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Transportation Impact Study

PROPOSED RESIDENTIAL DEVELOPMENT

3575 KANEFF CRESCENT
CITY OF MISSISSAUGA, ONTARIO

July 2023
Project No: NT-19-174

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NextEng Consulting Group Inc.

July 18, 2023

Kaneff Properties Limited
8501 Mississauga Road
Brampton, ON L6Y 5G8

Re: Transportation Impact Study
Proposed Residential Development
3575 Kaneff Crescent, City of Mississauga, ON
Our Project No. NT-19-174

Nextrans Consulting Engineers (a Division of NextEng Consulting Group Inc.) is pleased to present the enclosed Transportation Impact Study and Parking Justification for the above noted site in support of Official Plan Amendment and Zoning By-law Amendment Applications.

The subject property is located at 3575 Kaneff Crescent, in the City of Mississauga. The subject site is bounded by Mississauga Valley Boulevard to the east, Elm Drive East to the south, Kaneff Crescent to the north, Obelisk Way to the west. The subject site is currently occupied by the parking lot. The proposed development consists of a 40-storey residential building with a total of 467 dwelling unit. A total of 300 vehicle parking spaces and 280 bicycle parking are proposed with the ability to provide additional outdoor bicycle parking spaces at grade. The proposed development will provide a full movement access via Obelisk Way.

The transportation study concludes that the proposed development can adequately be accommodated by the existing transportation network, excellent existing Miway Service services, as well as the recommended Transportation Demand Management measures and incentives recommended in this report.

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,
Nextrans Consulting Engineers
A Division of NextEng Consulting Group Inc.

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Issues and Revisions Registry

Identification	Date	Description of issued and/or revision
Final Report 3rd submission	July 18, 2023	For submission

EXECUTIVE SUMMARY

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by Kaneff Properties Limited (the 'Client') to undertake a Transportation Impact Study and Parking Justification Study in support of Official Plan and Zoning By-law Amendment Applications for a proposed residential development. The subject property is located at 3575 Kaneff Crescent and bounded by Mississauga Valley Boulevard to the east, Elm Drive East to the south, Kaneff Crescent to the north, Obelisk Way to the west.

Proposed Development

The site is currently occupied by a parking lot. The redevelopment proposal includes a 40-storey residential building with a total of 467 dwelling units. As part of the proposed development, a total of 254 resident parking spaces, a total of 46 visitor spaces (on-site and off-site) will be provided. The proposed development will provide 280 Class A bicycle parking spaces and 23 Class B bicycle spaces (which will be provided by landscapes with the next SPA submission).

Proposed Development Access

As part of the proposed development, the access to building will be full movement via Obelisk Way.

Capacity Analysis

The proposed development is expected to generate:

- 144 total two-way trips (35 inbound and 109 outbound) and 167 total two-way trips (102 inbound and 65 outbound) during the morning and afternoon peak hours, respectively.
- 92 total two-way auto trips (22 inbound and 70 outbound) and 120 total two-way auto trips (73 inbound and 47 outbound) during the morning and afternoon peak hours, respectively.
- 37 total two-way transit trips (9 inbound and 28 outbound) and 15 total two-way transit trips (9 inbound and 6 outbound) during the morning and afternoon peak hours, respectively.
- 15 total two-way active trips (4 inbound and 11 outbound) and 32 total two-way active trips (20 inbound and 12 outbound) during the morning and afternoon peak hours, respectively.

Auto Mode Assessment

Under the existing, future background and future total conditions, the intersection operation capacity analysis indicates that all intersections considered are expected to operate at acceptable levels of service, except for the intersection of Hurontario Street and Elm Drive, the eastbound left and northbound thru due to high turning movement of the background development, it is our recommendation that the City should monitor these movements in the future when the background developments fully build out. It should be noted that the lane configurations for Hurontario Street was provided by City of Mississauga's staff to respect the Hurontario LRT project that expected to complete on Fall 2024, was applied to this horizon year assessment. The lane reduction on Hurontario from three through lanes in each direction to two through, and left turn lanes will be protective only. As such, no physical improvement is required at this horizon year, due to the change of Hurontario LTR.

The analysis indicates that the proposed access via Obelisk Way is expected to operate at acceptable levels of service with minimal delays or queues. No improvement to the existing road network is required to accommodate the proposed development.

Active Transportation Mode Assessment

Walking

Currently, there are sidewalks located on both sides of the Mississauga Valley Boulevard, Kaneff Crescent, Obelisk Way and Elm Drive East in the vicinity of the proposed development.

Since the proposed development will utilize the sidewalks on Kaneff Crescent and Mississauga Valley Boulevard, no improvements are necessary to accommodate the proposed development. Appropriate suggestions will be provided in later sections of the report that will speak to the pedestrian requirement as part of the proposed development.

Cycling

Currently, there are two dedicated cycling routes in the general area:

- Dedicated north-south bicycle lanes along Mississauga Valley Boulevard;
- Dedicated east-west bicycle lanes along Elm Drive East.

It is Nextrans' opinion that the study area is well served by existing cycling facilities. To continue to support the modal split and transportation demand management incentives for the area, it is recommended that, at the minimum, the proposed development provides 56 bicycle parking spaces.

Transit Mode Assessment

The area is currently well serviced by the existing Miway transit network. The proposed development is located adjacent to MiWay Bus Routes 8 Cawthra, 53 Kennedy and 3 Bloor. It is NexTrans' opinion that the proposed development will contribute a healthy transit ridership for the existing Miway Transit system in the area

The transit passenger demands generated by the proposed development per transit vehicle is very low (at most 5 passenger per transit vehicle per hour). As such, the proposed development impact on transit service is negligible and no improvements are required.

In reality, some of passengers could be bunched together during the peak 15 minutes, instead of spreading during the entire peak hour. Even if this is the case, our estimates indicate that the demand per vehicle is extremely low and can be accommodated without the need for additional transit vehicles or improvements during both the morning and afternoon peak periods.

