Motorcycle	Other	Auto passenger	Taxi passenger	Paid rideshare	Walk
House	260	288	41480	12	20	0	8245	0	0	1888
Apartment	39	33	3058	0	0	0	239	0	119	180
Townhouse	0	59	4764	0	0	13	723	49	0	104
SUM	299	380	49302	12	20	13	9207	49	119	2172
									GRAND SUM	61573

Mode	%
Auto Driver	80%
Passenger	15%
Transit	1%
Pedestrian	3%
Cycling	1%
Total	100%

Sun Jun 19 2025 21:19:11 GMT-0500 (Eastern Standard Time) - Run Time: 3219ms

Cross Tabulation Query Form - Trip - 2022

Row: Planning district of origin - pd_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
2006 GTA zone of destination - gta06_dest In 6042-6051, 6190-6200
and
Start time of trip - start_time In 1500-1900
and
Trip Purpose of Destination - purp_dest In H
and
Primary travel mode of trip - mode_prime In D, M

Trip 2022
Table:

Pull for Niagara-on-the-Lake only:
Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
2006 GTA zone of destination - gta06_dest In 6042-6051, 6190-6200
and
Start time of trip - start_time In 1500-1900
and
Trip Purpose of Destination - purp_dest In H
and
Primary travel mode of trip - mode_prime In D, M
and
Planning district of origin - pd_orig In 54

Origin	Destination																Trips from Origin	Trip Distribution		Trip Assignment				
	6042	6043	6044	6045	6046	6047	6048	6049	6050	6051	6192	6193	6194	6195	6196	6197	6198	6199		Distribution	Direction From	From East	From West	From North	From South	Assignment
PD 1 of Toronto	0	0	0	30	0	0	0	0	6	0	0	0	0	0	0	0	0	0	36	0%	N			0%		Gardiner/QEW, EB Niagara Stone Road, SB Four Mile Creek Road
PD 4 of Toronto	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	0%	N			0%		Gardiner/QEW, EB Niagara Stone Road, SB Four Mile Creek Road
PD 8 of Toronto	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0%	N			0%		Gardiner/QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Pickering	0	0	0	0	0	0	0	0	0	0	0	0	23	0	0	0	0	0	23	0%	N			0%		407, QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Mississauga	0	0	0	0	15	20	0	0	99	0	0	0	0	0	138	0	50	0	322	3%	N			3%		403, QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Oakville	0	0	0	0	0	4	0	0	0	0	0	0	0	0	16	0	0	0	20	0%	W		0%			403, QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Burlington	0	0	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	154	1%	W		1%			403, QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Ancaster	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	0%	W		0%			403, QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Stoney Creek	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	15	0%	W		0%			QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Hamilton	0	0	0	0	0	0	0	0	9	0	0	173	0	9	25	0	0	10	226	2%	W		2%			QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Grimsby	0	0	0	0	0	0	0	0	72	0	0	0	63	0	36	0	0	57	228	2%	W		2%			QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Lincoln	0	12	21	0	5	0	0	0	55	0	0	0	153	0	0	0	0	0	246	2%	W		2%			QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Pelham	0	0	0	0	0	0	0	0	0	0	0	11	0	0	6	0	28	6	45	0%	S				0%	406, EB Niagara Stone Road, SB Four Mile Creek Road
St. Catharines	88	288	311	22	103	141	136	0	232	46	0	157	160	30	277	0	164	226	2361	20%	W		20%			QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Thorold	0	0	8	0	57	0	0	0	13	77	0	0	0	0	134	7	18	32	346	3%	S				3%	406, EB Niagara Stone Road, SB Four Mile Creek Road
Niagara Falls	17	127	325	23	142	32	26	0	230	77	46	436	705	356	676	54	837	858	4827	40%	S				40%	QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Welland	0	91	0	0	22	0	0	0	21	0	0	0	101	13	0	0	55	29	332	3%	S				3%	406, EB Niagara Stone Road, SB Four Mile Creek Road
Port Colborne	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	22	41	0%	S				0%	QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Port Erie	0	0	15	0	33	0	0	0	0	0	30	52	13	0	0	0	0	10	153	1%	S				1%	QEW, EB Niagara Stone Road, SB Four Mile Creek Road
West Lincoln	0	0	0	0	0	0	26	0	0	0	0	13	0	0	0	0	17	0	56	0%	W		0%			QEW, EB Niagara Stone Road, SB Four Mile Creek Road
6042	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0%	W		0%			SB Four Mile Creek Road
6043	0	0	48	0	0	65	0	0	0	0	0	0	0	0	0	0	0	0	113	1%	N			1%		SB Four Mile Creek Road
6044	256	26	385	0	0	76	0	10	40	0	5	0	0	7	0		0	0	785	7%	N			7%		WB Niagara Stone Road, SB Four Mile Creek Road
6045	0	0	0	0	0	0	0	0	0	0	0	66	0	0	0		0	0	66	1%	E	1%				NB Four Mile Creek Road
6046	0	41	0	0	41	0	0	0	0	0	0	66	0	0	0		5	0	153	1%	S				1%	NB Four Mile Creek Road
6047	0	0	460	22	151	21	0	0	21	0	0	0	8	0	0		19	0	702	6%	N			6%		SB Four Mile Creek Road
6048	0	91	0	0	18	0	0	0	10	14	0	0	7	0	0		0	0	140	1%	W		1%			EB Niagara Stone Road, SB Four Mile Creek Road
6050	0	0	10	0	18	0	0	0	16	0	0	0	28	0	0		0	0	70	1%	S				1%	NB Four Mile Creek Road
6051	0	0	0	0	0	0	0	0	10	18	0	0	0	0	13		0	0	41	0%	S				0%	NB Four Mile Creek Road
6052	0	0	91	0	0	151	123	0	0	0	0	9	53	0	10		18	10	465	4%	S				4%	EB Niagara Stone Road, SB Four Mile Creek Road
																			10508	100%	TOTAL	1%	29%	17%	54%	100%

Row Labels	Sum of From East	Sum of From West	Sum of From North	Sum of From South
E	1%			
NB Four Mile Creek Road	1%			
N			17%	
403, QEW, EB Niagara Stone Road, SB Four Mile Creek Road			3%	
407, QEW, EB Niagara Stone Road, SB Four Mile Creek Road			0%	
Gardiner/QEW, EB Niagara Stone Road, SB Four Mile Creek Road			1%	
SB Four Mile Creek Road			7%	
WB Niagara Stone Road, SB Four Mile Creek Road			7%	
S				54%
406, EB Niagara Stone Road, SB Four Mile Creek Road				6%
EB Niagara Stone Road, SB Four Mile Creek Road				4%
NB Four Mile Creek Road				2%
QEW, EB Niagara Stone Road, SB Four Mile Creek Road				42%
W		29%		
403, QEW, EB Niagara Stone Road, SB Four Mile Creek Road		2%		
EB Niagara Stone Road, SB Four Mile Creek Road		1%		
QEW, EB Niagara Stone Road, SB Four Mile Creek Road		26%		
SB Four Mile Creek Road		0%		
Grand Total	1%	29%	17%	54%

Residential In Summary	
Direction From	%
E	1%
W	29%
N	17%
S	54%
Total	100%

Residential In Detailed Summary		
Direction From	Predicted Route	%
N	(SB) Four Mile Creek Road and INV Corridors	10%
	(SB) Four Mile Creek Road	7%
S	(SB) Four Mile Creek Road and INV Corridors	52%
	(NB) Four Mile Creek Road	2%
E	(NB) Four Mile Creek Road	1%
W	(SB) Four Mile Creek Road and INV Corridors	28%
	(SB) Four Mile Creek Road	0%
	TOTAL	100%

Sun Sep 25 2022 10:31:12 GMT-0400 (Eastern Daylight Time) - Run Time: 3307ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
2006 GTA zone of origin - gta06_orig In 6042-6051, 6190-6200
and
Start time of trip - start_time In 600-1000
and
Trip Purpose of Origin - purp_orig In H
and
Primary travel mode of trip - mode_prime In D, M

Trip 2022
Table:

Pull for Niagara-on-the-Lake only:
Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
2006 GTA zone of origin - gta06_orig In 6042-6051, 6190-6200
and
Start time of trip - start_time In 600-1000
and
Trip Purpose of Origin - purp_orig In H
and
Primary travel mode of trip - mode_prime In d, m
and
Planning district of destination - pd_dest In 54,

Destination	Origin																Trips In Destination	Trip Distribution		Trip Assignment				
	6042	6043	6044	6045	6046	6047	6048	6049	6050	6051	6192	6193	6194	6195	6196	6198	6199		Distribution	Direction To	To East	To West	To North	To South	Assignment
PD 1 of Toronto	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, Gardiner/QEW
PD 4 of Toronto	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, Gardiner/QEW
PD 8 of Toronto	0	0	18	30	0	0	0	0	0	0	0	0	0	0	0	0	0	48	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, Gardiner/QEW
PD 9 of Toronto	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, Gardiner/QEW
PD 10 of Toronto	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, Gardiner/QEW
Vaughan	0	0	0	0	0	0	0	19	0	0	0	0	11	0	0	0	0	30	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 407
Brampton	0	0	5	0	0	40	0	0	0	0	0	0	0	0	0	0	19	64	1%	N			1%		NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 407
Mississauga	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 403
Oakville	0	0	17	0	0	4	0	0	0	0	0	0	0	0	31	0	0	52	0%	W					NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 403
Burlington	0	0	93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93	1%	W		1%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 403
Ancaster	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	0%	W		0%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 403
Stoney Creek	0	0	0	0	0	0	0	0	30	0	0	15	0	0	0	0	0	45	0%	W		0%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Hamilton	0	0	127	16	0	0	0	0	9	46	0	93	62	9	10	0	10	339	3%	W		3%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Grimsby	0	0	0	0	0	0	0	0	58	0	0	0	0	0	21	0	0	79	1%	W		1%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Lincoln	0	12	0	0	5	0	0	0	0	0	0	0	153	0	0	0	15	185	2%	W		2%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Pelham	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	8	0%	S		0%			NB Four Mile Creek Road, WB Niagara Stone Road, 406
St. Catharines	101	149	210	22	114	257	147	0	239	0	0	144	205	46	221	302	185	2342	21%	W		21%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Thorold	0	29	0	0	46	0	0	0	0	0	0	16	29	0	18	0	10	148	1%	S				1%	NB Four Mile Creek Road, WB Niagara Stone Road, 406
Niagara Falls	0	156	113	43	190	58	26	0	206	0	30	470	712	165	801	777	1038	4785	43%	S				43%	NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Welland	0	91	0	0	0	0	0	0	9	0	0	6	101	13	0	102	15	337	3%	S				3%	NB Four Mile Creek Road, WB Niagara Stone Road, 406
Port Colborne	0	0	0	0	0	0	0	0	0	0	0	0	26	0	11	0	41	78	1%	S				1%	NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Fort Erie	0	0	26	0	33	0	0	0	0	0	0	52	13	0	0	0	32	156	1%	S				1%	NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Haldimand-Norfolk	0	0	0	0	18	0	0	0	31	0	0	0	0	0	0	0	0	49	0%	W		0%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW
6042	0	0	0	0	0	45		0	0	0	0	0	0	0	0	0	0	45	0%	N			0%		NB Four Mile Creek Road
6044	156	18	456		43	102		10	58	0		0	0	7		13		863	8%	N			8%		NB Four Mile Creek Road, EB Niagara Stone Road
6045	0	0	0		0	0		0	0	0		66	0	0		0		66	1%	E					SB Four Mile Creek Road
6046	9	41	0		169	10		0	0	0		66	0	0		0		295	3%	S				3%	SB Four Mile Creek Road
6047	21	0	228		24	69		0	15	77		0	0	0		0		434	4%	N			4%		NB Four Mile Creek Road
6048	0	91	0		18	0		0	0	28		0	0	0		0		137	1%	W		1%			NB Four Mile Creek Road, WB Niagara Stone Road
6050	14	0	0		0	0		0	115	0		0	0	0		0		129	1%	S				1%	SB Four Mile Creek Road
6051	0	0	0		0	0		0	0	29		0	0	0		0		29	0%	S				0%	SB Four Mile Creek Road
6052	0	0	0		0	0		0	26	0		9	98	0		0		133	1%	S				1%	NB Four Mile Creek Road, WB Niagara Stone Road
																		13272	100%	TOTAL	1%	30%	14%	55%	100%

Row Labels	Sum of To East	Sum of To West	Sum of To North	Sum of To South
E	1%			
SB Four Mile Creek Road	1%			
N			14%	
NB Four Mile Creek Road			4%	
NB Four Mile Creek Road, EB Niagara Stone Road			8%	
NB Four Mile Creek Road, WB Niagara Stone Road, Gardiner/QEW			1%	
NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 403			0%	
NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 407			1%	
S		0%		55%
NB Four Mile Creek Road, WB Niagara Stone Road				1%
NB Four Mile Creek Road, WB Niagara Stone Road, 406		0%		4%
NB Four Mile Creek Road, WB Niagara Stone Road, QEW				45%
SB Four Mile Creek Road				4%
W		30%		
NB Four Mile Creek Road, WB Niagara Stone Road		1%		
NB Four Mile Creek Road, WB Niagara Stone Road, QEW		27%		
NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 403		1%		
Grand Total	1%	30%	14%	55%

Residential Out Summary	
Direction To	%
E	1%
W	30%
N	14%
S	55%
Total	100%

Residential Out Detailed Summary		
Direction To	Preferred Route	%
N	(NB) Four Mile Creek Road and EW Corridors	10%
	(NB) Four Mile Creek Road	4%
S	(NB) Four Mile Creek Road and EW Corridors	51%
	(SB) Four Mile Creek Road	4%
E	(SB) Four Mile Creek Road	1%
W	(NB) Four Mile Creek Road and EW Corridors	30%
TOTAL		100%

Sun Sep 25 2022 10:42:15 GMT-0400 (Eastern Daylight Time) - Run Time: 4006ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
2006 GTA zone of destination - gta06_dest In 6042-6051, 6150-6200
and
Start time of trip - start_time In 1500-1900
and
Trip Purpose of Destination - purp_dest In M,
and
Primary travel mode of trip - mode_prime In d, m

Pull for Niagara-on-the-Lake only:
Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
2006 GTA zone of destination - gta06_dest In 6042-6051, 6150-6200
and
Start time of trip - start_time In 1500-1900
and
Trip Purpose of Destination - purp_dest In M,
and
Primary travel mode of trip - mode_prime In d, m
and
Planning district of origin - pd_orig In 54

Trip 2016
Table:

Origin	Destination																					
	6042	6043	6044	6046	6047	6048	6049	6050	6150	6151	6152	6154	6156	6157	6159	6161	6165	6167	6168	6169	6170	6171
PD 4 of Toronto	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brampton	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oakville	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
Burlington	0	0	0	0	0	0	0	0	0	0	0	0	0	152	0	0	0	0	0	0	0	0
Grimsby	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0	0	0	0	0	27	10	0	0	0	0	0	0	0	0
Pelham	0	0	27	0	14	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Catharines	7	0	6	13	11	0	0	10	44	27	467	173	181	878	5	70	0	8	6	17	128	0
Thorold	0	0	0	0	13	0	0	0	0	0	0	0	0	84	0	0	7	0	0	0	150	123
Niagara Falls	0	8	72	0	19	10	22	0	0	21	0	0	114	94	0	0	0	0	0	0	0	0
Welland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
Port Colborne	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
Fort Erie	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0
6042		0	9	0	0			0						37		0						
6043		0	0	0	10			0						0		0						
6044		0	140	0	283			0						27		0						
6045		0	14	0	29			0						0		18						
6046		0	5	0	127			18						0		0						
6047		32	0	5	0			0						0		0						
6048		0	0	0	0			4						0		0						
6049		0	0	0	0			45						0		0						
6050		0	29	0	5			30						29		0						
6051		0	0	0	0			0						0		0						

Origin	Destination													Trips from Origin	Trip Distribution		Trip Assignment				
	6172	6174	6175	6176	6177	6178	6185	6188	6191	6194	6198	6199	6200		Distribution	Direction From	East	From West	North	South	Assignment
PD 4 of Toronto	0	0	0	6	0	0	0	0	0	0	0	0	0	6	0%	N			0%		Gardiner/QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Brampton	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0%	N			0%		407, QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Oakville	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0%	W		0%			403, QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Burlington	0	0	0	0	0	0	0	0	0	0	0	0	0	152	2%	W		2%			403, QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Grimsby	0	0	0	0	0	0	0	0	0	0	0	0	0	47	1%	W		1%			QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Lincoln	0	51	0	0	0	0	0	0	0	0	0	0	0	88	1%	W		1%			QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Pelham	0	0	0	0	6	0	10	0	0	0	0	0	0	63	1%	S				1%	406, EB Niagara Stone Road, SB Four Mile Creek Road
St. Catharines	145	42	0	18	0	0	0	0	21	0	27	30	26	2360	35%	W		35%			QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Thorold	0	150	0	0	0	0	0	42	0	0	0	0	0	569	8%	S				8%	406, EB Niagara Stone Road, SB Four Mile Creek Road
Niagara Falls	0	8	8	0	0	19	0	0	68	25	520	805	111	1924	28%	S				28%	QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Welland	0	5	0	0	0	0	0	10	0	0	0	126	0	161	2%	S				2%	406, EB Niagara Stone Road, SB Four Mile Creek Road
Port Colborne	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0%	S				0%	QEW, EB Niagara Stone Road, SB Four Mile Creek Road
Fort Erie	0	0	0	0	0	0	0	0	11	0	34	49	0	109	2%	S				2%	QEW, EB Niagara Stone Road, SB Four Mile Creek Road
6042						0				0	0	0		46	1%	W		1%			SB Four Mile Creek Road
6043						0				0	0	0		10	0%	N			0%		SB Four Mile Creek Road
6044						0				0	0	18		468	7%	N			7%		WB Niagara Stone Road, SB Four Mile Creek Road
6045						0				0	0	56		117	2%	E	2%				NB Four Mile Creek Road
6046						0				0	0	111		261	4%	S				4%	NB Four Mile Creek Road
6047						0				0	0	0		37	1%	N			1%		SB Four Mile Creek Road
6048						0				0	0	0		4	0%	S				0%	NB Four Mile Creek Road
6049						32				0	0	0		77	1%	W		1%			EB Niagara Stone Road, SB Four Mile Creek Road
6050						0				127	0	0		220	3%	S				3%	NB Four Mile Creek Road
6051						0				0	77	0		77	1%	S				1%	NB Four Mile Creek Road
														6826	100%	TOTAL	2%	41%	8%	50%	100%