Vehicle Parking Review

Based on the City of Mississauga By-Law 0225-2007 Part 3 – Parking, Loading and Stacking Lane Regulations, a total of 467 parking spaces are required for the proposed development. It is our understanding that the proposed development provides 300 vehicle parking spaces (including 254 parking spaces for resident and 46 parking spaces for visitor) or in rate of 0.54 spaces/ unit for resident and 0.10 spaces/unit for visitor parking, this presenting a technical shortfall of 167 resident parking spaces (~35.7% reduction).

It is our understand that the City Zoning Bylaw has implemented a minimum requirement of 0.6 bicycle parking spaces per unit (Class A – long term) and 0.05 bicycle parking spaces (Class B – short term).therefore, the proposed development will require 303 Class A bicycle spaces and 16 Class B bicycle spaces. The proposed development will provide 280 Class A bicycle parking spaces and 23 Class B bicycle spaces (which will be provided by landscapes with the next SPA submission) which meets the bylaw requirement.

Transportation Demand Management Measures and Incentives

The TDM measures and incentives related to the proposed development have been assessed and recommended in Section 9 of this report to support active transportation and transit, to meet the objectives and requirements of the City of Mississauga transportation policies.

Loading Requirement

The proposed development will use the private garbage pick up and a loading space is provided for garbage pick up that will meet the City's By-Law requirement. AutoTURN software was used to demonstrate the turning movement

requirements for garbage pick-up, delivery and passenger vehicles at the proposed access via Obelisk Way, the proposed loading and internal circulation to the underground parking.

Study Conclusions and Recommendations

Based on the assessment, our report recommends that:

- The proposed development implements the TDM measures and incentives identified in this report to support active transportation and transit and to reduce the numbers of single-occupant-vehicle trips to and from the proposed development.
- The proposed development provides direct shared pedestrian and cycling connections from the proposed development building entrances directly to public streets, where appropriate.
- The proposed development considers reduce 35.7% of required parking supply (or 0.64 spaces/unit) to support TDM and transit;
- Based on our review of the site plan, the warning light and a convex mirror will be installed on the wall where applicable to warning the passengers car going out from the underground parking, for safety concerns.
- The City should monitor the eastbound and northbound left movements due to high turning movements of the background developments.

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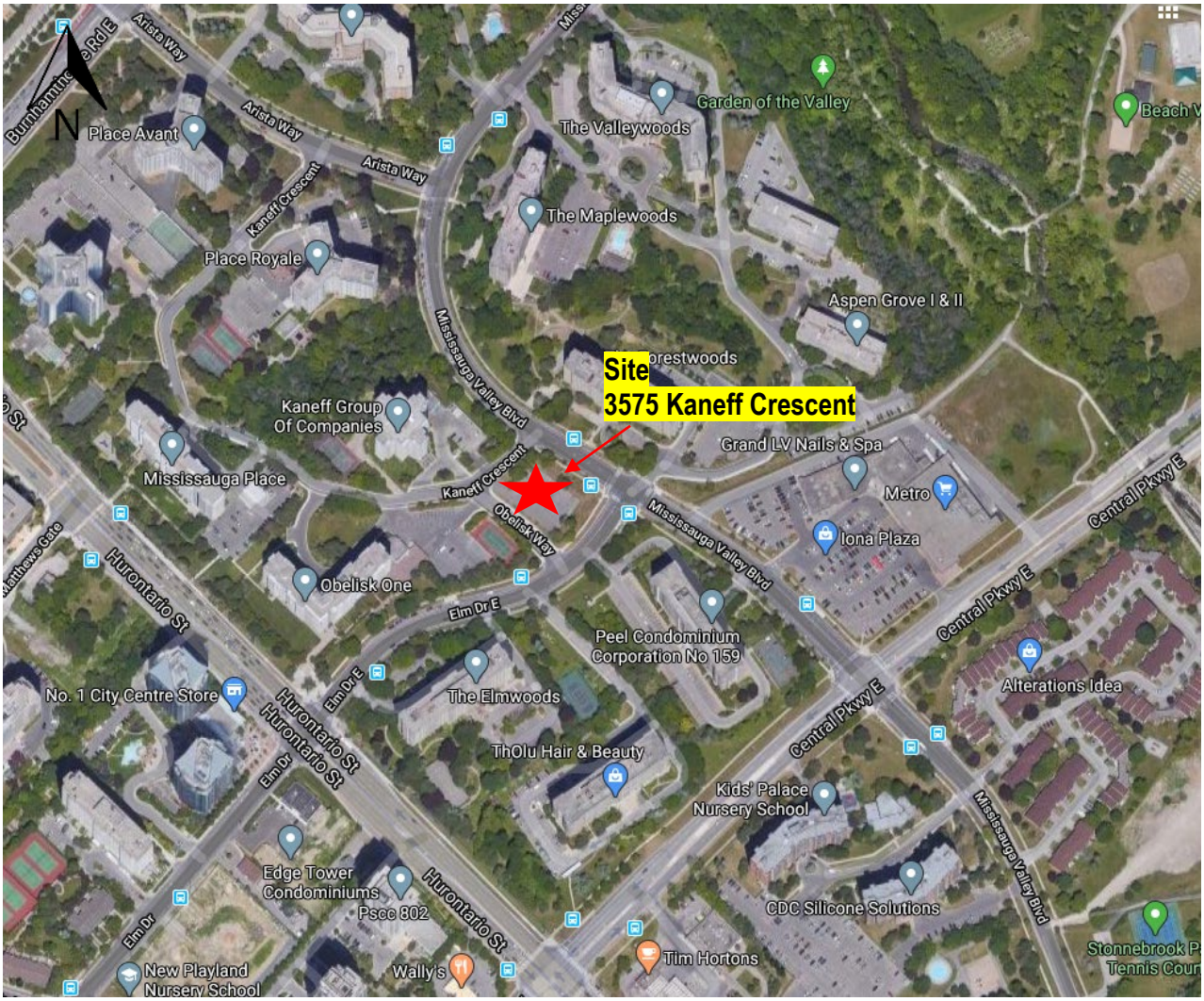
1.0 INTRODUCTION

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by Kaneff Properties Limited (the 'Client') to undertake a Transportation Impact Study and Parking Justification Study in support of Official Plan and Zoning By-law Amendment Applications for a proposed residential development. The subject property is located at 3575 Kaneff Crescent and bounded by Mississauga Valley Boulevard to the east, Elm Drive East to the south, Kaneff Crescent to the north, Obelisk Way to the west.