Row Labels	Sum of From East	Sum of From West	Sum of From North	Sum of From South
E	2%			
NB Four Mile Creek Road	2%			
N			8%	
407, QEW, EB Niagara Stone Road, SB Four Mile Creek Road			0%	
Gardiner/QEW, EB Niagara Stone Road, SB Four Mile Creek Road			0%	
SB Four Mile Creek Road			1%	
WB Niagara Stone Road, SB Four Mile Creek Road			7%	
S				50%
406, EB Niagara Stone Road, SB Four Mile Creek Road				12%
NB Four Mile Creek Road				8%
QEW, EB Niagara Stone Road, SB Four Mile Creek Road				30%
W		41%		
403, QEW, EB Niagara Stone Road, SB Four Mile Creek Road		2%		
EB Niagara Stone Road, SB Four Mile Creek Road		1%		
QEW, EB Niagara Stone Road, SB Four Mile Creek Road		37%		
SB Four Mile Creek Road		1%		
Grand Total	2%	41%	8%	50%

Retail In Summary	
Direction From	%
E	2%
W	41%
N	8%
S	50%
Total	*100%*

Retail In Detailed Summary		
Direction From	Predicted Route	%
N	(SB) Four Mile Creek Road and EW Corridors	7%
	(SB) Four Mile Creek Road	1%
S	(SB) Four Mile Creek Road and EW Corridors	41%
	(NB) Four Mile Creek Road	8%
E	(NB) Four Mile Creek Road	2%
W	(SB) Four Mile Creek Road and EW Corridors	40%
	(SB) Four Mile Creek Road	1%
	TOTAL	100%

Sun Sep 25 2022 10:48:34 GMT-0400 (Eastern Daylight Time) - Run Time: 3029ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
2006 GTA zone of origin - gta06_orig In 6042-6051, 6150-6200
and
Start time of trip - start_time In 1500-1900
and
Trip Purpose of Origin - purp_orig In M,
and
Primary travel mode of trip - mode_prime In d, m

Trip 2022
Table:

Pull for Niagara-on-the-Lake only:

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

Filters:
2006 GTA zone of origin - gta06_orig In 6042-6051, 6150-6200
and
Start time of trip - start_time In 1500-1900
and
Trip Purpose of Origin - purp_orig In M,
and
Primary travel mode of trip - mode_prime In d, m
and
Planning district of destination - pd_dest In 54

Destination	Origin													
	6042	6043	6044	6045	6046	6047	6048	6049	6050	6150	6151	6152	6154	6156
PD 2 of Toronto	0	0	10	0	0	0	0	0	0	0	0	0	0	0
PD 3 of Toronto	0	0	0	0	0	10	0	0	0	0	0	0	0	0
Aurora	0	0	0	0	0	0	0	0	30	0	0	0	0	0
Caledon	0	0	9	0	0	0	0	0	0	0	0	0	0	0
Brampton	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Grimsby	0	0	12	0	0	8	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pelham	0	0	0	0	0	22	0	0	0	0	0	0	0	0
St. Catharines	17	40	5	0	0	11	0	9	0	44	3	219	26	384
Thorold	0	0	0	0	0	0	0	0	0	0	0	314	27	19
Niagara Falls	0	8	34	56	0	8	10	13	0	0	16	0	0	30
Welland	0	0	14	0	0	27	0	13	0	0	0	0	0	0
Port Colborne	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Fort Erie	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cambridge	0	0	13	0	0	0	0	0	0	0	0	0	0	0
6042	0		9		0	0		0	0					
6043	0		0		13	0		0	0					
6044	12		125		5	319		0	17					
6046	0		0		0	132		0	18					
6047	0		37		10	0		0	0					
6050	0		0		0	5		10	0					
6051	0		0		0	0		0	0					
6052	0		7		0	83		0	0					

Destination	6157	6159	6161	6163	6164	6165	6167	6169	6170	6171	6172
PD 2 of Toronto	0	0	0	0	0	0	0	0	0	0	0
PD 3 of Toronto	0	0	0	0	0	0	0	0	0	0	0
Aurora	0	0	0	0	0	0	0	0	0	0	0
Caledon	0	0	0	0	0	0	0	0	0	0	0
Brampton	0	0	0	0	0	0	0	0	0	0	0
Grimsby	0	47	0	0	0	0	0	0	0	0	0
Lincoln	61	0	0	0	0	0	0	0	0	0	0
Pelham	0	0	0	0	0	0	0	17	0	0	0
St. Catharines	1114	5	77	11	7	34	19	0	0	27	0
Thorold	119	0	0	0	0	0	0	15	16	143	145
Niagara Falls	87	0	8	0	0	0	0	0	0	0	0
Welland	105	0	0	0	0	0	0	0	0	0	0
Port Colborne	0	0	0	0	0	0	0	0	0	0	0
Fort Erie	0	0	0	0	0	0	0	0	0	0	0
Cambridge	0	0	0	0	0	0	0	0	0	0	0
6042	37										
6043	0										
6044	50										
6046	0										
6047	12										
6050	39										
6051	0										
6052	12										

Destination	6174	6176	6177	6178	6185	6188	6191	6193	6194	6198	6199	6200
PD 2 of Toronto	0	0	0	0	0	0	0	0	0	0	0	0
PD 3 of Toronto	0	0	0	0	0	0	0	0	0	0	0	0
Aurora	0	0	0	0	0	0	0	0	0	0	0	0
Caledon	0	0	0	0	0	0	0	0	0	0	0	0
Brampton	0	0	0	0	0	0	0	0	0	0	0	0
Grimsby	0	0	0	0	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0	0	0	0	0
Pelham	5	0	0	0	10	58	0	0	0	0	9	0
St. Catharines	51	21	0	23	0	0	21	0	0	0	231	13
Thorold	61	0	6	32	0	0	8	0	0	0	6	0
Niagara Falls	107	7	0	19	0	0	54	0	9	697	1062	171
Welland	0	0	0	0	0	17	0	0	0	0	0	0
Port Colborne	0	0	0	0	0	0	0	0	0	0	0	0
Fort Erie	0	0	0	0	0	0	0	0	0	21	60	0
Cambridge	0	0	0	0	0	0	0	8	0	0	0	0
6042	0			0			0		0	0	0	
6043	0			0			0		0	0	0	
6044	0			0			11		0	0	0	
6046	0			29			0		0	0	0	
6047	0			0			0		0	0	0	
6050	0			0			20		127	0	0	
6051	0			0			0		0	77	0	
6052	51			0			0		0	0	10	

Destination	Trips to Destination	Trip Distribution		Trip Assignment				
		Distribution	Direction To	To East	To West	To North	To South	Assignment
PD 2 of Toronto	10	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, Gardiner/QEW
PD 3 of Toronto	10	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, Gardiner/QEW
Aurora	30	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 407, 404
Caledon	9	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 407
Brampton	7	0%	N			0%		NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 407
Grimsby	67	1%	W		1%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Lincoln	61	1%	W		1%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Pelham	121	2%	S				2%	NB Four Mile Creek Road, WB Niagara Stone Road, 406
St. Catharines	2412	32%	W		32%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Thorold	911	12%	S				12%	NB Four Mile Creek Road, WB Niagara Stone Road, 406
Niagara Falls	2396	32%	S				32%	NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Welland	176	2%	S				2%	NB Four Mile Creek Road, WB Niagara Stone Road, 406
Port Colborne	7	0%	S				0%	NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Fort Erie	81	1%	S				1%	NB Four Mile Creek Road, WB Niagara Stone Road, QEW
Cambridge	21	0%	W		0%			NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 401
6042	46	1%	W		1%			NB Four Mile Creek Road
6043	13	0%	N			0%		NB Four Mile Creek Road
6044	539	7%	N			7%		NB Four Mile Creek Road, EB Niagara Stone Road
6046	179	2%	S				2%	SB Four Mile Creek Road
6047	59	1%	N			1%		NB Four Mile Creek Road
6050	201	3%	S				3%	SB Four Mile Creek Road
6051	77	1%	S				1%	SB Four Mile Creek Road
6052	163	2%	S				2%	NB Four Mile Creek Road, WB Niagara Stone Road
	7596	100%	TOTAL	0%	34%	9%	57%	100%

Row Labels	Sum of To West	Sum of To North	Sum of To South	Sum of To East
N		9%		
NB Four Mile Creek Road		1%		
NB Four Mile Creek Road, EB Niagara Stone Road		7%		
NB Four Mile Creek Road, WB Niagara Stone Road, Gardiner/QEW		0%		
NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 407		0%		
NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 407, 404		0%		
S			57%	
NB Four Mile Creek Road, WB Niagara Stone Road			2%	
NB Four Mile Creek Road, WB Niagara Stone Road, 406			16%	
NB Four Mile Creek Road, WB Niagara Stone Road, QEW			33%	
SB Four Mile Creek Road			6%	
W	34%			
NB Four Mile Creek Road	1%			
NB Four Mile Creek Road, WB Niagara Stone Road, QEW	33%			
NB Four Mile Creek Road, WB Niagara Stone Road, QEW, 401	0%			
Grand Total	34%	9%	57%	

Retail Out Summary	
Direction To	%
E	0%
W	34%
N	9%
S	57%
Total	*100%*

Retail Out Detailed Summary		
Direction To	Predicted Route	%
N	(NB) Four Mile Creek Road and EW Corridors	8%
	(NB) Four Mile Creek Road	1%
S	(NB) Four Mile Creek Road and EW Corridors	51%
	(SB) Four Mile Creek Road	6%
W	(NB) Four Mile Creek Road and EW Corridors	34%
	(NB) Four Mile Creek Road	1%

APPENDIX E

Intersection Capacity Analysis - Level of Service Definition

LEVELS OF SERVICE FOR SIGNALIZED INTERSECTIONS: METHODOLOGY

Signalized intersection analyses contained in this report were carried out using methodology described in the ***Highway Capacity Manual,*** *2000 update*, by the Transportation Research Board and implemented using Synchro 11 software.

Analyses of signalized intersections compare the volume of traffic passing through an intersection with the capacity of each of the intersection's approaches. Volumes can be either observed or estimated whereas an intersection's capacity is a function of its geometry, the number of lanes per approach, speeds, signal timing, and other considerations. The level of service is evaluated in terms of the average control delay (seconds) per vehicle, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Delay is a complex measure and is calculated as a function of a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

The criteria for each level of service are given below.

Level of Service	Features	Control Delay (sec/veh)
A	Very low control delay. Occurs when signal progression (i.e. coordination) is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not have to stop.	0.0 – 10.0
B	Occurs with good progression, short cycle length, or both. More vehicles stop than with LOS A.	10.1 – 20.0
C	Occurs with fair progression, longer cycle length, or both. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.	20.0 – 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles have to stop. Individual cycle failures are noticeable (i.e. some vehicles require more than one cycle to make it through the intersection).	35.0 – 55.0
E	Considered by many agencies to be the limit of acceptable delay. High delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	55.0- 80.0
F	Considered to be unacceptable to most drivers and often occurs with oversaturation. It may also occur at high v/c ratios below 1.0 with many individual cycle failures.	80.1 +

LEVELS OF SERVICE FOR UNSIGNALIZED INTERSECTIONS: METHODOLOGY

Unsignalized intersection analyses contained in this report were carried out using methodology described in the ***Highway Capacity Manual*** *(2000 edition)* by the Transportation Research Board and implemented using the Synchro 11 software.

Analyses of unsignalized intersections compare observed or estimated traffic volumes with the capacity of each of the intersection's approaches. The analysis derives an estimation of queue lengths and the resulting delays experienced by vehicles from the time they join a queue to the moment they cross the stop bar at the intersection. Queuing and delays at unsignalized approaches are a function of the volumes of all other conflicting movements and the characteristics of the intersection. Traffic volumes can be either observed or estimated while an intersection's capacity is a function of its geometry, lane configurations, speeds, and other operational considerations. The resulting statistic is termed "average total delay" for each approach and is measured in seconds per vehicle. The delay can then be assigned a letter grade, which provides a simple qualitative assessment of the Level of Service for any unsignalized intersection.

The Level of Service grading for unsignalized intersections is more sensitive than that used for signalized analyses: delays are more onerous at unsignalized intersections as drivers must remain attentive while waiting for acceptable conditions to complete their movement. As a result, the thresholds between grades are lower for unsignalized analyses.

Level of Service	Features	Average Total Delay (sec/veh)
A	Almost no delay occurs. Approaches appear clear and turns are made easily.	0.0 – 10.0
B	Short delays are experienced. Drivers find their movement becoming more restricted.	10.1 – 15.0
C	Longer delays occur. Operation of both the minor and major streets are generally stable but movements from the minor street become more difficult. This level is often used for urban intersection design standards.	15.1 – 25.0
D	Motorists encounter increasing traffic restrictions and substantial delays. Delays on the major street occur as turning traffic interferes with the flow of traffic. Traffic flows are approaching the capacity of the intersection.	25.1 - 35.0
E	At level "E", capacity is reached. There are long queues of vehicles waiting upstream for the approach to clear. Delays to vehicles reach frustrating levels.	35.1- 50.0
F	Intersection saturation occurs as vehicle demand has exceeded the capacity. Drivers will often accept less than ideal gap opportunities; safety is compromised.	50.1 +

LEVELS OF SERVICE FOR UNSIGNALIZED INTERSECTIONS: METHODOLOGY

Unsignalized intersection analyses contained in this report were carried out using methodology described in the ***Highway Capacity Manual 6th edition*** by the Transportation Research Board and implemented using the Synchro 11 (Build 2, Revision 9) software.

Analyses of unsignalized intersections compare observed or estimated traffic volumes with the capacity of each of the intersection's approaches. The analysis derives an estimation of queue lengths and the resulting delays experienced by vehicles from the time they join a queue to the moment they cross the stop bar at the intersection. Queuing and delays at unsignalized approaches are a function of the volumes of all other conflicting movements and the characteristics of the intersection. Traffic volumes can be either observed or estimated while an intersection's capacity is a function of its geometry, lane configurations, speeds, and other operational considerations. The resulting statistic is termed "average total delay" for each approach and is measured in seconds per vehicle. The delay can then be assigned a letter grade, which provides a simple qualitative assessment of the Level of Service for any unsignalized intersection.

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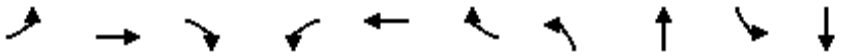
APPENDIX E

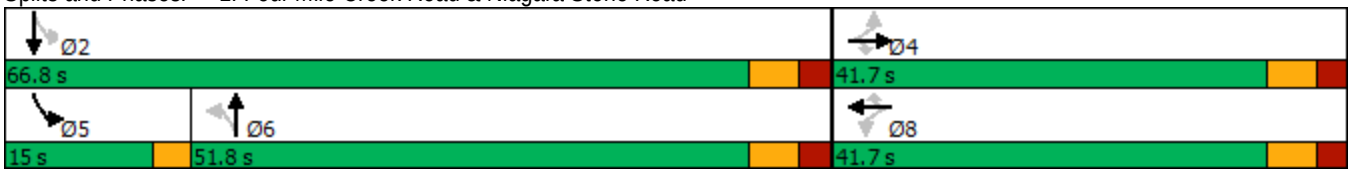
Intersection Capacity Analysis - Existing

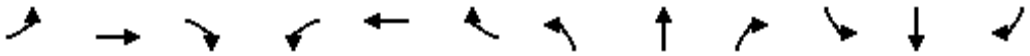


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	28	335	56	88	282	6	59	42	21	50
Future Volume (vph)	28	335	56	88	282	6	59	42	21	50
Lane Group Flow (vph)	30	356	60	94	300	6	63	205	22	94
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	13.7	13.7	13.7	13.7	13.7	13.7	11.2	11.2	16.6	12.6
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.28	0.28	0.41	0.31
v/c Ratio	0.09	0.58	0.11	0.31	0.49	0.01	0.20	0.38	0.05	0.18
Control Delay	11.0	15.9	3.9	13.9	14.2	0.0	16.1	7.6	8.6	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	15.9	3.9	13.9	14.2	0.0	16.1	7.6	8.6	8.0
LOS	B	B	A	B	B	A	B	A	A	A
Approach Delay		14.0			13.9			9.6		8.1
Approach LOS		B			B			A		A
Queue Length 50th (m)	1.2	17.2	0.0	4.1	14.0	0.0	2.9	2.0	0.8	2.4
Queue Length 95th (m)	7.0	53.9	5.6	17.6	44.6	0.0	14.9	18.9	4.4	11.1
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	831	1604	1294	799	1619	1311	1088	1477	545	1625
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.22	0.05	0.12	0.19	0.00	0.06	0.14	0.04	0.06