The location of the proposed development is illustrated in **Figure 1**.

Figure 1 – Proposed Development Location

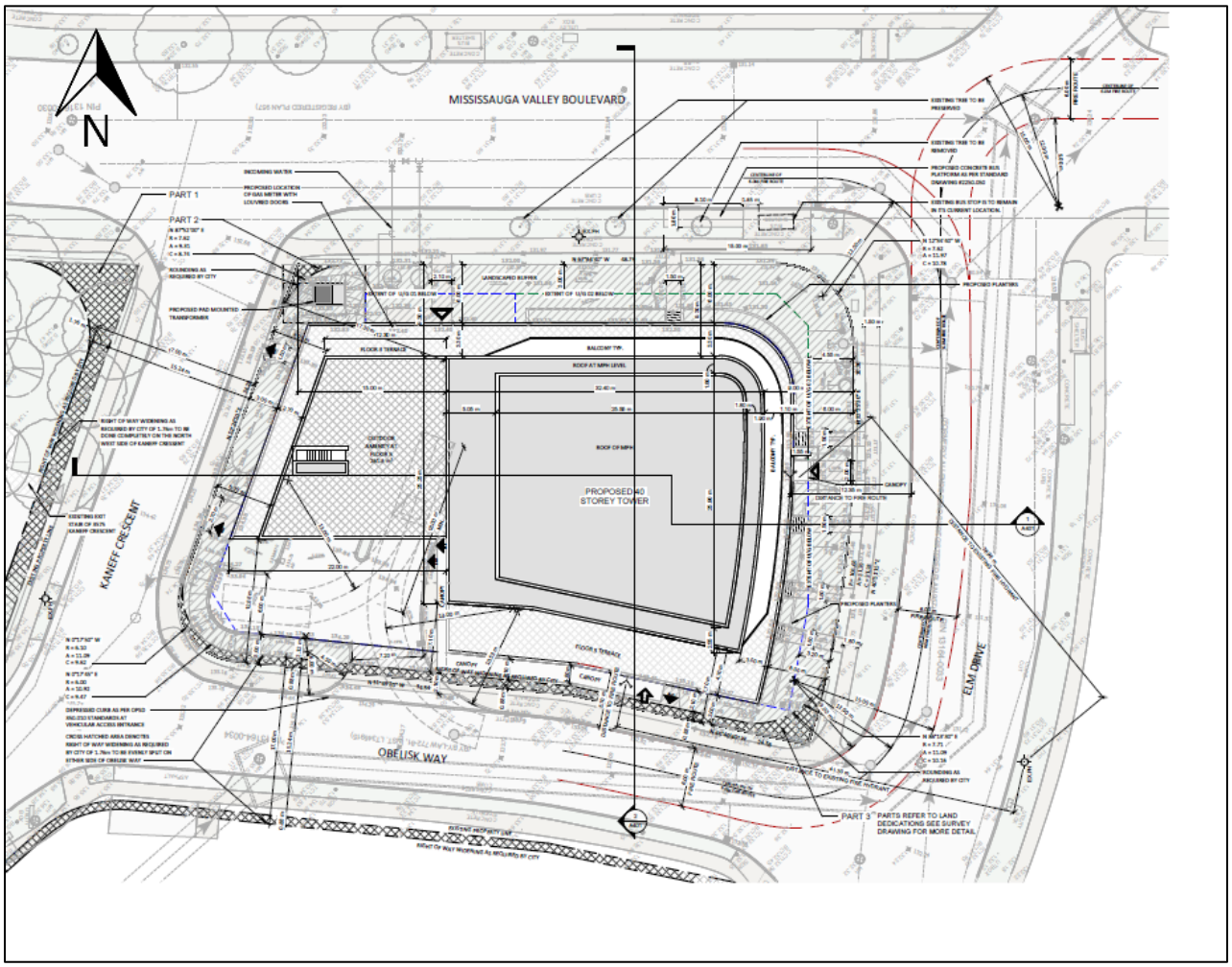


Source: Google Map

The site is currently occupied by a parking lot. The redevelopment proposal includes a 40-storey apartment building with a total of 467 dwelling units. As part of the proposed development, the access to building will be full movement via Obelisk Way. The proposed development will provide a total of 82 spaces are to be accommodated off-site within existing UG at 3575 Kaneff Cres, 208 spaces within proposed UG garage for resident, a total of 46 visitor spaces (on-site and off-site). The proposed development will provide 280 Class A bicycle parking spaces and 23 Class B bicycle spaces (which will be provided by landscapes with the next SPA submission).

Figure 2 illustrates the proposed development site plan.