Intersection Summary			
Cycle Length: 108.5			
Actuated Cycle Length: 40.4			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	335	56	88	282	6	59	42	150	21	50	39
Future Volume (vph)	28	335	56	88	282	6	59	42	150	21	50	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1807	1449	1604	1824	1474	1560	1547		1503	1624	
Flt Permitted	0.58	1.00	1.00	0.53	1.00	1.00	0.70	1.00		0.50	1.00	
Satd. Flow (perm)	937	1807	1449	900	1824	1474	1143	1547		785	1624	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	30	356	60	94	300	6	63	45	160	22	53	41
RTOR Reduction (vph)	0	0	41	0	0	4	0	118	0	0	26	0
Lane Group Flow (vph)	30	356	19	94	300	2	63	87	0	22	68	0
Confl. Peds. (#/hr)	2					2			2	2		
Heavy Vehicles (%)	9%	4%	4%	5%	3%	0%	8%	14%	3%	12%	2%	16%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	13.7	13.7	13.7	13.7	13.7	13.7	11.2	11.2		15.2	15.2	
Effective Green, g (s)	13.7	13.7	13.7	13.7	13.7	13.7	11.2	11.2		15.2	15.2	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.32	0.26	0.26		0.36	0.36	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	302	583	468	290	589	476	301	408		298	582	
v/s Ratio Prot		c0.20			0.16			c0.06		0.00	c0.04	
v/s Ratio Perm	0.03		0.01	0.10		0.00	0.06			0.02		
v/c Ratio	0.10	0.61	0.04	0.32	0.51	0.00	0.21	0.21		0.07	0.12	
Uniform Delay, d1	10.0	12.1	9.8	10.8	11.6	9.7	12.2	12.2		9.0	9.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.9	0.0	0.7	0.7	0.0	0.5	0.4		0.1	0.1	
Delay (s)	10.2	14.0	9.9	11.5	12.3	9.7	12.6	12.5		9.0	9.2	
Level of Service	B	B	A	B	B	A	B	B		A	A	
Approach Delay (s)		13.2			12.1			12.5			9.2	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	42.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	4	0	1	0	262	5	1	160	0
Future Vol, veh/h	0	0	0	4	0	1	0	262	5	1	160	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	50	0	0	0	6	25	0	6	0
Mvmt Flow	0	0	0	5	0	1	0	305	6	1	186	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	497	501	186	498	498	310	186	0	0	313	0	0
Stage 1	188	188	-	310	310	-	-	-	-	-	-	-
Stage 2	309	313	-	188	188	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.6	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.95	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	487	475	861	413	477	735	1401	-	-	1259	-	-
Stage 1	818	748	-	609	663	-	-	-	-	-	-	-
Stage 2	705	661	-	715	748	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	486	474	861	412	476	734	1401	-	-	1257	-	-
Mov Cap-2 Maneuver	486	474	-	412	476	-	-	-	-	-	-	-
Stage 1	818	747	-	608	662	-	-	-	-	-	-	-
Stage 2	704	660	-	714	747	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	13.1	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1401	-	-	-	452	1257	-	-
HCM Lane V/C Ratio	-	-	-	-	0.013	0.001	-	-
HCM Control Delay (s)	0	-	-	0	13.1	7.9	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

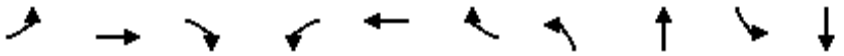
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	0	26	1	61	1	197	10	31	133	0
Future Vol, veh/h	1	0	0	26	1	61	1	197	10	31	133	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	3	0	5	0	4	6	0
Mvmt Flow	1	0	0	29	1	67	1	216	11	34	146	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	472	445	146	440	440	224	146	0	0	229	0	0
Stage 1	214	214	-	226	226	-	-	-	-	-	-	-
Stage 2	258	231	-	214	214	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.23	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.327	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	506	511	906	531	514	813	1448	-	-	1327	-	-
Stage 1	793	729	-	781	721	-	-	-	-	-	-	-
Stage 2	751	717	-	793	729	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	453	495	906	518	498	812	1448	-	-	1325	-	-
Mov Cap-2 Maneuver	453	495	-	518	498	-	-	-	-	-	-	-
Stage 1	792	709	-	779	719	-	-	-	-	-	-	-
Stage 2	687	715	-	771	709	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	11.1	0	1.5
HCM LOS	B	B		

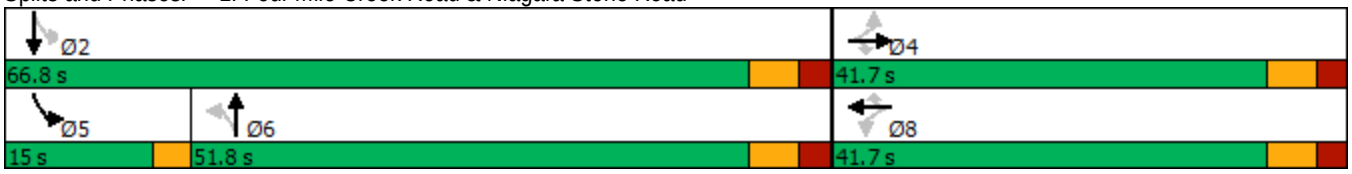
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1448	-	-	453	691	1325	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.14	0.026	-	-
HCM Control Delay (s)	7.5	0	-	13	11.1	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0.1	-	-

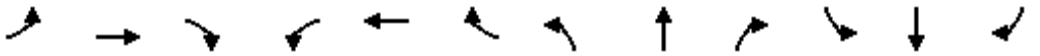


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	30	371	82	136	564	17	89	96	32	62
Future Volume (vph)	30	371	82	136	564	17	89	96	32	62
Lane Group Flow (vph)	32	399	88	146	606	18	96	262	34	112
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	33.4	33.4	33.4	33.4	33.4	33.4	14.3	14.3	21.7	17.8
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51	0.22	0.22	0.33	0.27
v/c Ratio	0.12	0.41	0.12	0.33	0.64	0.02	0.36	0.61	0.10	0.22
Control Delay	13.1	13.5	3.8	14.9	17.9	0.1	27.4	22.2	14.4	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	13.5	3.8	14.9	17.9	0.1	27.4	22.2	14.4	12.1
LOS	B	B	A	B	B	A	C	C	B	B
Approach Delay		11.8			16.9			23.6		12.7
Approach LOS		B			B			C		B
Queue Length 50th (m)	1.6	24.1	0.0	8.4	43.0	0.0	9.7	18.0	2.9	6.4
Queue Length 95th (m)	9.1	70.6	8.0	31.6	123.2	0.0	25.7	46.5	8.0	16.7
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	296	1040	807	473	1019	845	854	1203	427	1547
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.38	0.11	0.31	0.59	0.02	0.11	0.22	0.08	0.07

Intersection Summary			
Cycle Length: 108.5			
Actuated Cycle Length: 65.1			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	371	82	136	564	17	89	96	148	32	62	42
Future Volume (vph)	30	371	82	136	564	17	89	96	148	32	62	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1684	1879	1391	1683	1842	1474	1666	1656		1685	1709	
Flt Permitted	0.30	1.00	1.00	0.48	1.00	1.00	0.68	1.00		0.42	1.00	
Satd. Flow (perm)	536	1879	1391	856	1842	1474	1201	1656		746	1709	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	399	88	146	606	18	96	103	159	34	67	45
RTOR Reduction (vph)	0	0	44	0	0	9	0	69	0	0	32	0
Lane Group Flow (vph)	32	399	44	146	606	9	96	193	0	34	80	0
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	0%	0%	6%	0%	2%	0%	1%	8%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	33.4	33.4	33.4	33.4	33.4	33.4	14.3	14.3		19.8	19.8	
Effective Green, g (s)	33.4	33.4	33.4	33.4	33.4	33.4	14.3	14.3		19.8	19.8	
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.50	0.50	0.21	0.21		0.30	0.30	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	268	940	696	428	922	738	257	355		256	507	
v/s Ratio Prot		0.21			c0.33			c0.12		0.00	c0.05	
v/s Ratio Perm	0.06		0.03	0.17		0.01	0.08			0.03		
v/c Ratio	0.12	0.42	0.06	0.34	0.66	0.01	0.37	0.54		0.13	0.16	
Uniform Delay, d1	8.8	10.6	8.6	10.0	12.4	8.4	22.4	23.3		17.0	17.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3	0.0	0.5	1.7	0.0	1.2	2.1		0.2	0.2	
Delay (s)	9.0	10.9	8.6	10.5	14.1	8.4	23.6	25.4		17.2	17.5	
Level of Service	A	B	A	B	B	A	C	C		B	B	
Approach Delay (s)		10.4			13.3			24.9			17.4	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	66.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	15	0	36	0	210	13	14	274	0
Future Vol, veh/h	0	0	0	15	0	36	0	210	13	14	274	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	0	19	0	45	0	263	16	18	343	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	673	663	344	656	655	276	343	0	0	284	0	0
Stage 1	379	379	-	276	276	-	-	-	-	-	-	-
Stage 2	294	284	-	380	379	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	372	384	703	382	388	768	1227	-	-	1290	-	-
Stage 1	647	618	-	735	685	-	-	-	-	-	-	-
Stage 2	719	680	-	646	618	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	346	376	702	375	380	765	1227	-	-	1285	-	-
Mov Cap-2 Maneuver	346	376	-	375	380	-	-	-	-	-	-	-
Stage 1	647	607	-	732	682	-	-	-	-	-	-	-
Stage 2	677	677	-	635	607	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.9	0	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1227	-	-	-	586	1285	-	-
HCM Lane V/C Ratio	-	-	-	-	0.109	0.014	-	-
HCM Control Delay (s)	0	-	-	0	11.9	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	0	0	15	1	46	0	184	22	61	228	0
Future Vol, veh/h	2	0	0	15	1	46	0	184	22	61	228	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	3	0
Mvmt Flow	2	0	0	17	1	53	0	211	25	70	262	0

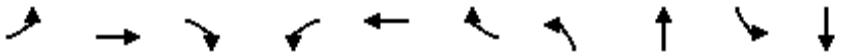
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	653	639	262	627	627	225	262	0	0	237	0	0
Stage 1	402	402	-	225	225	-	-	-	-	-	-	-
Stage 2	251	237	-	402	402	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	383	397	782	399	403	819	1314	-	-	1342	-	-
Stage 1	629	604	-	782	721	-	-	-	-	-	-	-
Stage 2	758	713	-	629	604	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	341	372	782	380	378	818	1314	-	-	1341	-	-
Mov Cap-2 Maneuver	341	372	-	380	378	-	-	-	-	-	-	-
Stage 1	629	567	-	781	720	-	-	-	-	-	-	-
Stage 2	708	712	-	591	567	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	11.4	0	1.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1314	-	-	341	630	1341	-	-
HCM Lane V/C Ratio	-	-	-	0.007	0.113	0.052	-	-
HCM Control Delay (s)	0	-	-	15.6	11.4	7.8	0	-
HCM Lane LOS	A	-	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0.2	-	-

APPENDIX E

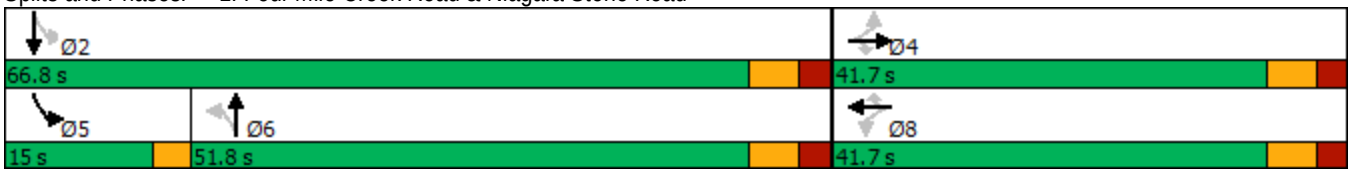
Intersection Capacity Analysis - 2026



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	28	343	56	88	292	6	59	43	21	51
Future Volume (vph)	28	343	56	88	292	6	59	43	21	51
Lane Group Flow (vph)	30	365	60	94	311	6	63	206	22	95
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	13.9	13.9	13.9	13.9	13.9	13.9	11.2	11.2	16.6	12.6
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.28	0.28	0.41	0.31
v/c Ratio	0.09	0.59	0.11	0.31	0.50	0.01	0.20	0.38	0.05	0.18
Control Delay	10.9	16.1	3.8	14.0	14.3	0.0	16.3	7.7	8.7	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	16.1	3.8	14.0	14.3	0.0	16.3	7.7	8.7	8.2
LOS	B	B	A	B	B	A	B	A	A	A
Approach Delay		14.1			14.0			9.7		8.3
Approach LOS		B			B			A		A
Queue Length 50th (m)	1.2	17.8	0.0	4.1	14.6	0.0	2.9	2.1	0.8	2.5
Queue Length 95th (m)	7.1	55.5	5.6	17.8	46.2	0.0	15.1	19.2	4.5	11.4
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	818	1597	1289	776	1612	1305	1084	1473	542	1626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.23	0.05	0.12	0.19	0.00	0.06	0.14	0.04	0.06

Intersection Summary			
Cycle Length: 108.5			
Actuated Cycle Length: 40.7			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	343	56	88	292	6	59	43	150	21	51	39
Future Volume (vph)	28	343	56	88	292	6	59	43	150	21	51	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1807	1449	1604	1824	1474	1560	1547		1503	1626	
Flt Permitted	0.57	1.00	1.00	0.52	1.00	1.00	0.70	1.00		0.50	1.00	
Satd. Flow (perm)	928	1807	1449	879	1824	1474	1142	1547		785	1626	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	30	365	60	94	311	6	63	46	160	22	54	41
RTOR Reduction (vph)	0	0	40	0	0	4	0	118	0	0	26	0
Lane Group Flow (vph)	30	365	20	94	311	2	63	88	0	22	69	0
Confl. Peds. (#/hr)	2					2			2	2		
Heavy Vehicles (%)	9%	4%	4%	5%	3%	0%	8%	14%	3%	12%	2%	16%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	13.9	13.9	13.9	13.9	13.9	13.9	11.2	11.2		15.2	15.2	
Effective Green, g (s)	13.9	13.9	13.9	13.9	13.9	13.9	11.2	11.2		15.2	15.2	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.26	0.26		0.36	0.36	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	302	589	472	286	595	480	300	406		296	580	
v/s Ratio Prot		c0.20			0.17			c0.06		0.00	c0.04	
v/s Ratio Perm	0.03		0.01	0.11		0.00	0.06			0.02		
v/c Ratio	0.10	0.62	0.04	0.33	0.52	0.00	0.21	0.22		0.07	0.12	
Uniform Delay, d1	10.0	12.1	9.8	10.8	11.7	9.7	12.2	12.3		9.1	9.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.9	0.0	0.7	0.8	0.0	0.5	0.4		0.1	0.1	
Delay (s)	10.1	14.1	9.8	11.5	12.5	9.7	12.7	12.6		9.1	9.3	
Level of Service	B	B	A	B	B	A	B	B		A	A	
Approach Delay (s)		13.3			12.2			12.7			9.3	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	42.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	4	0	1	0	267	5	1	163	0
Future Vol, veh/h	0	0	0	4	0	1	0	267	5	1	163	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	50	0	0	0	6	25	0	6	0
Mvmt Flow	0	0	0	5	0	1	0	310	6	1	190	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	506	510	190	507	507	315	190	0	0	318	0	0
Stage 1	192	192	-	315	315	-	-	-	-	-	-	-
Stage 2	314	318	-	192	192	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.6	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.95	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	480	469	857	407	471	730	1396	-	-	1253	-	-
Stage 1	814	745	-	605	659	-	-	-	-	-	-	-
Stage 2	701	657	-	711	745	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	479	468	857	406	470	729	1396	-	-	1251	-	-
Mov Cap-2 Maneuver	479	468	-	406	470	-	-	-	-	-	-	-
Stage 1	814	744	-	604	658	-	-	-	-	-	-	-
Stage 2	700	656	-	710	744	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	13.2	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1396	-	-	-	445	1251	-	-
HCM Lane V/C Ratio	-	-	-	-	0.013	0.001	-	-
HCM Control Delay (s)	0	-	-	0	13.2	7.9	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

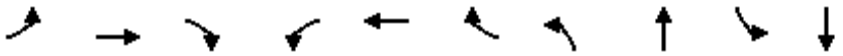
Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	0	0	26	1	61	1	201	10	31	136	0
Future Vol, veh/h	1	0	0	26	1	61	1	201	10	31	136	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	3	0	5	0	4	6	0
Mvmt Flow	1	0	0	29	1	67	1	221	11	34	149	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	480	453	149	448	448	229	149	0	0	234	0	0
Stage 1	217	217	-	231	231	-	-	-	-	-	-	-
Stage 2	263	236	-	217	217	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.23	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.327	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	499	506	903	524	509	808	1445	-	-	1322	-	-
Stage 1	790	727	-	776	717	-	-	-	-	-	-	-
Stage 2	747	713	-	790	727	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	447	490	903	511	493	807	1445	-	-	1320	-	-
Mov Cap-2 Maneuver	447	490	-	511	493	-	-	-	-	-	-	-
Stage 1	789	707	-	774	715	-	-	-	-	-	-	-
Stage 2	683	711	-	768	707	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.1	11.1	0	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1445	-	-	447	685	1320	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.141	0.026	-	-
HCM Control Delay (s)	7.5	0	-	13.1	11.1	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0.1	-	-

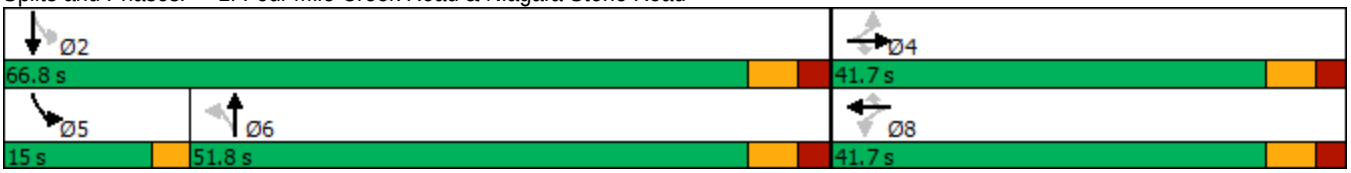


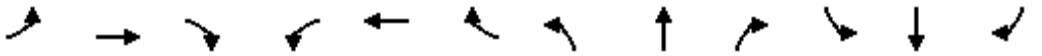
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	30	382	82	136	577	17	89	98	32	63
Future Volume (vph)	30	382	82	136	577	17	89	98	32	63
Lane Group Flow (vph)	32	411	88	146	620	18	96	264	34	113
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	34.9	34.9	34.9	34.9	34.9	34.9	14.4	14.4	21.9	18.0
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.52	0.52	0.22	0.22	0.33	0.27
v/c Ratio	0.12	0.42	0.11	0.33	0.64	0.02	0.37	0.62	0.10	0.23
Control Delay	13.2	13.5	3.8	14.9	18.0	0.1	27.8	23.1	14.5	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	13.5	3.8	14.9	18.0	0.1	27.8	23.1	14.5	12.3
LOS	B	B	A	B	B	A	C	C	B	B
Approach Delay		11.9			17.0			24.4		12.8
Approach LOS		B			B			C		B
Queue Length 50th (m)	1.6	25.3	0.0	8.5	45.0	0.0	9.9	18.8	3.0	6.7
Queue Length 95th (m)	9.2	73.5	8.0	32.0	#131.1	0.0	25.7	47.4	8.0	16.8
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	279	1006	785	448	986	820	825	1168	414	1540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.41	0.11	0.33	0.63	0.02	0.12	0.23	0.08	0.07

Intersection Summary		
Cycle Length: 108.5		
Actuated Cycle Length: 66.7		
Natural Cycle: 70		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.64		
Intersection Signal Delay: 16.6	Intersection LOS: B	
Intersection Capacity Utilization 76.5%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		

Queue shown is maximum after two cycles.

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	382	82	136	577	17	89	98	148	32	63	42
Future Volume (vph)	30	382	82	136	577	17	89	98	148	32	63	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1684	1879	1391	1683	1842	1474	1666	1656		1685	1710	
Flt Permitted	0.30	1.00	1.00	0.47	1.00	1.00	0.68	1.00		0.41	1.00	
Satd. Flow (perm)	524	1879	1391	838	1842	1474	1200	1656		724	1710	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	411	88	146	620	18	96	105	159	34	68	45
RTOR Reduction (vph)	0	0	43	0	0	9	0	68	0	0	32	0
Lane Group Flow (vph)	32	411	45	146	620	9	96	196	0	34	81	0
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	0%	0%	6%	0%	2%	0%	1%	8%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	34.9	34.9	34.9	34.9	34.9	34.9	14.4	14.4		20.0	20.0	
Effective Green, g (s)	34.9	34.9	34.9	34.9	34.9	34.9	14.4	14.4		20.0	20.0	
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51	0.21	0.21		0.29	0.29	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	267	958	709	427	939	752	252	348		248	500	
v/s Ratio Prot		0.22			c0.34			c0.12		0.01	c0.05	
v/s Ratio Perm	0.06		0.03	0.17		0.01	0.08			0.03		
v/c Ratio	0.12	0.43	0.06	0.34	0.66	0.01	0.38	0.56		0.14	0.16	
Uniform Delay, d1	8.7	10.5	8.5	9.9	12.4	8.3	23.2	24.2		17.7	18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3	0.0	0.5	1.8	0.0	1.3	2.5		0.2	0.2	
Delay (s)	8.9	10.8	8.5	10.4	14.1	8.3	24.5	26.7		17.9	18.2	
Level of Service	A	B	A	B	B	A	C	C		B	B	
Approach Delay (s)		10.3			13.3			26.1			18.1	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	15	0	36	0	214	13	14	279	0
Future Vol, veh/h	0	0	0	15	0	36	0	214	13	14	279	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	0	19	0	45	0	268	16	18	349	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	684	674	350	667	666	281	349	0	0	289	0	0
Stage 1	385	385	-	281	281	-	-	-	-	-	-	-
Stage 2	299	289	-	386	385	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	365	379	698	375	383	763	1221	-	-	1284	-	-
Stage 1	642	614	-	730	682	-	-	-	-	-	-	-
Stage 2	714	677	-	641	614	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	339	371	697	368	375	760	1221	-	-	1279	-	-
Mov Cap-2 Maneuver	339	371	-	368	375	-	-	-	-	-	-	-
Stage 1	642	604	-	727	679	-	-	-	-	-	-	-
Stage 2	672	674	-	630	604	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	12	0	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1221	-	-	-	579	1279	-	-
HCM Lane V/C Ratio	-	-	-	-	0.11	0.014	-	-
HCM Control Delay (s)	0	-	-	0	12	7.9	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0	-	-

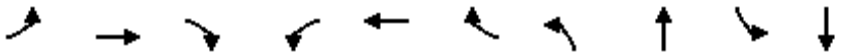
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	0	0	15	1	46	0	188	22	61	233	0
Future Vol, veh/h	2	0	0	15	1	46	0	188	22	61	233	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	3	0
Mvmt Flow	2	0	0	17	1	53	0	216	25	70	268	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	664	650	268	638	638	230	268	0	0	242	0	0
Stage 1	408	408	-	230	230	-	-	-	-	-	-	-
Stage 2	256	242	-	408	408	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	377	391	776	392	397	814	1307	-	-	1336	-	-
Stage 1	624	600	-	777	718	-	-	-	-	-	-	-
Stage 2	753	709	-	624	600	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	335	366	776	373	372	813	1307	-	-	1335	-	-
Mov Cap-2 Maneuver	335	366	-	373	372	-	-	-	-	-	-	-
Stage 1	624	563	-	776	717	-	-	-	-	-	-	-
Stage 2	703	708	-	585	563	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.8	11.5	0	1.6
HCM LOS	C	B		

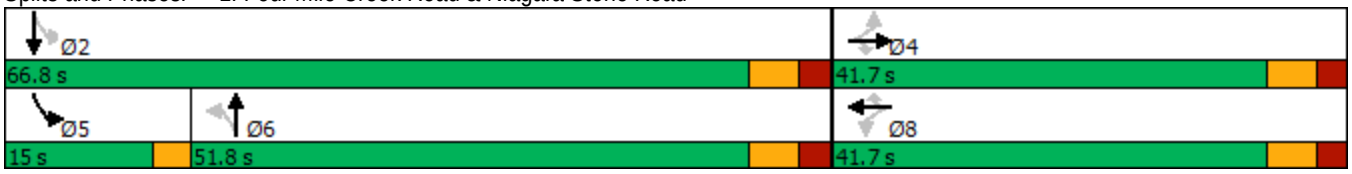
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1307	-	-	335	623	1335	-	-
HCM Lane V/C Ratio	-	-	-	0.007	0.114	0.053	-	-
HCM Control Delay (s)	0	-	-	15.8	11.5	7.8	0	-
HCM Lane LOS	A	-	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0.2	-	-

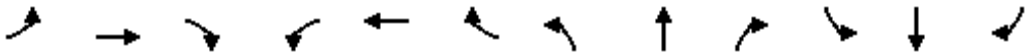


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	28	343	91	91	292	6	80	42	21	52
Future Volume (vph)	28	343	91	91	292	6	80	42	21	52
Lane Group Flow (vph)	30	365	97	97	311	6	85	207	22	96
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	14.2	14.2	14.2	14.2	14.2	14.2	11.7	11.7	17.1	13.1
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.28	0.28	0.41	0.31
v/c Ratio	0.09	0.59	0.17	0.33	0.50	0.01	0.26	0.38	0.05	0.18
Control Delay	11.4	16.4	4.1	14.6	14.7	0.0	16.8	7.5	8.7	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.4	16.4	4.1	14.6	14.7	0.0	16.8	7.5	8.7	8.1
LOS	B	B	A	B	B	A	B	A	A	A
Approach Delay		13.7			14.5			10.2		8.3
Approach LOS		B			B			B		A
Queue Length 50th (m)	1.2	17.8	0.0	4.3	14.6	0.0	4.1	2.1	0.8	2.5
Queue Length 95th (m)	7.3	57.9	8.0	19.0	48.3	0.0	19.2	19.1	4.5	11.6
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	806	1572	1298	758	1587	1286	1099	1467	542	1618
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.23	0.07	0.13	0.20	0.00	0.08	0.14	0.04	0.06

Intersection Summary			
Cycle Length: 108.5			
Actuated Cycle Length: 41.6			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	343	91	91	292	6	80	42	152	21	52	39
Future Volume (vph)	28	343	91	91	292	6	80	42	152	21	52	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1807	1478	1604	1824	1474	1589	1546		1503	1629	
Flt Permitted	0.57	1.00	1.00	0.52	1.00	1.00	0.69	1.00		0.50	1.00	
Satd. Flow (perm)	928	1807	1478	871	1824	1474	1162	1546		791	1629	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	30	365	97	97	311	6	85	45	162	22	55	41
RTOR Reduction (vph)	0	0	65	0	0	4	0	118	0	0	26	0
Lane Group Flow (vph)	30	365	32	97	311	2	85	89	0	22	70	0
Confl. Peds. (#/hr)	2					2			2	2		
Heavy Vehicles (%)	9%	4%	2%	5%	3%	0%	6%	14%	3%	12%	2%	16%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	14.2	14.2	14.2	14.2	14.2	14.2	11.7	11.7		15.7	15.7	
Effective Green, g (s)	14.2	14.2	14.2	14.2	14.2	14.2	11.7	11.7		15.7	15.7	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.27	0.27		0.36	0.36	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	303	591	483	284	596	482	313	416		302	589	
v/s Ratio Prot		c0.20			0.17			0.06		0.00	c0.04	
v/s Ratio Perm	0.03		0.02	0.11		0.00	c0.07			0.02		
v/c Ratio	0.10	0.62	0.07	0.34	0.52	0.00	0.27	0.21		0.07	0.12	
Uniform Delay, d1	10.2	12.3	10.0	11.1	11.8	9.8	12.5	12.3		9.1	9.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.9	0.1	0.7	0.8	0.0	0.6	0.4		0.1	0.1	
Delay (s)	10.3	14.2	10.1	11.8	12.7	9.8	13.1	12.6		9.2	9.4	
Level of Service	B	B	B	B	B	A	B	B		A	A	
Approach Delay (s)		13.2			12.4			12.8			9.3	
Approach LOS		B			B			B			A	

Intersection Summary					
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.45				
Actuated Cycle Length (s)	43.4	Sum of lost time (s)	16.5		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B		
Analysis Period (min)	15				
c Critical Lane Group					

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	12	0	0	4	0	1	0	277	5	1	182	20
Future Vol, veh/h	12	0	0	4	0	1	0	277	5	1	182	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	50	0	0	0	6	25	0	5	0
Mvmt Flow	14	0	0	5	0	1	0	322	6	1	212	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	552	556	224	553	564	327	235	0	0	330	0	0
Stage 1	226	226	-	327	327	-	-	-	-	-	-	-
Stage 2	326	330	-	226	237	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.6	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.95	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	447	442	820	378	438	719	1344	-	-	1241	-	-
Stage 1	781	721	-	596	651	-	-	-	-	-	-	-
Stage 2	691	649	-	680	713	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	446	441	820	377	437	718	1344	-	-	1239	-	-
Mov Cap-2 Maneuver	446	441	-	377	437	-	-	-	-	-	-	-
Stage 1	781	720	-	595	650	-	-	-	-	-	-	-
Stage 2	690	648	-	679	712	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.3	13.8	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1344	-	-	446	417	1239	-	-
HCM Lane V/C Ratio	-	-	-	0.031	0.014	0.001	-	-
HCM Control Delay (s)	0	-	-	13.3	13.8	7.9	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

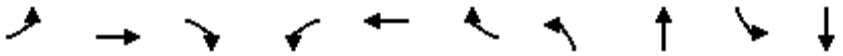
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	0	1	26	0	61	3	201	10	31	136	19
Future Vol, veh/h	11	0	1	26	0	61	3	201	10	31	136	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	3	0	5	0	4	6	0
Mvmt Flow	12	0	1	29	0	67	3	221	11	34	149	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	494	468	160	463	473	229	170	0	0	234	0	0
Stage 1	228	228	-	235	235	-	-	-	-	-	-	-
Stage 2	266	240	-	228	238	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.23	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.327	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	489	496	890	513	493	808	1420	-	-	1322	-	-
Stage 1	779	719	-	773	714	-	-	-	-	-	-	-
Stage 2	744	711	-	779	712	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	438	480	890	500	477	807	1420	-	-	1320	-	-
Mov Cap-2 Maneuver	438	480	-	500	477	-	-	-	-	-	-	-
Stage 1	777	698	-	770	711	-	-	-	-	-	-	-
Stage 2	681	708	-	755	691	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.1	11.1	0.1	1.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1420	-	-	457	682	1320	-	-
HCM Lane V/C Ratio	0.002	-	-	0.029	0.14	0.026	-	-
HCM Control Delay (s)	7.5	0	-	13.1	11.1	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.1	-	-

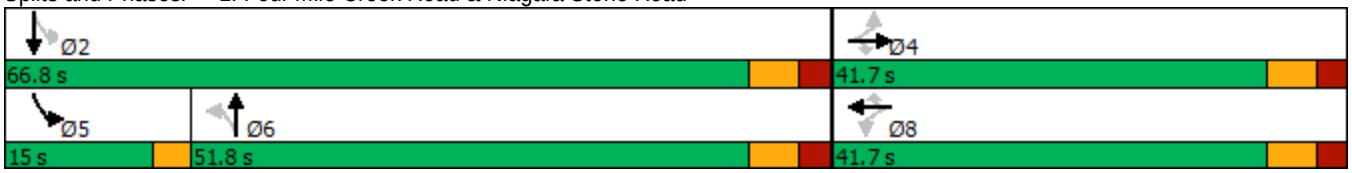


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	30	382	113	139	577	17	128	97	32	63
Future Volume (vph)	30	382	113	139	577	17	128	97	32	63
Lane Group Flow (vph)	32	411	122	149	620	18	138	266	34	113
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	34.9	34.9	34.9	34.9	34.9	34.9	14.5	14.5	22.0	18.1
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.52	0.52	0.22	0.22	0.33	0.27
v/c Ratio	0.12	0.42	0.15	0.34	0.64	0.02	0.53	0.62	0.10	0.23
Control Delay	13.2	13.6	3.4	15.1	18.1	0.1	32.1	23.0	14.5	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	13.6	3.4	15.1	18.1	0.1	32.1	23.0	14.5	12.3
LOS	B	B	A	B	B	A	C	C	B	B
Approach Delay		11.4			17.1			26.1		12.8
Approach LOS		B			B			C		B
Queue Length 50th (m)	1.7	25.5	0.0	8.8	45.4	0.0	14.7	18.8	3.0	6.7
Queue Length 95th (m)	9.2	73.5	9.4	32.9	#131.1	0.0	35.8	47.5	8.0	16.8
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	279	1004	814	448	985	819	823	1165	413	1539
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.41	0.15	0.33	0.63	0.02	0.17	0.23	0.08	0.07

Intersection Summary		
Cycle Length: 108.5		
Actuated Cycle Length: 66.8		
Natural Cycle: 70		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.64		
Intersection Signal Delay: 17.0	Intersection LOS: B	
Intersection Capacity Utilization 76.6%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		

Queue shown is maximum after two cycles.

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	382	113	139	577	17	128	97	151	32	63	42
Future Volume (vph)	30	382	113	139	577	17	128	97	151	32	63	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1684	1879	1418	1683	1842	1474	1666	1655		1685	1710	
Flt Permitted	0.29	1.00	1.00	0.47	1.00	1.00	0.68	1.00		0.41	1.00	
Satd. Flow (perm)	523	1879	1418	838	1842	1474	1200	1655		720	1710	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	411	122	149	620	18	138	104	162	34	68	45
RTOR Reduction (vph)	0	0	60	0	0	9	0	69	0	0	32	0
Lane Group Flow (vph)	32	411	62	149	620	9	138	197	0	34	81	0
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	0%	0%	4%	0%	2%	0%	1%	8%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	34.9	34.9	34.9	34.9	34.9	34.9	14.5	14.5		20.1	20.1	
Effective Green, g (s)	34.9	34.9	34.9	34.9	34.9	34.9	14.5	14.5		20.1	20.1	
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51	0.21	0.21		0.29	0.29	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	266	957	722	426	938	750	254	350		247	501	
v/s Ratio Prot		0.22			c0.34			c0.12		0.01	c0.05	
v/s Ratio Perm	0.06		0.04	0.18		0.01	0.12			0.04		
v/c Ratio	0.12	0.43	0.09	0.35	0.66	0.01	0.54	0.56		0.14	0.16	
Uniform Delay, d1	8.8	10.5	8.6	10.0	12.4	8.3	24.1	24.2		17.7	18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3	0.1	0.5	1.8	0.0	3.0	2.5		0.2	0.2	
Delay (s)	9.0	10.9	8.7	10.5	14.2	8.3	27.0	26.7		17.9	18.2	
Level of Service	A	B	A	B	B	A	C	C		B	B	
Approach Delay (s)		10.3			13.4			26.8			18.1	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	28	0	6	15	0	36	6	227	13	14	289	24
Future Vol, veh/h	28	0	6	15	0	36	6	227	13	14	289	24
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	35	0	8	19	0	45	8	284	16	18	361	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	743	733	377	730	740	297	391	0	0	305	0	0
Stage 1	412	412	-	313	313	-	-	-	-	-	-	-
Stage 2	331	321	-	417	427	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	334	350	674	340	347	747	1179	-	-	1267	-	-
Stage 1	621	598	-	702	661	-	-	-	-	-	-	-
Stage 2	687	655	-	617	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	308	340	673	328	337	744	1179	-	-	1262	-	-
Mov Cap-2 Maneuver	308	340	-	328	337	-	-	-	-	-	-	-
Stage 1	616	587	-	694	653	-	-	-	-	-	-	-
Stage 2	640	647	-	599	578	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.1	12.5	0.2	0.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1179	-	-	341	542	1262	-	-
HCM Lane V/C Ratio	0.006	-	-	0.125	0.118	0.014	-	-
HCM Control Delay (s)	8.1	0	-	17.1	12.5	7.9	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.4	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	0	8	15	0	46	7	184	22	61	228	21
Future Vol, veh/h	25	0	8	15	0	46	7	184	22	61	228	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	3	0
Mvmt Flow	29	0	9	17	0	53	8	211	25	70	262	24