Figure 2 – Proposed Concept Site Plan



2.0 EXISTING TRAFFIC CONDITIONS

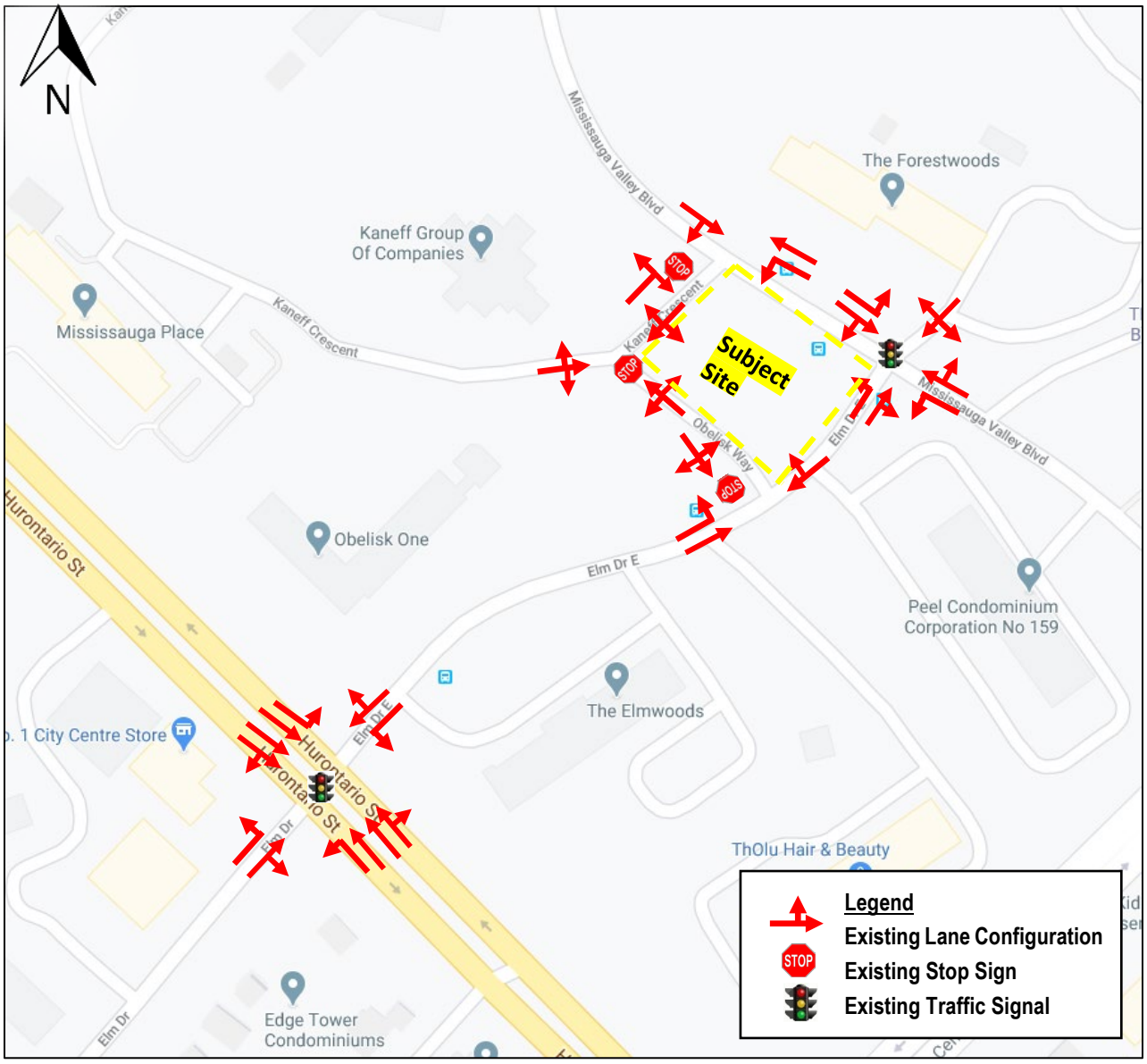
2.1. Existing Road Network

The subject property is located at 3575 Kaneff Crescent and bounded by Mississauga Valley Boulevard to the east, Elm Drive East to the south, Kaneff Crescent to the north, Obelisk Way to the west. The road network is described as follows:

- **Mississauga Valley Boulevard:** is a north-south minor collector road under the jurisdiction of the City of Mississauga. It has three lane cross sections and maintains a posted speed of 40 km/h in the vicinity of the subject site.
- **Kaneff Crescent:** is an east-west local road under the jurisdiction of the City of Mississauga. It has two lanes cross sections and maintain a posted speed of 40 km/h in the vicinity of the subject site.
- **Obelisk Way:** is a north-south local road under the jurisdiction of the City of Mississauga. It has two lane cross section and maintain an unposted speed of 40 km/h in the vicinity of the subject site.
- **Elm Drive East:** is an east-west minor collector road under the jurisdiction of the City of Mississauga. It has three lane cross sections and maintains an unposted speed of 40 km/h in the vicinity of the subject site.
- **Hurontario Street:** is a north-south arterial road under the jurisdiction of the City or Mississauga. It has six-lane cross sections and maintain a posted speed of 60 km/h in the vicinity of the subject site.

The subject site currently has one full movement access onto Kaneff Crescent servicing the existing parking lot. As indicated, the proposed residential development will provide one full movement access via Obelisk Way.

Figure 3 – Existing Lane Configuration and Traffic Control

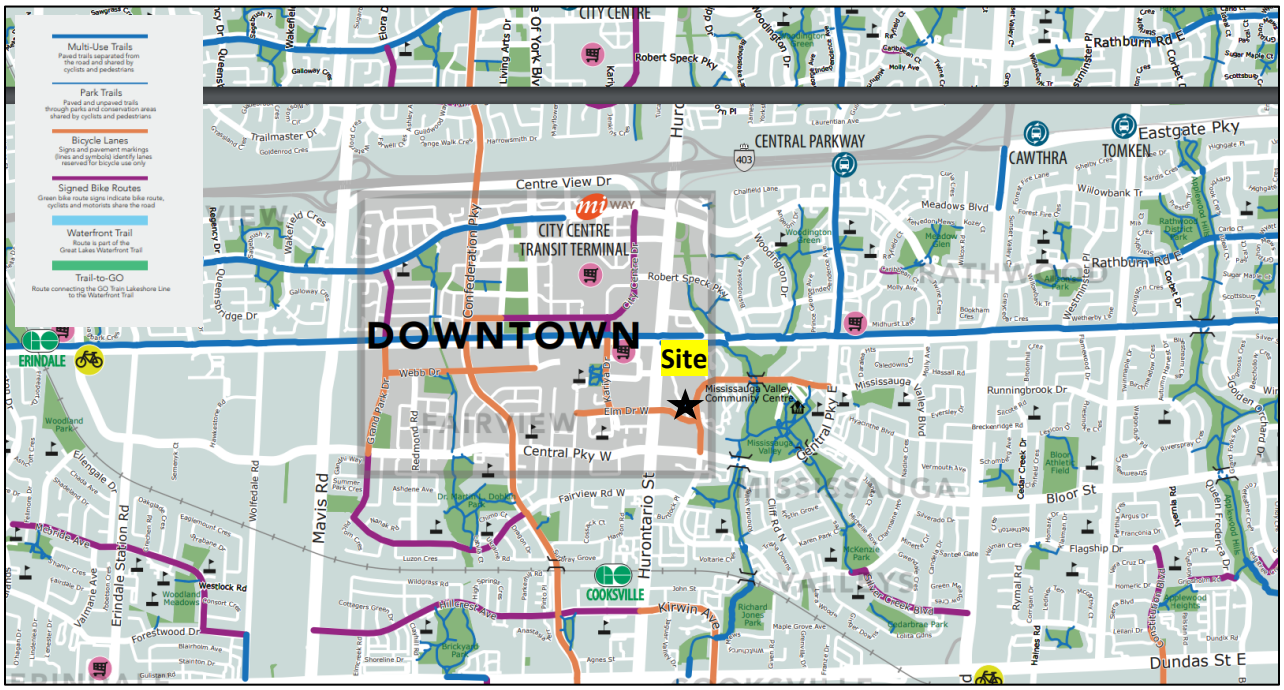


Source: Google Map

2.2. Existing Active Transportation Network

Figure 4 illustrates the existing active transportation network in the study area.

Figure 4 – Existing Active Transportation Network in the Study Area



Source: Mississauga Cycling Map 2018

2.3. Existing Active Transportation Assessment

Sidewalk

Currently, there are sidewalks located on both sides of the Mississauga Valley Boulevard, Kaneff Crescent, Obelisk Way and Elm Drive East in the vicinity of the proposed development.

Since the proposed development will utilize the sidewalks on Kaneff Crescent and Mississauga Valley Boulevard, no improvements are necessary to accommodate the proposed development. Appropriate suggestions will be provided in later sections of the report that will speak to the pedestrian requirement as part of the proposed development.

Bicycle Facility

Currently, there are two dedicated cycling routes in the general area:

- Dedicated north-south bicycle lanes along Mississauga Valley Boulevard;
- Dedicated east-west bicycle lanes along Elm Drive East.

It is Nextrans' opinion that cycling facilities could be improved in the area, as part of the future City capital projects or cycling initiatives. These types of projects are beyond the scope of the proposed development.