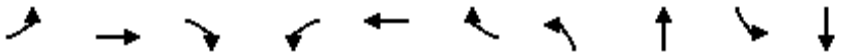
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	680	667	274	660	667	225	286	0	0	237	0	0
Stage 1	414	414	-	241	241	-	-	-	-	-	-	-
Stage 2	266	253	-	419	426	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	368	382	770	379	382	819	1288	-	-	1342	-	-
Stage 1	620	597	-	767	710	-	-	-	-	-	-	-
Stage 2	744	701	-	616	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	326	356	770	355	356	818	1288	-	-	1341	-	-
Mov Cap-2 Maneuver	326	356	-	355	356	-	-	-	-	-	-	-
Stage 1	616	560	-	761	704	-	-	-	-	-	-	-
Stage 2	691	695	-	571	552	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	11.6	0.3	1.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1288	-	-	379	619	1341	-	-
HCM Lane V/C Ratio	0.006	-	-	0.1	0.113	0.052	-	-
HCM Control Delay (s)	7.8	0	-	15.6	11.6	7.8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.4	0.2	-	-

APPENDIX E

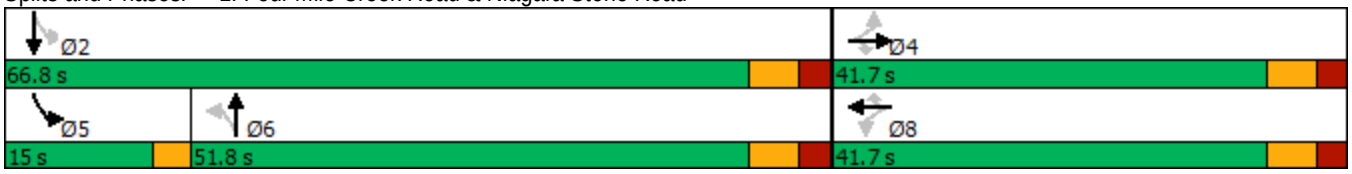
Intersection Capacity Analysis - 2031

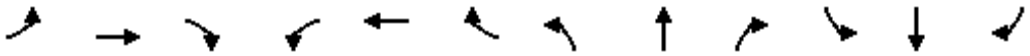


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	28	379	56	88	322	6	59	47	21	56
Future Volume (vph)	28	379	56	88	322	6	59	47	21	56
Lane Group Flow (vph)	30	403	60	94	343	6	63	210	22	101
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	15.1	15.1	15.1	15.1	15.1	15.1	11.3	11.3	16.7	12.7
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.36	0.36	0.27	0.27	0.40	0.30
v/c Ratio	0.09	0.62	0.11	0.33	0.52	0.01	0.21	0.39	0.05	0.19
Control Delay	10.6	16.4	3.6	14.3	14.4	0.0	17.2	8.3	9.5	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	16.4	3.6	14.3	14.4	0.0	17.2	8.3	9.5	9.0
LOS	B	B	A	B	B	A	B	A	A	A
Approach Delay		14.5			14.2			10.3		9.1
Approach LOS		B			B			B		A
Queue Length 50th (m)	1.2	20.2	0.0	4.2	16.4	0.0	3.1	2.4	0.8	2.8
Queue Length 95th (m)	6.9	62.0	5.5	18.2	51.2	0.0	15.8	20.7	4.8	12.9
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	777	1566	1265	686	1581	1282	1072	1468	528	1625
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.26	0.05	0.14	0.22	0.00	0.06	0.14	0.04	0.06

Intersection Summary			
Cycle Length: 108.5			
Actuated Cycle Length: 42			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.0		Intersection LOS: B	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	379	56	88	322	6	59	47	150	21	56	39
Future Volume (vph)	28	379	56	88	322	6	59	47	150	21	56	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1807	1449	1604	1824	1474	1560	1549		1503	1639	
Flt Permitted	0.55	1.00	1.00	0.47	1.00	1.00	0.69	1.00		0.50	1.00	
Satd. Flow (perm)	896	1807	1449	792	1824	1474	1136	1549		783	1639	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	30	403	60	94	343	6	63	50	160	22	60	41
RTOR Reduction (vph)	0	0	39	0	0	4	0	119	0	0	27	0
Lane Group Flow (vph)	30	403	21	94	343	2	63	91	0	22	74	0
Confl. Peds. (#/hr)	2					2			2	2		
Heavy Vehicles (%)	9%	4%	4%	5%	3%	0%	8%	14%	3%	12%	2%	16%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	15.1	15.1	15.1	15.1	15.1	15.1	11.3	11.3		15.3	15.3	
Effective Green, g (s)	15.1	15.1	15.1	15.1	15.1	15.1	11.3	11.3		15.3	15.3	
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.26	0.26		0.35	0.35	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	308	621	498	272	627	507	292	398		289	571	
v/s Ratio Prot		c0.22			0.19			c0.06		0.00	c0.05	
v/s Ratio Perm	0.03		0.01	0.12		0.00	0.06			0.02		
v/c Ratio	0.10	0.65	0.04	0.35	0.55	0.00	0.22	0.23		0.08	0.13	
Uniform Delay, d1	9.8	12.2	9.6	10.7	11.6	9.5	12.8	12.9		9.6	9.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	2.3	0.0	0.8	1.0	0.0	0.5	0.4		0.1	0.1	
Delay (s)	9.9	14.5	9.6	11.5	12.6	9.5	13.3	13.3		9.6	9.9	
Level of Service	A	B	A	B	B	A	B	B		A	A	
Approach Delay (s)		13.6			12.3			13.3			9.9	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	43.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	4	0	1	0	295	5	1	180	0
Future Vol, veh/h	0	0	0	4	0	1	0	295	5	1	180	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	50	0	0	0	6	25	0	6	0
Mvmt Flow	0	0	0	5	0	1	0	343	6	1	209	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	558	562	209	559	559	348	209	0	0	351	0	0
Stage 1	211	211	-	348	348	-	-	-	-	-	-	-
Stage 2	347	351	-	211	211	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.6	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.95	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	443	439	836	375	440	700	1374	-	-	1219	-	-
Stage 1	796	731	-	579	638	-	-	-	-	-	-	-
Stage 2	673	636	-	693	731	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	442	438	836	374	439	699	1374	-	-	1217	-	-
Mov Cap-2 Maneuver	442	438	-	374	439	-	-	-	-	-	-	-
Stage 1	796	730	-	578	637	-	-	-	-	-	-	-
Stage 2	672	635	-	692	730	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	13.9	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1374	-	-	-	412	1217	-	-
HCM Lane V/C Ratio	-	-	-	-	0.014	0.001	-	-
HCM Control Delay (s)	0	-	-	0	13.9	8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

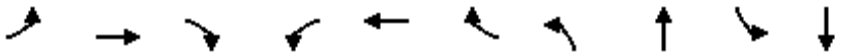
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	0	26	1	61	1	222	10	31	150	0
Future Vol, veh/h	1	0	0	26	1	61	1	222	10	31	150	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	3	0	5	0	4	6	0
Mvmt Flow	1	0	0	29	1	67	1	244	11	34	165	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	519	492	165	487	487	252	165	0	0	257	0	0
Stage 1	233	233	-	254	254	-	-	-	-	-	-	-
Stage 2	286	259	-	233	233	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.23	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.327	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	471	481	885	494	484	784	1426	-	-	1296	-	-
Stage 1	775	716	-	755	701	-	-	-	-	-	-	-
Stage 2	726	697	-	775	716	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	420	466	885	482	469	783	1426	-	-	1294	-	-
Mov Cap-2 Maneuver	420	466	-	482	469	-	-	-	-	-	-	-
Stage 1	774	695	-	753	699	-	-	-	-	-	-	-
Stage 2	662	695	-	753	695	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.6	11.4	0	1.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1426	-	-	420	657	1294	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.147	0.026	-	-
HCM Control Delay (s)	7.5	0	-	13.6	11.4	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0.1	-	-

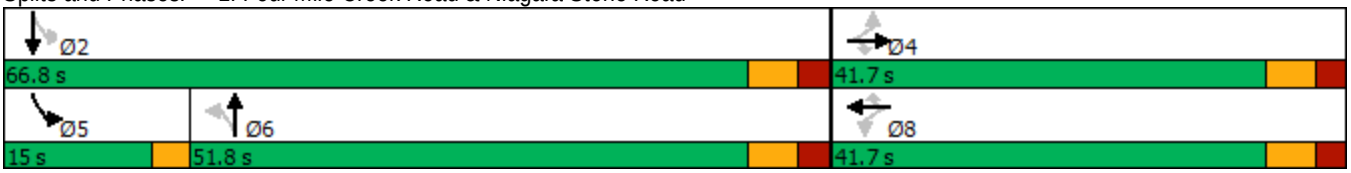


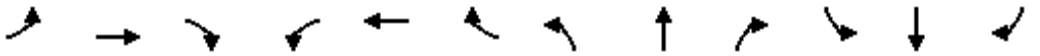
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	30	421	82	136	637	17	89	108	32	70
Future Volume (vph)	30	421	82	136	637	17	89	108	32	70
Lane Group Flow (vph)	32	453	88	146	685	18	96	275	34	120
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	35.7	35.7	35.7	35.7	35.7	35.7	15.1	15.1	22.6	18.8
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.52	0.52	0.22	0.22	0.33	0.28
v/c Ratio	0.14	0.46	0.11	0.36	0.71	0.02	0.36	0.64	0.10	0.24
Control Delay	14.5	14.5	3.9	16.2	20.8	0.1	27.5	24.8	14.5	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	14.5	3.9	16.2	20.8	0.1	27.5	24.8	14.5	12.6
LOS	B	B	A	B	C	A	C	C	B	B
Approach Delay		12.9			19.6			25.5		13.0
Approach LOS		B			B			C		B
Queue Length 50th (m)	1.7	29.9	0.0	9.0	54.6	0.0	9.9	21.1	3.0	7.4
Queue Length 95th (m)	9.7	84.8	8.2	34.0	#168.4	0.0	25.6	51.2	7.9	17.8
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	224	982	768	402	963	802	801	1141	408	1534
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.46	0.11	0.36	0.71	0.02	0.12	0.24	0.08	0.08

Intersection Summary		
Cycle Length: 108.5		
Actuated Cycle Length: 68.2		
Natural Cycle: 75		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.71		
Intersection Signal Delay: 18.2	Intersection LOS: B	
Intersection Capacity Utilization 80.1%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		

Queue shown is maximum after two cycles.

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	421	82	136	637	17	89	108	148	32	70	42
Future Volume (vph)	30	421	82	136	637	17	89	108	148	32	70	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1684	1879	1391	1683	1842	1474	1666	1660		1685	1716	
Flt Permitted	0.24	1.00	1.00	0.43	1.00	1.00	0.68	1.00		0.39	1.00	
Satd. Flow (perm)	429	1879	1391	769	1842	1474	1192	1660		696	1716	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	453	88	146	685	18	96	116	159	34	75	45
RTOR Reduction (vph)	0	0	43	0	0	9	0	61	0	0	32	0
Lane Group Flow (vph)	32	453	45	146	685	9	96	214	0	34	88	0
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	0%	0%	6%	0%	2%	0%	1%	8%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	35.6	35.6	35.6	35.6	35.6	35.6	15.1	15.1		20.7	20.7	
Effective Green, g (s)	35.6	35.6	35.6	35.6	35.6	35.6	15.1	15.1		20.7	20.7	
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51	0.22	0.22		0.30	0.30	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	218	958	709	392	939	751	257	359		243	508	
v/s Ratio Prot		0.24			c0.37			c0.13		0.01	c0.05	
v/s Ratio Perm	0.07		0.03	0.19		0.01	0.08			0.04		
v/c Ratio	0.15	0.47	0.06	0.37	0.73	0.01	0.37	0.60		0.14	0.17	
Uniform Delay, d1	9.1	11.0	8.7	10.3	13.3	8.4	23.3	24.6		17.9	18.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4	0.0	0.6	2.9	0.0	1.2	3.1		0.2	0.2	
Delay (s)	9.4	11.4	8.7	10.9	16.2	8.4	24.6	27.7		18.1	18.4	
Level of Service	A	B	A	B	B	A	C	C		B	B	
Approach Delay (s)		10.9			15.1			26.9			18.4	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	69.8	Sum of lost time (s)	16.5
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	15	0	36	0	236	13	14	308	0
Future Vol, veh/h	0	0	0	15	0	36	0	236	13	14	308	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	0	19	0	45	0	295	16	18	385	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	747	737	386	730	729	308	385	0	0	316	0	0
Stage 1	421	421	-	308	308	-	-	-	-	-	-	-
Stage 2	326	316	-	422	421	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	332	348	666	340	352	737	1185	-	-	1256	-	-
Stage 1	614	592	-	706	664	-	-	-	-	-	-	-
Stage 2	691	659	-	613	592	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	307	340	665	334	344	734	1185	-	-	1251	-	-
Mov Cap-2 Maneuver	307	340	-	334	344	-	-	-	-	-	-	-
Stage 1	614	581	-	703	661	-	-	-	-	-	-	-
Stage 2	649	656	-	601	581	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	12.5	0	0.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1185	-	-	-	543	1251	-	-
HCM Lane V/C Ratio	-	-	-	-	0.117	0.014	-	-
HCM Control Delay (s)	0	-	-	0	12.5	7.9	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0	-	-

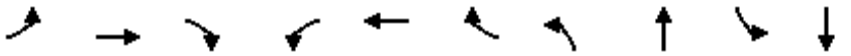
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	0	15	1	46	0	208	22	61	257	0
Future Vol, veh/h	2	0	0	15	1	46	0	208	22	61	257	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	3	0
Mvmt Flow	2	0	0	17	1	53	0	239	25	70	295	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	714	700	295	688	688	253	295	0	0	265	0	0
Stage 1	435	435	-	253	253	-	-	-	-	-	-	-
Stage 2	279	265	-	435	435	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	349	366	749	363	372	791	1278	-	-	1311	-	-
Stage 1	604	584	-	756	701	-	-	-	-	-	-	-
Stage 2	732	693	-	604	584	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	309	342	749	345	348	790	1278	-	-	1310	-	-
Mov Cap-2 Maneuver	309	342	-	345	348	-	-	-	-	-	-	-
Stage 1	604	547	-	755	700	-	-	-	-	-	-	-
Stage 2	682	692	-	565	547	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	11.9	0	1.5
HCM LOS	C	B		

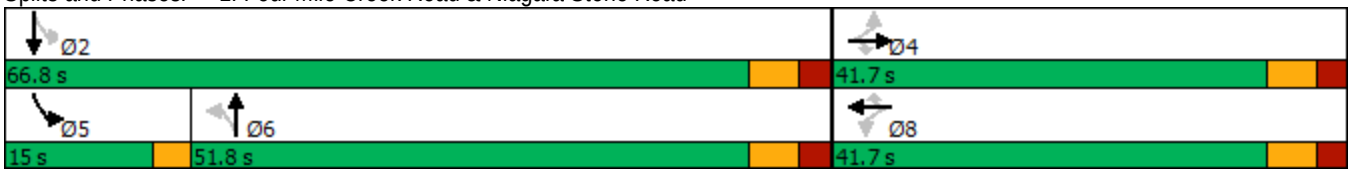
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	309	593	1310	-	-
HCM Lane V/C Ratio	-	-	-	0.007	0.12	0.054	-	-
HCM Control Delay (s)	0	-	-	16.7	11.9	7.9	0	-
HCM Lane LOS	A	-	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0.2	-	-

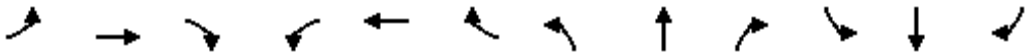


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	28	379	91	91	322	6	80	46	21	57
Future Volume (vph)	28	379	91	91	322	6	80	46	21	57
Lane Group Flow (vph)	30	403	97	97	343	6	85	211	22	102
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	15.7	15.7	15.7	15.7	15.7	15.7	11.9	11.9	17.3	13.2
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.36	0.36	0.27	0.27	0.40	0.30
v/c Ratio	0.09	0.62	0.16	0.34	0.52	0.01	0.27	0.39	0.05	0.19
Control Delay	10.9	16.5	3.8	14.7	14.5	0.0	18.2	8.2	9.9	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	16.5	3.8	14.7	14.5	0.0	18.2	8.2	9.9	9.2
LOS	B	B	A	B	B	A	B	A	A	A
Approach Delay		13.8			14.3			11.1		9.3
Approach LOS		B			B			B		A
Queue Length 50th (m)	1.2	20.2	0.0	4.3	16.4	0.0	4.3	2.3	0.9	3.0
Queue Length 95th (m)	7.1	63.9	7.7	19.2	52.8	0.0	20.9	21.2	5.1	13.7
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	756	1537	1271	669	1551	1259	1081	1455	526	1609
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.26	0.08	0.14	0.22	0.00	0.08	0.15	0.04	0.06