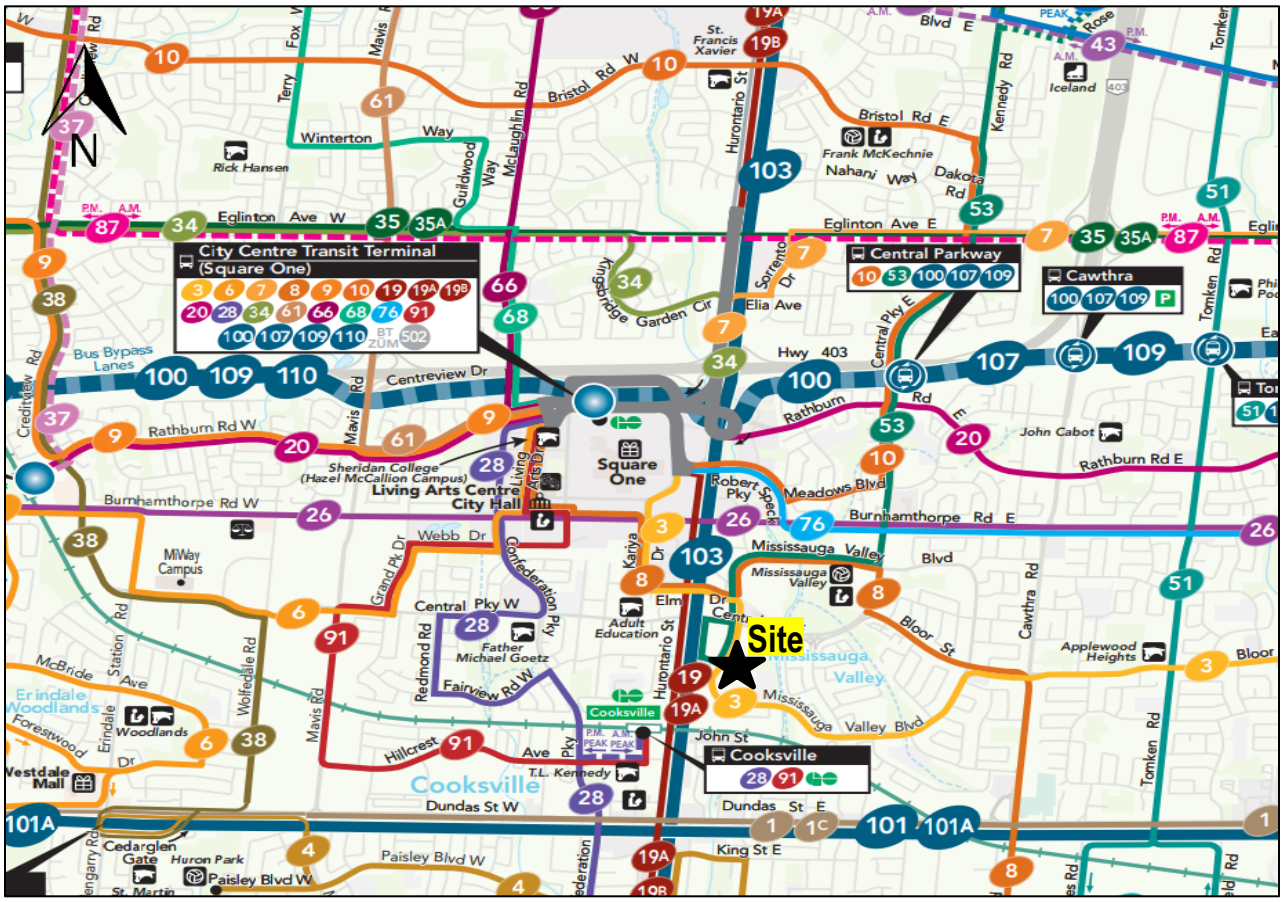
2.4. Existing MiWay System

The area is currently well serviced by the existing Miway transit network. The proposed development is located adjacent to MiWay Bus Routes 8 Cawthra, 53 Kennedy, 3 Bloor, about 300 m to the Miway Bus Route 2 Hurontario, 103 Hurontario Express, 302 Philip Pocock-Bloor West (School Route), GO Bus Route 21 Milton at Hurontario Street and Elm Drive East. It is NexTrans' opinion that the proposed development will contribute a healthy transit ridership for the existing Miway Transit system in the area. The existing transit network in the area is illustrated in **Figure 5**.

The proposed development is located about 1 km from City Centre Transit Terminal, which is part of Mississauga Transitway project that delivers 18 kilometers of dedicated busway. The City Centre Transit Terminal is linked to other 11 stations from Winston Churchill Boulevard to Renforth Drive. The proposed development also located about 500 m to

Hurontario St and Burnhamthorpe Road intersection which will be Burnhamthorpe Stop, as part of Hurontario Light Rail (LRT) project that expected to complete on 2024. The Hurontario LRT will delivers 18 kilometres of dedicated bus lane with 19 stops, linking local transit like MiWay, Brampton Transit, Zum and Mississauga Transitway at Square One, in between Brampton and Mississauga.

Figure 5 – Existing Transit Network in the Area



Source: MiWay Route Map

Below are the bus route descriptions based on the information provided on the Mississauga Transit Website (https://web.mississauga.ca/miway-transit/):

- **MiWay Bus Route 8 Cawthra** - The 8 Cawthra bus route operates generally in a north-south direction between City Centre Transit Terminal Platform J and Port Credit GO Station Platform 8. This route operates all day, every day and the service frequency are about 10 minutes during the peak periods.
- **MiWay Bus Route 3 Bloor**- The 3 Bloor bus route operates generally in an east-west direction between TTC Islington Subway Station and City Centre Transit Terminal Drop Off. This route operates all day, every day and the service frequency are about 10 minutes during the peak periods.
- **MiWay Bus Route 53 Kennedy -** The 53 Kennedy bus route operates generally in a north-south direction between Hurontario & 407 Park and Ride Platform A and Hurontario Street at Central Parkway East. This route operates all day, every day and the service frequency are about 20 minutes during the peak periods.
- **Miway Bus Route 2 Hurontario** – The 2 Hurontario bus route operates generally in north-south direction between City Centre Transit Terminal and Port Credit GO Station. This route operates all days, everyday and the service frequency are about 10 minutes during peak periods. The 2 Hurontario will replace the former 19 Hurontario bus route due to Hurontario LRT construction on Hurontario Street.

- **Miway Bus Route 103 Hurontario Express** – The 103 Hurontario bus route operates generally in north-south direction between Brampton Gateway Terminal and Port Credit GO Station Platform 5. The route operates all days, everyday and the service frequency are about 20 minutes.

2.3. Existing Traffic Volumes

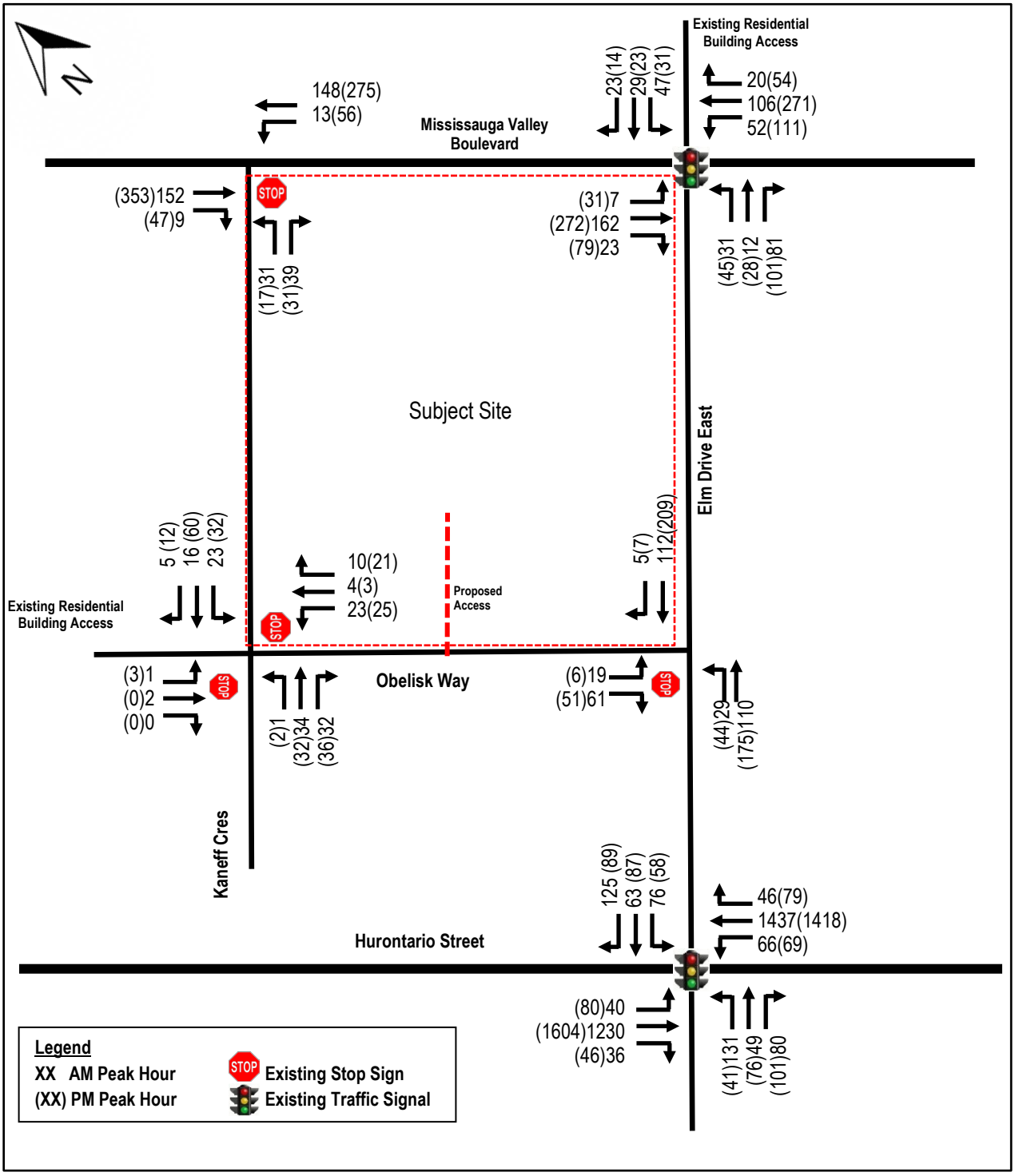
Existing traffic volumes at the study area intersections were undertaken by Spectrum during the morning (7:00 a.m. to 10:00 a.m.) and afternoon (4:00 p.m. to 7:00 p.m.) peak periods for following intersections:

- Hurontario Street and Elm Drive: Thursday, March 05, 2020
- Elm Drive East and Mississauga Valley Blvd: Tuesday, February 04, 2020
- Kaneff Cres and Mississauga Valley Blvd: Tuesday, February 04, 2020
- Kaneff Cres and Obelisk Way: Tuesday, February 04, 2020
- Obelisk Way and Elm Drive East: Tuesday, February 04, 2020

Turning movement counts are summarized in **Appendix A**.

The signal timing plans for the signalized intersections were obtained from the City of Mississauga and incorporated into the analysis. The existing volumes are illustrated in **Figure 6.**

Figure 6 – Existing Traffic Volumes



2.4. Existing Traffic Assessment

The existing volumes in **Figure 6** were analyzed using Synchro Version 9 software. The methodology of the software follows the procedures described and outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board. The detailed results are provided in **Appendix B** and summarized in **Table 1**.

Table 1 – Existing Levels of Service for Signalized Intersections

Intersection	Key Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue 95th (m)	LOS (v/c)	Delay (s)	Queue 95th (m)
Mississauga Valley Boulevard and Elm Drive East (signalized)	**Overall**	**B (0.34)**	**11.2**		**B (0.50)**	**11.5**	
	EB – L	B (0.20)	15.3	7.8	B (0.30)	18.9	12.6
	EB – TR	B (0.12)	14.8	9.8	B (0.22)	18.1	15.2
	WB – LTR	B (0.31)	14.1	15.3	B (0.24)	16.6	14.5
	NB – L	A (0.10)	5.2	4.4	A (0.21)	5.0	8.4
	NB – TR	A (0.14)	5.3	10.7	A (0.34)	5.5	28.7
	SB – L	B (0.02)	10.9	2.6	B (0.10)	10.3	6.6
	SB - TR	B (0.42)	12.8	25.2	B (0.64)	14.9	49.8
Hurontario Street and Elm Drive East (signalized)	**Overall**	**B (0.60)**	**17.1**		**B (0.59)**	**16.3**	
	EB – L	C (0.53)	29.7	45.9	D (0.26)	36.8	22.0
	EB – TR	C (0.25)	26.1	31.1	D (0.56)	40.5	60.6
	WB – L	C (0.29)	26.5	27.8	D (0.37)	38.0	28.7
	WB – TR	C (0.40)	27.4	45.6	D (0.58)	41.1	62.9
	NB – L	A (0.29)	9.3	11.1	A (0.37)	9.5	9.0
	NB -TR	B (0.63)	15.1	106.1	B (0.56)	13.0	91.6
	SB – L	B (0.26)	11.3	7.5	A (0.37)	8.5	10.1
	SB - TR	B (0.58)	15.8	90.2	B (0.61)	13.4	112.8
Elm Drive East and Obelisk Way (unsignalized)	EB – LT	A (0.02)	7.5	0.5	A (0.04)	7.8	0.8
	SB – LR	B (0.11)	10.1	2.8	B (0.09)	10.6	2.2
Obelisk Way and Kaneff Cres (unsignalized)	EB – LTR	A (0.00)	0.1	0.0	A (0.00)	0.2	0.0
	WB – LTR	A (0.02)	4.0	0.4	A (0.02)	2.4	0.5
	NB – LTR	A (0.05)	9.6	1.2	B (0.07)	10.0	1.7
	SB – LTR	B (0.00)	10.0	0.1	B (0.00)	10.7	0.1
Mississauga Valley Boulevard and Kaneff Crescent (unsignalized)	EB – LR	B (0.10)	10.0	2.4	B (0.09)	11.9	2.3
	NB - LT	A (0.01)	7.6	0.2	A (0.05)	8.4	1.3

Based on the intersection capacity analysis, under the existing traffic conditions, all the intersections considered are currently operating at acceptable levels of service. No improvement is required at this time.