Intersection Summary			
Cycle Length: 108.5			
Actuated Cycle Length: 43.3			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.0		Intersection LOS: B	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	379	91	91	322	6	80	46	152	21	57	39
Future Volume (vph)	28	379	91	91	322	6	80	46	152	21	57	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1807	1478	1604	1824	1473	1589	1548		1503	1640	
Flt Permitted	0.55	1.00	1.00	0.47	1.00	1.00	0.69	1.00		0.50	1.00	
Satd. Flow (perm)	890	1807	1478	788	1824	1473	1156	1548		791	1640	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	30	403	97	97	343	6	85	49	162	22	61	41
RTOR Reduction (vph)	0	0	63	0	0	4	0	119	0	0	27	0
Lane Group Flow (vph)	30	403	34	97	343	2	85	92	0	22	75	0
Confl. Peds. (#/hr)	2					2			2	2		
Heavy Vehicles (%)	9%	4%	2%	5%	3%	0%	6%	14%	3%	12%	2%	16%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	15.7	15.7	15.7	15.7	15.7	15.7	11.9	11.9		15.8	15.8	
Effective Green, g (s)	15.7	15.7	15.7	15.7	15.7	15.7	11.9	11.9		15.8	15.8	
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.35	0.35	0.26	0.26		0.35	0.35	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	310	630	515	274	636	513	305	409		291	575	
v/s Ratio Prot		c0.22			0.19			0.06		0.00	c0.05	
v/s Ratio Perm	0.03		0.02	0.12		0.00	c0.07			0.02		
v/c Ratio	0.10	0.64	0.07	0.35	0.54	0.00	0.28	0.22		0.08	0.13	
Uniform Delay, d1	9.9	12.3	9.8	10.9	11.7	9.6	13.1	12.9		9.7	9.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	2.1	0.1	0.8	0.9	0.0	0.7	0.4		0.1	0.1	
Delay (s)	10.0	14.4	9.8	11.7	12.6	9.6	13.8	13.3		9.8	10.1	
Level of Service	B	B	A	B	B	A	B	B		A	B	
Approach Delay (s)		13.3			12.4			13.5			10.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	12	0	0	4	0	1	0	305	5	1	199	20
Future Vol, veh/h	12	0	0	4	0	1	0	305	5	1	199	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	50	0	0	0	6	25	0	5	0
Mvmt Flow	14	0	0	5	0	1	0	355	6	1	231	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	604	608	243	605	616	360	254	0	0	363	0	0
Stage 1	245	245	-	360	360	-	-	-	-	-	-	-
Stage 2	359	363	-	245	256	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.6	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.95	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	413	413	801	348	409	689	1323	-	-	1207	-	-
Stage 1	763	707	-	570	630	-	-	-	-	-	-	-
Stage 2	663	628	-	663	699	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	412	412	801	347	408	688	1323	-	-	1205	-	-
Mov Cap-2 Maneuver	412	412	-	347	408	-	-	-	-	-	-	-
Stage 1	763	706	-	569	629	-	-	-	-	-	-	-
Stage 2	662	627	-	662	698	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	14.5	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1323	-	-	412	385	1205	-	-
HCM Lane V/C Ratio	-	-	-	0.034	0.015	0.001	-	-
HCM Control Delay (s)	0	-	-	14	14.5	8	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

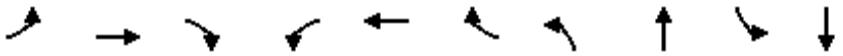
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	11	0	1	26	0	61	3	222	10	31	150	19
Future Vol, veh/h	11	0	1	26	0	61	3	222	10	31	150	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	3	0	5	0	4	6	0
Mvmt Flow	12	0	1	29	0	67	3	244	11	34	165	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	533	507	176	502	512	252	186	0	0	257	0	0
Stage 1	244	244	-	258	258	-	-	-	-	-	-	-
Stage 2	289	263	-	244	254	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.23	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.327	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	461	471	872	483	468	784	1401	-	-	1296	-	-
Stage 1	764	708	-	751	698	-	-	-	-	-	-	-
Stage 2	723	694	-	764	701	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	412	455	872	470	453	783	1401	-	-	1294	-	-
Mov Cap-2 Maneuver	412	455	-	470	453	-	-	-	-	-	-	-
Stage 1	762	687	-	748	695	-	-	-	-	-	-	-
Stage 2	660	691	-	741	681	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.6	11.5	0.1	1.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1401	-	-	431	653	1294	-	-
HCM Lane V/C Ratio	0.002	-	-	0.031	0.146	0.026	-	-
HCM Control Delay (s)	7.6	0	-	13.6	11.5	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.1	-	-

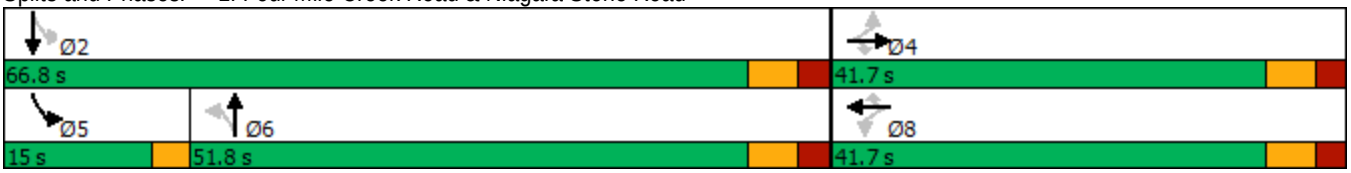


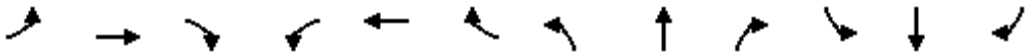
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	30	421	113	139	637	17	128	107	32	70
Future Volume (vph)	30	421	113	139	637	17	128	107	32	70
Lane Group Flow (vph)	32	453	122	149	685	18	138	277	34	120
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4			8			6	5	2
Permitted Phases	4		4	8		8	6		2	
Detector Phase	4	4	4	8	8	8	6	6	5	2
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	24.7	24.7	24.7	25.7	25.7	25.7	26.8	26.8	10.5	26.8
Total Split (s)	41.7	41.7	41.7	41.7	41.7	41.7	51.8	51.8	15.0	66.8
Total Split (%)	38.4%	38.4%	38.4%	38.4%	38.4%	38.4%	47.7%	47.7%	13.8%	61.6%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	0.0	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	3.0	6.8
Lead/Lag							Lag	Lag	Lead	
Lead-Lag Optimize?							Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	Min
Act Effct Green (s)	35.7	35.7	35.7	35.7	35.7	35.7	15.2	15.2	22.7	18.8
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.52	0.52	0.22	0.22	0.33	0.28
v/c Ratio	0.14	0.46	0.15	0.37	0.71	0.02	0.52	0.64	0.10	0.24
Control Delay	14.5	14.5	3.5	16.4	20.8	0.1	31.7	24.7	14.4	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	14.5	3.5	16.4	20.8	0.1	31.7	24.7	14.4	12.6
LOS	B	B	A	B	C	A	C	C	B	B
Approach Delay		12.3			19.6			27.1		13.0
Approach LOS		B			B			C		B
Queue Length 50th (m)	1.7	29.9	0.0	9.3	54.6	0.0	14.7	21.1	3.0	7.4
Queue Length 95th (m)	9.7	84.9	9.5	35.0	#168.8	0.0	35.7	51.3	7.9	17.8
Internal Link Dist (m)		277.9			212.2			272.8		146.6
Turn Bay Length (m)	60.0			70.0			40.0		25.0	
Base Capacity (vph)	224	982	798	402	963	802	800	1140	408	1534
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.46	0.15	0.37	0.71	0.02	0.17	0.24	0.08	0.08

Intersection Summary		
Cycle Length: 108.5		
Actuated Cycle Length: 68.2		
Natural Cycle: 75		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.71		
Intersection Signal Delay: 18.4	Intersection LOS: B	
Intersection Capacity Utilization 80.2%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		

Queue shown is maximum after two cycles.

Splits and Phases: 1: Four Mile Creek Road & Niagara Stone Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	421	113	139	637	17	128	107	151	32	70	42
Future Volume (vph)	30	421	113	139	637	17	128	107	151	32	70	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1684	1879	1418	1683	1842	1474	1666	1659		1685	1716	
Flt Permitted	0.24	1.00	1.00	0.43	1.00	1.00	0.68	1.00		0.39	1.00	
Satd. Flow (perm)	428	1879	1418	768	1842	1474	1192	1659		691	1716	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	453	122	149	685	18	138	115	162	34	75	45
RTOR Reduction (vph)	0	0	60	0	0	9	0	63	0	0	32	0
Lane Group Flow (vph)	32	453	62	149	685	9	138	214	0	34	88	0
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	0%	0%	4%	0%	2%	0%	1%	8%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8		8	6			2		
Actuated Green, G (s)	35.7	35.7	35.7	35.7	35.7	35.7	15.2	15.2		20.8	20.8	
Effective Green, g (s)	35.7	35.7	35.7	35.7	35.7	35.7	15.2	15.2		20.8	20.8	
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51	0.22	0.22		0.30	0.30	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8		3.0	6.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		2.5	4.0	
Lane Grp Cap (vph)	218	958	723	391	939	751	258	360		242	509	
v/s Ratio Prot		0.24			c0.37			c0.13		0.01	c0.05	
v/s Ratio Perm	0.07		0.04	0.19		0.01	0.12			0.04		
v/c Ratio	0.15	0.47	0.09	0.38	0.73	0.01	0.53	0.60		0.14	0.17	
Uniform Delay, d1	9.1	11.1	8.8	10.4	13.4	8.5	24.3	24.6		17.9	18.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4	0.1	0.6	2.9	0.0	2.7	3.1		0.2	0.2	
Delay (s)	9.4	11.4	8.8	11.1	16.3	8.5	27.0	27.7		18.1	18.5	
Level of Service	A	B	A	B	B	A	C	C		B	B	
Approach Delay (s)		10.8			15.2			27.5			18.4	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	28	0	6	15	0	36	6	249	13	14	318	24
Future Vol, veh/h	28	0	6	15	0	36	6	249	13	14	318	24
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	35	0	8	19	0	45	8	311	16	18	398	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	807	797	414	794	804	324	428	0	0	332	0	0
Stage 1	449	449	-	340	340	-	-	-	-	-	-	-
Stage 2	358	348	-	454	464	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	302	322	643	308	319	722	1142	-	-	1239	-	-
Stage 1	593	576	-	679	643	-	-	-	-	-	-	-
Stage 2	664	638	-	589	567	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	277	312	643	297	309	719	1142	-	-	1234	-	-
Mov Cap-2 Maneuver	277	312	-	297	309	-	-	-	-	-	-	-
Stage 1	588	565	-	670	635	-	-	-	-	-	-	-
Stage 2	617	630	-	571	556	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.6	13.1	0.2	0.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	308	507	1234	-	-
HCM Lane V/C Ratio	0.007	-	-	0.138	0.126	0.014	-	-
HCM Control Delay (s)	8.2	0	-	18.6	13.1	8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	0	8	15	0	46	7	204	22	61	252	21
Future Vol, veh/h	25	0	8	15	0	46	7	204	22	61	252	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	3	0
Mvmt Flow	29	0	9	17	0	53	8	234	25	70	290	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	731	718	302	711	718	248	314	0	0	260	0	0
Stage 1	442	442	-	264	264	-	-	-	-	-	-	-
Stage 2	289	276	-	447	454	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	340	357	742	351	357	796	1258	-	-	1316	-	-
Stage 1	598	580	-	746	694	-	-	-	-	-	-	-
Stage 2	723	685	-	595	573	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	300	331	742	327	331	795	1258	-	-	1315	-	-
Mov Cap-2 Maneuver	300	331	-	327	331	-	-	-	-	-	-	-
Stage 1	594	542	-	740	688	-	-	-	-	-	-	-
Stage 2	670	680	-	549	536	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.5	12	0.2	1.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1258	-	-	351	588	1315	-	-
HCM Lane V/C Ratio	0.006	-	-	0.108	0.119	0.053	-	-
HCM Control Delay (s)	7.9	0	-	16.5	12	7.9	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.4	0.2	-	-

APPENDIX F

Functional Design Review

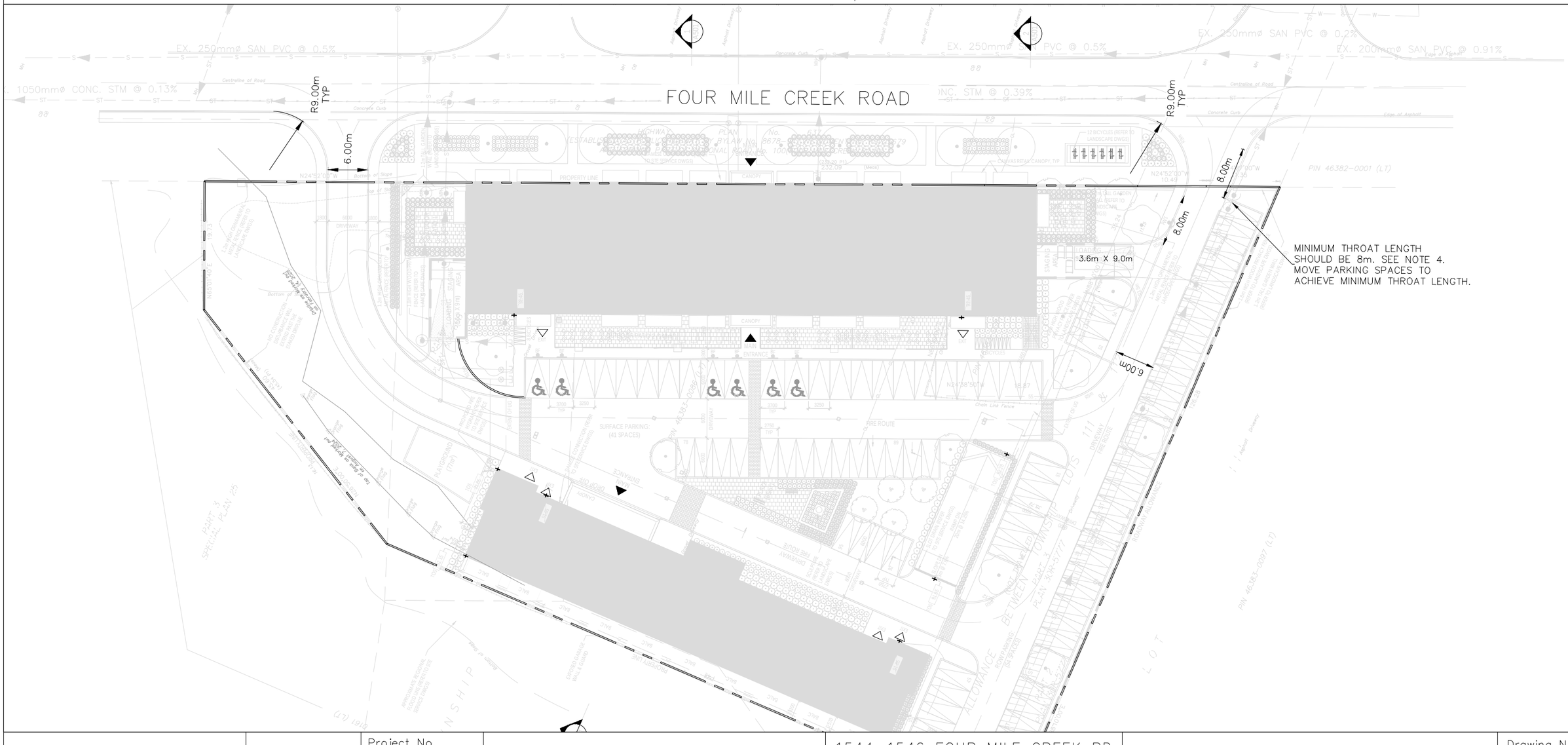
NOTES:

1. AS PER THE NIAGARA–ON–THE–LAKE MUNICIPAL ENGINEERING STANDARDS JAN 2018 SECTION 3.11, REFER TO OPSD 350.010 FOR ACCESS DESIGN REQUIREMENTS

2. OPSD 350.010 STATES:
a. CURB RADIUS MUST BE BETWEEN 4.5m–12.0m FOR COMMERCIAL AND APARTMENT LAND USE
b. WIDTH OF DRIVEWAY MUST BE BETWEEN 7.2m–12.0m FOR COMMERCIAL AND APARTMENT LAND USE

3. AS PER TOWN OF NIAGARA–ON–THE–LAKE ZONING BY–LAW SECTION 6.38, AISLE WIDTH SHOULD BE 6m

4. AS PER TAC TABLE 8.9.3. MINIMUM CLEAR THROAT LENGHT FROM COLLECTOR ROAD FOR OFFICE BUILDING AREA LESS THAN 10000 sqm AND APARTMENTS LESS THAN 100 UNITS SHOULD BE 8m



DRAWN BY: HSODHI PLOT DATE: April 4, 2025

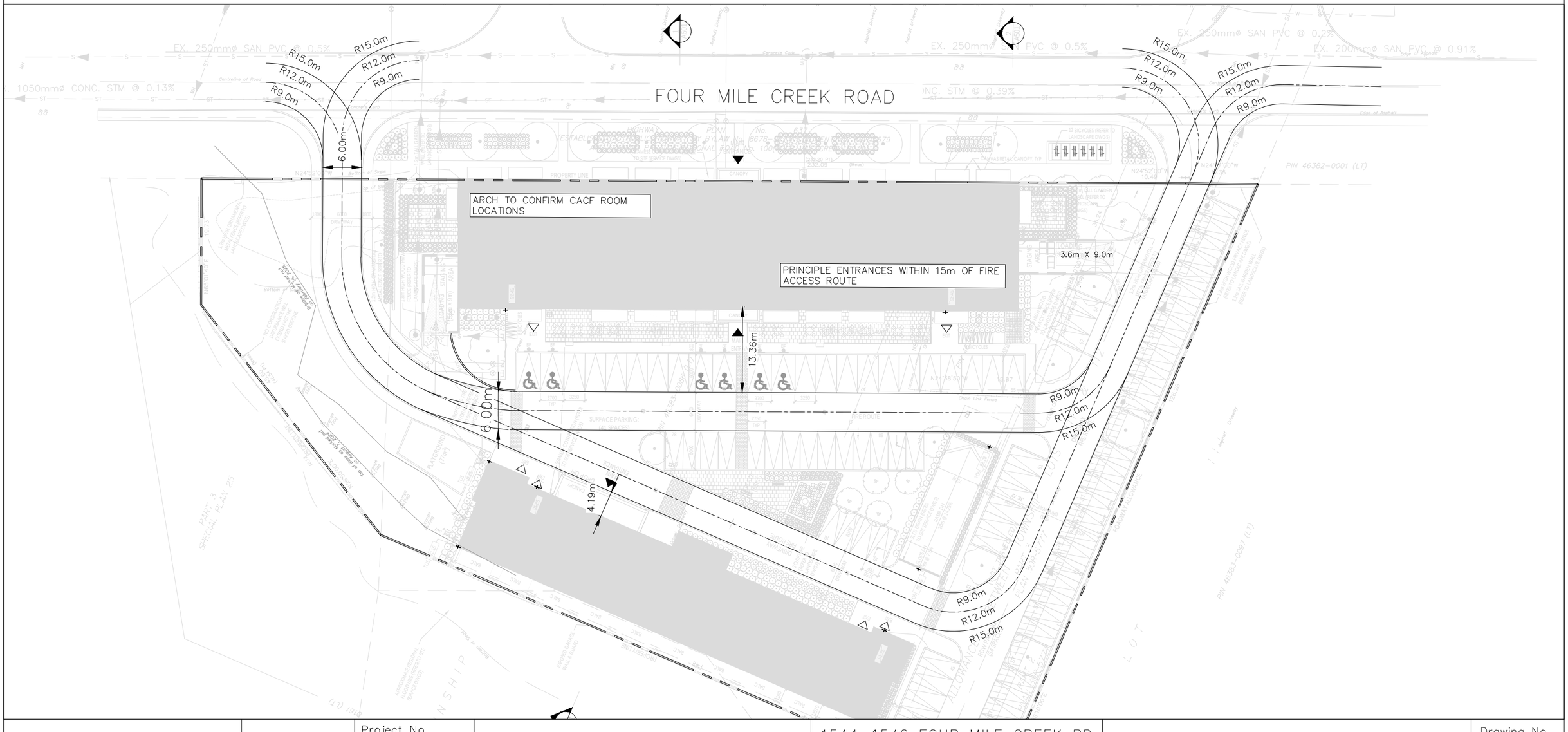
LEA Consulting Ltd. Consulting Engineers and Planners www.LEA.ca	N	Project No. 25253 Date Apr 4, 2025		1544–1546 FOUR MILE CREEK RD NIAGARA–ON–THE–LAKE ONTARIO 6 0 6 12 18m 1:600	ACCESS DESIGN REVIEW Drawing No. 001

DRAWING NAME: C:\Users\HSodhi\Desktop\Projects\25253.01\25253WF010.dwg

NOTES:

AS PER THE ONTARIO BUILDING CODE 3.2.5

1. 5.1 LOCATION OF ACCESS ROUTES – ACCESS ROUTES SHALL BE LOCATED SO THAT THE PRINCIPAL ENTRANCE AND EVERY ACCESS OPENING ARE LOCATED NOT LESS THAN 3m AND NOT MORE THAN 15m FROM THE CLOSEST PORTION OF THE ACCESS ROUTE
2. 6.1 ACCESS ROUTE DESIGN – A PORTION OF A ROADWAY PROVIDED AS A REQUIRED ACCESS ROUTE FOR FIRE DEPARTMENT USE SHALL:
   - 2.1. 6.1.a HAVE A CLEAR WIDTH NOT LESS THAN 6m
   - 2.2. 6.1.b HAVE A CENTRELINE RADIUS NOT LESS THAN 12m
   - 2.3. 6.1.c HAVE AN OH CLEARANCE OF NOT LESS THAN 5m
   - 2.4. 6.1.g BE CONNECTED WITH A PUBLIC THOROUGHFARE



DRAWN BY: HSODHI PLOT DATE: April 4, 2025

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DRAWING NAME: C:\Users\HSodhi\Desktop\Projects\25253.01\25253WF010.dwg

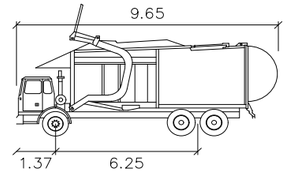
AS PER REGION OF NIAGARA PROCEDURE FOR REQUIREMENTS FOR WASTE COLLECTION

1. WASTE COLLECTION VEHICLES SHALL NOT REVERSE IN EXCESS OF 15m
2. ROADWAYS MUST HAVE A MINIMUM WIDTH OF PAVEMENT OF 6 METRES
3. VERTICAL/OVERHEAD CLEARANCE OF 4.4 METRES MUST BE MAINTAINED ON ALL ACCESS ROUTES. COLLECTION AREA MUST HAVE 6.1m VERTICAL CLEARANCE.
4. SUFFICIENT SPACE IS NEEDED TO HOUSE ALL CURRENT AND ANY FUTURE WASTE STREAMS (REQUIRED MINIMUM 2.5 SQUARE METRES PER UNIT, FOR PLACEMENT OF MATERIAL BASED ON INDUSTRY BEST PRACTICES)
5. THERE MUST BE AN APPROPRIATE STORAGE AREA FOR CONTAINERS. THE STORAGE AREA SHOULD BE SIZED APPROPRIATELY TO CONTAIN AND ALLOW FOR EASY MOVEMENT OF ALL REQUIRED RECYCLING CARTS. IT IS RECOMMENDED THAT THERE IS ONE (1) BLUE CART FOR EVERY TWENTY (20) UNITS AND ONE (1) GREY CART FOR EVERY ELEVEN (11) UNITS. THE RECOMMENDATIONS FOR ORGANIC CARTS ARE AS FOLLOWS: IT IS RECOMMENDED THAT THERE IS ONE (1) ORGANIC CART FOR EVERY THIRTY (30) UNITS.
6. FLASHING WARNING SYSTEM

6.1. FLASHING WARNING LIGHT TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE.

AS PER TOWN OF NIAGARA-ON-THE-LAKE ZONING BY-LAW SECTION 6.27

4. REQUIRED LOADING SPACES SHALL HAVE MINIMUM HORIZONTAL DIMENSIONS OF 3.6 M (11.81 FT) BY 9.0 M (29.53 FT) AND A MINIMUM VERTICAL CLEARANCE OF 4.2 M (13.78 FT);



Garbage Miller meters

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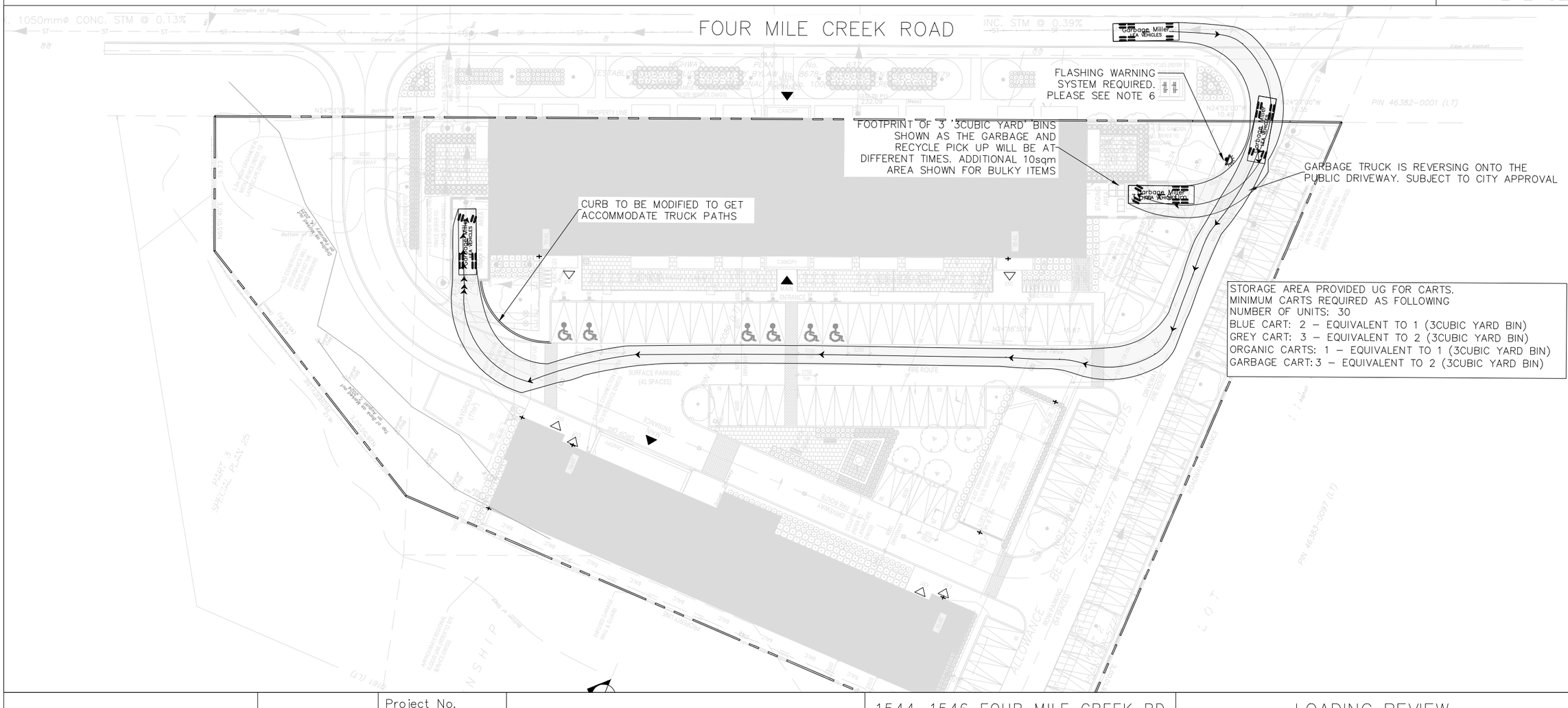
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 30.0°

FORWARD IN
REVERSE OUT



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Project No. 25253

Date Apr 4, 2025

1544-1546 FOUR MILE CREEK RD
NIAGARA-ON-THE-LAKE ONTARIO

6 0 6 12 18m
1:600

LOADING REVIEW
PRIVATE GARBAGE PICKUP TRUCK
(MILLER)
ENTRY PATHS

Drawing No. 003

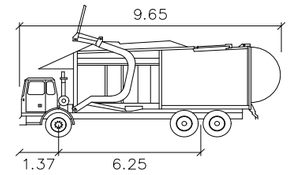
DRAWING NAME: C:\Users\HSodhi\Desktop\Projects\25253.01\25253WF010.dwg

AS PER REGION OF NIAGARA PROCEDURE FOR REQUIREMENTS FOR WASTE COLLECTION

1. WASTE COLLECTION VEHICLES SHALL NOT REVERSE IN EXCESS OF 15m
2. ROADWAYS MUST HAVE A MINIMUM WIDTH OF PAVEMENT OF 6 METRES
3. VERTICAL/OVERHEAD CLEARANCE OF 4.4 METRES MUST BE MAINTAINED ON ALL ACCESS ROUTES. COLLECTION AREA MUST HAVE 6.1m VERTICAL CLEARANCE.
4. SUFFICIENT SPACE IS NEEDED TO HOUSE ALL CURRENT AND ANY FUTURE WASTE STREAMS (REQUIRED MINIMUM 2.5 SQUARE METRES PER UNIT, FOR PLACEMENT OF MATERIAL BASED ON INDUSTRY BEST PRACTICES)
5. THERE MUST BE AN APPROPRIATE STORAGE AREA FOR CONTAINERS. THE STORAGE AREA SHOULD BE SIZED APPROPRIATELY TO CONTAIN AND ALLOW FOR EASY MOVEMENT OF ALL REQUIRED RECYCLING CARTS. IT IS RECOMMENDED THAT THERE IS ONE (1) BLUE CART FOR EVERY TWENTY (20) UNITS AND ONE (1) GREY CART FOR EVERY ELEVEN (11) UNITS. THE RECOMMENDATIONS FOR ORGANIC CARTS ARE AS FOLLOWS: IT IS RECOMMENDED THAT THERE IS ONE (1) ORGANIC CART FOR EVERY THIRTY (30) UNITS.
6. FLASHING WARNING SYSTEM
   6.1. FLASHING WARNING LIGHT TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE.

AS PER TOWN OF NIAGARA-ON-THE-LAKE ZONING BY-LAW SECTION 6.27

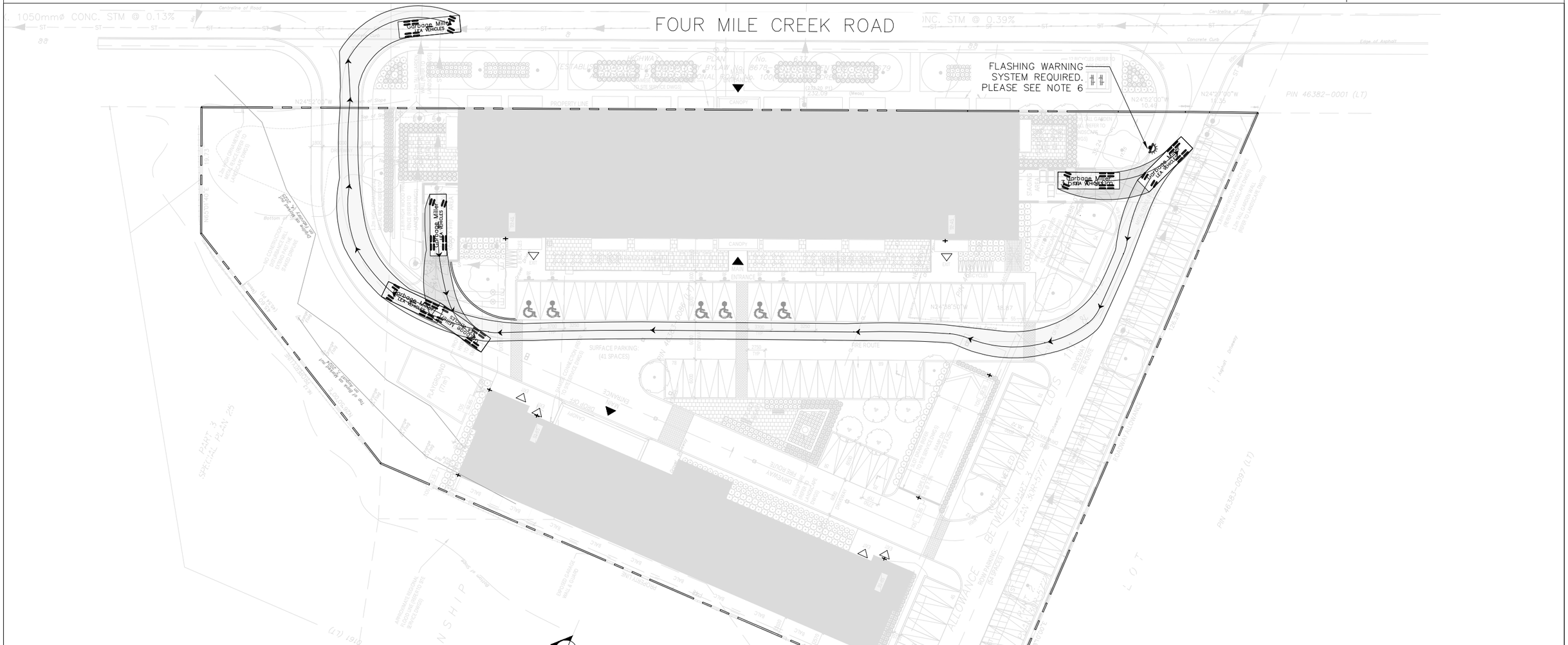
4. REQUIRED LOADING SPACES SHALL HAVE MINIMUM HORIZONTAL DIMENSIONS OF 3.6 M (11.81 FT) BY 9.0 M (29.53 FT) AND A MINIMUM VERTICAL CLEARANCE OF 4.2 M (13.78 FT);



Garbage Miller meters

Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 30.0°

FORWARD IN
REVERSE OUT



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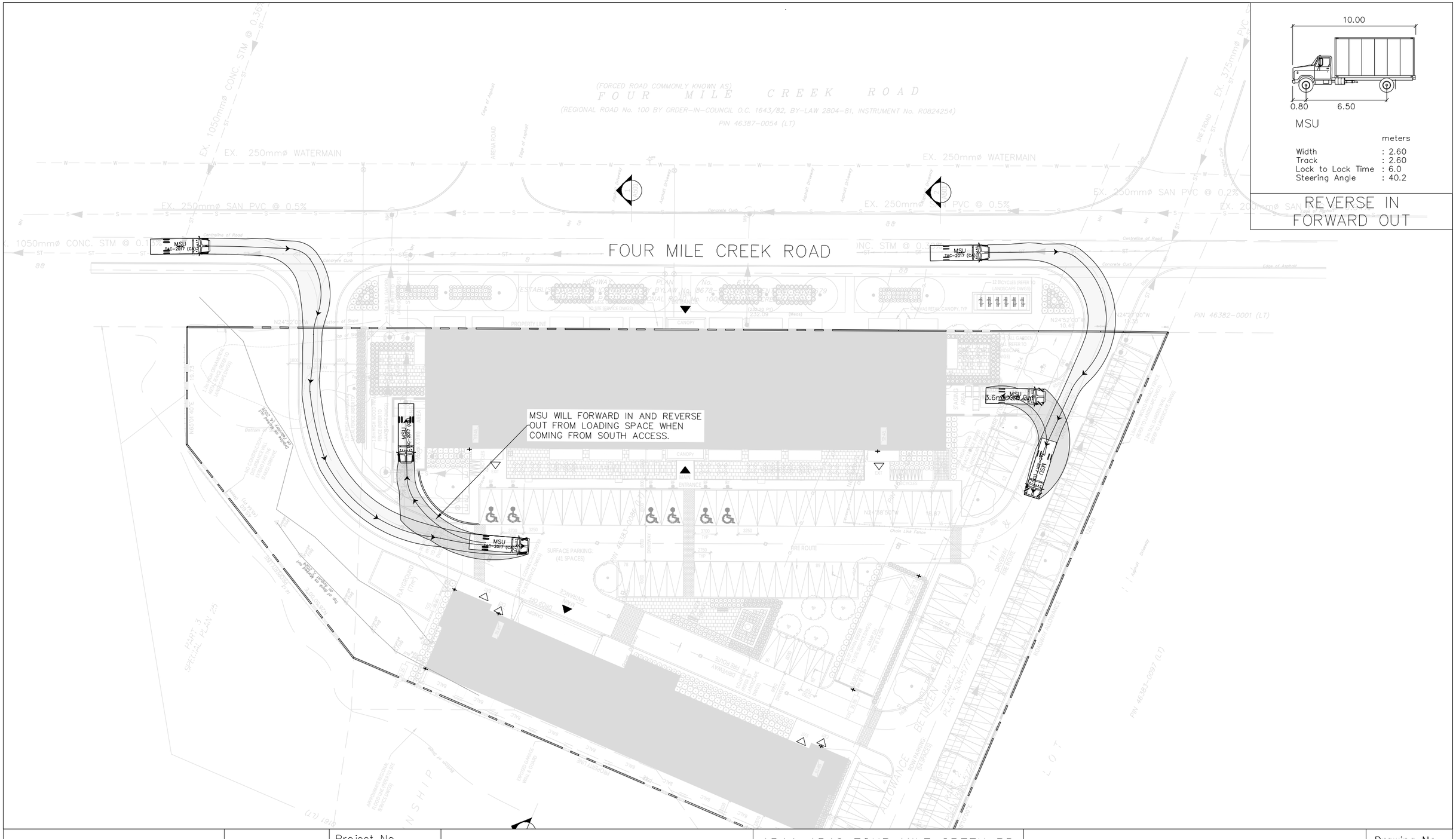
LEA Consulting Ltd. Consulting Engineers and Planners www.LEA.ca		Project No. 25253 Date Apr 4, 2025		1544-1546 FOUR MILE CREEK RD NIAGARA-ON-THE-LAKE ONTARIO 6 0 6 12 18m 1:600	LOADING REVIEW PRIVATE GARBAGE PICKUP TRUCK (MILLER) EXIT PATHS	Drawing No. 004

DRAWING NAME: C:\Users\HSodhi\Desktop\Projects\25253.01\25253WF010.dwg



MSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

REVERSE IN
FORWARD OUT

DRAWN BY: HSODHI PLOT DATE: April 4, 2025

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Project No. 25253

Date Apr 4, 2025

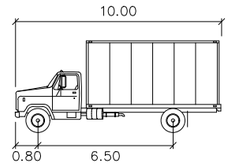
1544-1546 FOUR MILE CREEK RD
NIAGARA-ON-THE-LAKE ONTARIO

6 0 6 12 18m
1:600

LOADING REVIEW
MOVING/DELIVERY TRUCK (MSU)
ENTRY PATHS

Drawing No. 005

DRAWING NAME: C:\Users\HSodhi\Desktop\Projects\25253.01\25253WF010.dwg



MSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

REVERSE IN
FORWARD OUT

FOUR MILE CREEK ROAD

MSU WILL FORWARD IN AND REVERSE OUT FROM LOADING SPACE WHEN COMING FROM SOUTH ACCESS.

DRAWN BY: HSODHI PLOT DATE: April 4, 2025

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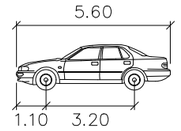
DRAWING NAME: C:\Users\HSodhi\Desktop\Projects\25253.01\25253WF010.dwg

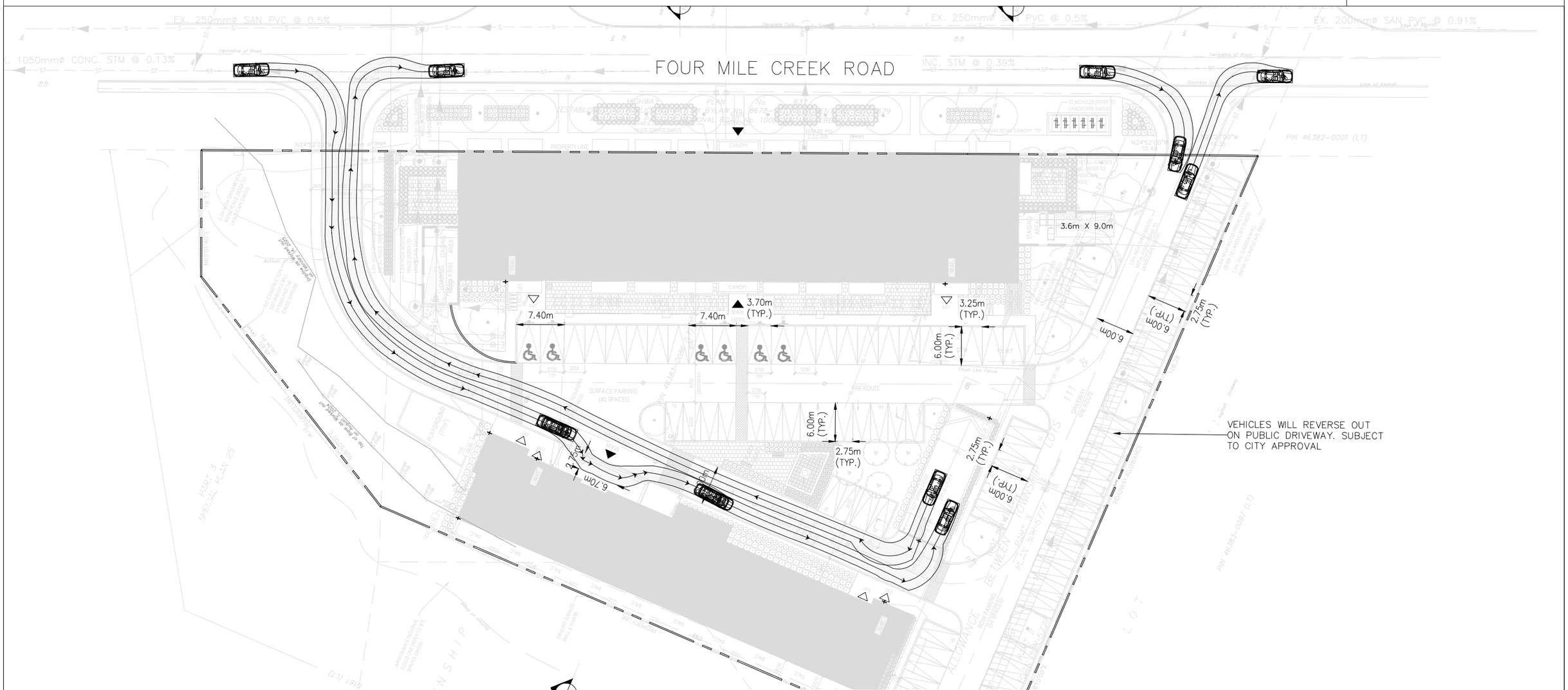
AS PER TOWN OF NIAGARA-ON-THE-LAKE ZONING BY-LAW SECTION 6.38 AND 6.42

1. MINIMUM PARKING SPACE DIMENSION FOR 90^0 PARKING ALIGNMENT IS 2.75X6.0m. FOR 0^0 PARKING ALIGNMENT IS 2.75X6.7m.
2. MINIMUM DRIVEWAYS AND AISLE WIDTH IS 6.0M
3. THE ACCESSIBLE PARKING SPACES SHALL HAVE MINIMUM RECTANGULAR DIMENSIONS OF 3.7 M (12.11 FT) WIDTH BY 6.0 M (19.69 FT) IN LENGTH, AND IF TWO (2) ADJACENT SPACES ARE DESIGNATED FOR THE DISABLED, THEN THE TOTAL WIDTH OF BOTH SPACES TOGETHER MAY BE 6.4 M (21 FT) IF A 1.5 M (5 FT) WIDE ACCESS AISLE SEPARATES THE TWO (2) SPACES. IF NO ACCESS AISLE SEPARATES THE SPACES, THE TOTAL WIDTH OF THE TWO (2) SPACES SHALL BE 7.4 M (24.28 FT)
4. A MINIMUM VERTICAL CLEARANCE OF 2.9 M (9.51 FT) SHALL BE PROVIDED AT ACCESSIBLE PARKING SPACES, PASSENGER LOADING ZONES, AND ALONG ACCESS ROUTES



P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9



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Project No. 25253

Date Apr 4, 2025

1544-1546 FOUR MILE CREEK RD
NIAGARA-ON-THE-LAKE ONTARIO

6 0 6 12 18m
1:600

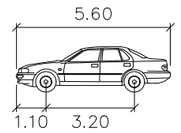
PARKING REVIEW
GROUND FLOOR

Drawing No. 007

DRAWING NAME: C:\Users\HSodhi\Desktop\Projects\25253.01\25253WF010.dwg

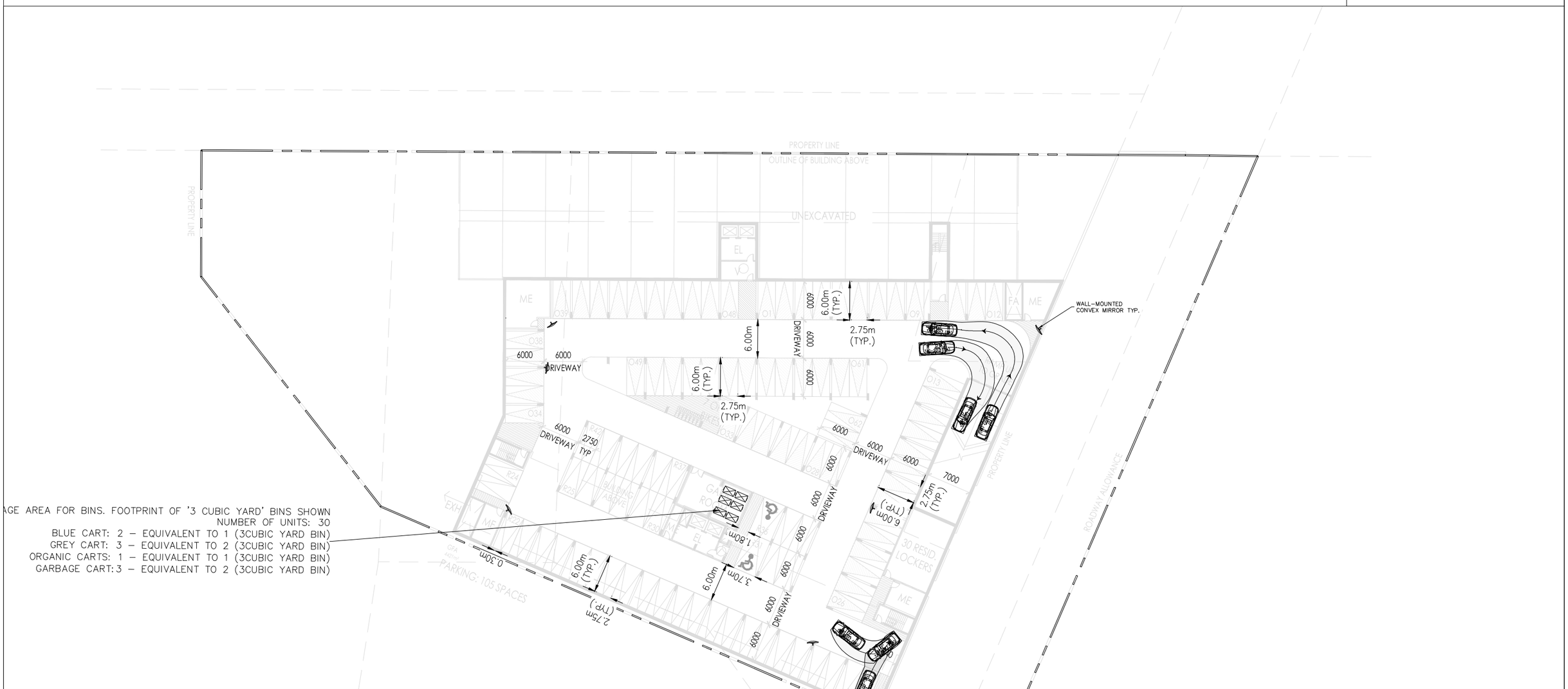
AS PER TOWN OF NIAGARA-ON-THE-LAKE ZONING BY-LAW SECTION 6.38 AND 6.42

1. MINIMUM PARKING SPACE DIMENSION FOR 90^0 PARKING ALIGNMENT IS 2.75X6.0m. FOR 0^0 PARKING ALIGNMENT IS 2.75X6.7m.
2. MINIMUM DRIVEWAYS AND AISLE WIDTH IS 6.0M
3. THE ACCESSIBLE PARKING SPACES SHALL HAVE MINIMUM RECTANGULAR DIMENSIONS OF 3.7 M (12.11 FT) WIDTH BY 6.0 M (19.69 FT) IN LENGTH, AND IF TWO (2) ADJACENT SPACES ARE DESIGNATED FOR THE DISABLED, THEN THE TOTAL WIDTH OF BOTH SPACES TOGETHER MAY BE 6.4 M (21 FT) IF A 1.5 M (5 FT) WIDE ACCESS AISLE SEPARATES THE TWO (2) SPACES. IF NO ACCESS AISLE SEPARATES THE SPACES, THE TOTAL WIDTH OF THE TWO (2) SPACES SHALL BE 7.4 M (24.28 FT)
4. A MINIMUM VERTICAL CLEARANCE OF 2.9 M (9.51 FT) SHALL BE PROVIDED AT ACCESSIBLE PARKING SPACES, PASSENGER LOADING ZONES, AND ALONG ACCESS ROUTES



P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9



AGE AREA FOR BINS. FOOTPRINT OF '3 CUBIC YARD' BINS SHOWN
NUMBER OF UNITS: 30
BLUE CART: 2 – EQUIVALENT TO 1 (3CUBIC YARD BIN)
GREY CART: 3 – EQUIVALENT TO 2 (3CUBIC YARD BIN)
ORGANIC CARTS: 1 – EQUIVALENT TO 1 (3CUBIC YARD BIN)
GARBAGE CART: 3 – EQUIVALENT TO 2 (3CUBIC YARD BIN)

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1544-1546 FOUR MILE CREEK RD
NIAGARA-ON-THE-LAKE ONTARIO

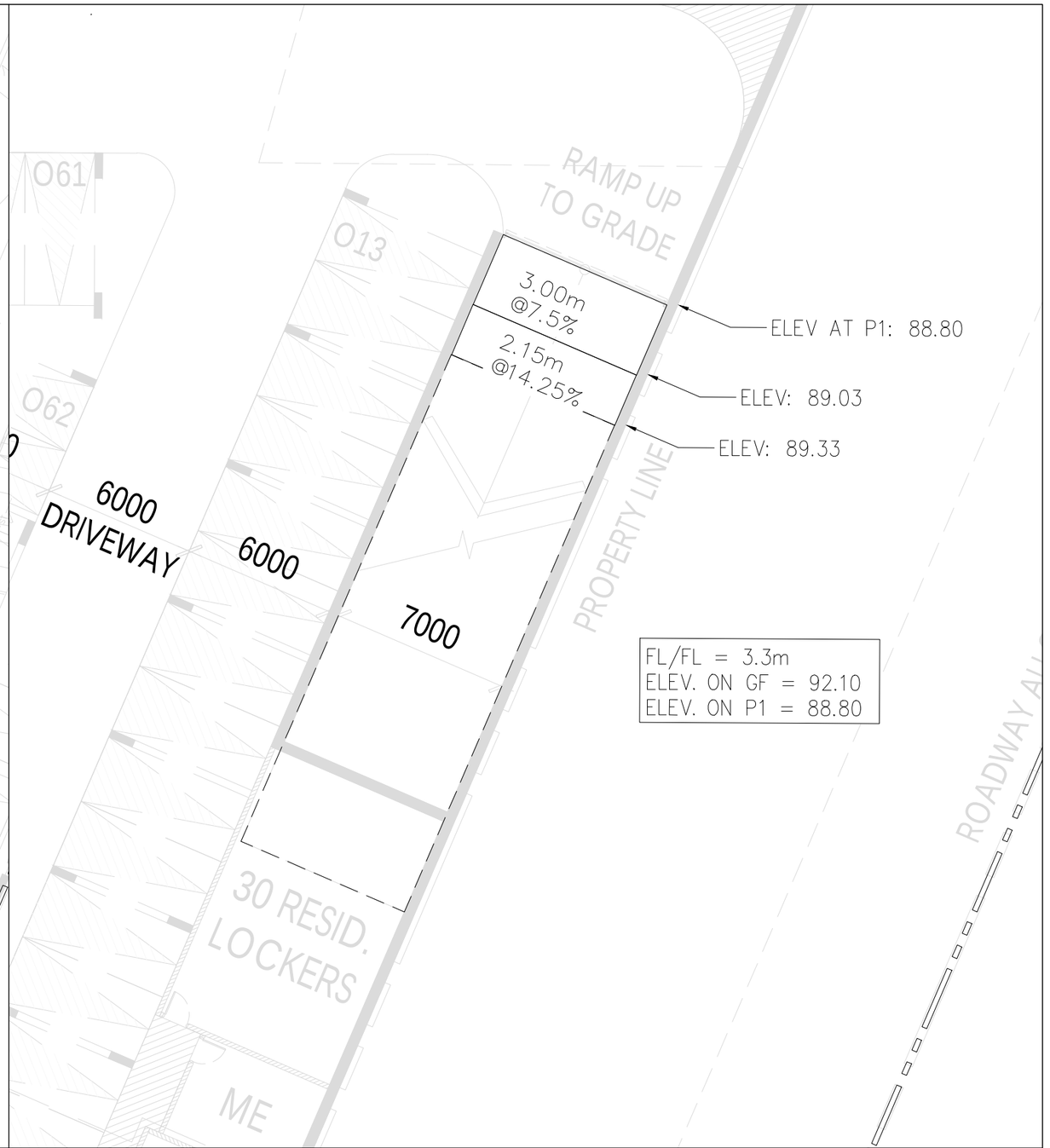
6 0 6 12 18m
1:600

PARKING REVIEW
LEVEL P1

Drawing No. 008

DRAWING NAME: C:\Users\HSodhi\Desktop\Projects\25253.01\25253WF010.dwg

GROUND FLOOR



P1 LEVEL

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1544–1546 FOUR MILE CREEK RD
NIAGARA–ON–THE–LAKE ONTARIO

6 0 6 12 18m
1:600

RAMP GRADING REVIEW
GROUND FLOOR AND P1 LEVEL

Drawing No. 009

DRAWING NAME: C:\Users\HSodhi\Desktop\Projects\25253.01\25253WF010.dwg