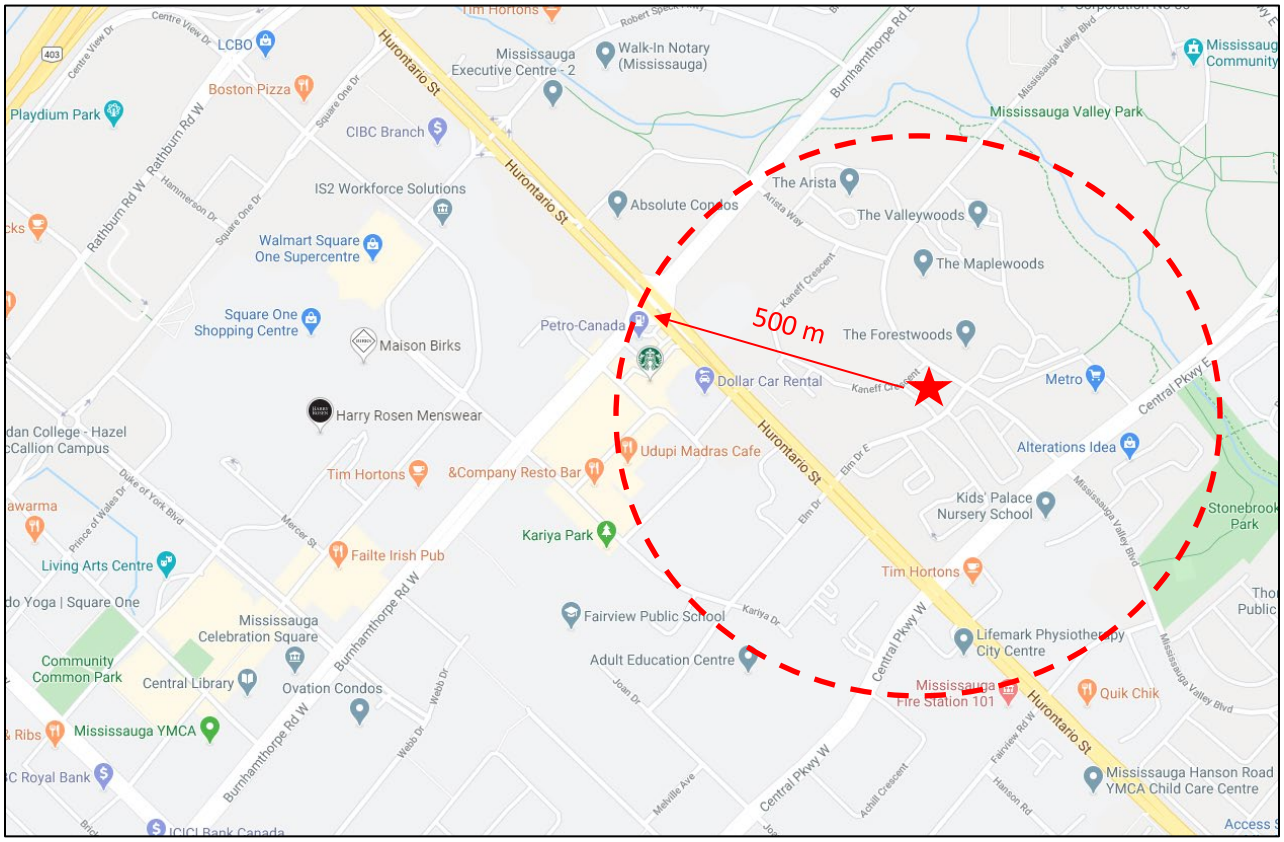
3.0 TRANSPORTATION PLANNING CONTEXT IN THE AREA

3.1. Land Use Context

NexTrans has conducted a comprehensive review of the area. To the west of the subject site, Hurontario Street is an important corridor that has serval institutions such as Square One Shopping Center, Sheridan College-Hazel McCallion Campus among other healthcare institutions. There are significant retail, restaurants and service establishments within walking and cycling distance to the proposed development. Amenities within a 500-m radius (approximately 8-minute walk) include Metro, Money Mart, Banks and Square One Shopping Center and others. The active transportation facilities such as sidewalks and bike lanes on Mississauga Valley Boulevard. **Figure 7** illustrates the amenities within a 500-m radius.

It is NexTrans' opinion that the proposed development is located at a great location from a transportation planning perspective and proper parking supply management will encourage residents to take transit and active transportation instead of driving single-occupant-vehicles.

Figure 7 – Amenity Within 500m Radius



Sources: Google Maps

3.2. Transportation Planning Context

As indicated in Section 2.4, the area is currently well serviced by the existing Miway transit network. The proposed development is located adjacent to MiWay Bus Routes 8 Cawthra, 53 Kennedy, 3 Bloor, about 300 m to the Miway Bus Route 2 Hurontario, 103 Hurontario Express, 302 Philip Pocock-Bloor West (School Route), GO Bus Route 21 Milton at Hurontario Street and Elm Drive East. It should be noted that the Hurontario LRT project are expected to complete on fall 2024, that will contribute new 18-kilometre dedicated bus lane with 19 bus stops from Brampton to Mississauga and all connection in between. The proposed development is located about 800 m (less then 10-minute walk) to the Burnhamthorpe Station at the Hurontario Street and Burnhamthorpe Road intersection. It is NexTrans' opinion that the proposed development will contribute a healthy transit ridership for the existing Mississauga transit system in the area. **Figure 8** illustrates the Hurontario LRT map.

The area is currently well serviced by a sufficient network of sidewalks, with sidewalks are available on both sides of Mississauga Valley Boulevard, Kaneff Crescent, Obelisk Way and Elm Drive East. There are dedicated bicycle lanes on Mississauga Valley Boulevard and Elm Drive East.

As part of this Study, NexTrans will provide appropriate recommendations that the proposed development can implement to continue positively to the area and community.

Figure 8 – Hurontario LRT Map

Source: metrolinx.com/en/greaterregion/projects/hurontario-lrt.aspx

4.0 FUTURE BACKGROUND CONDITIONS

4.1. Analysis Horizon

For the purposes of this assessment, it is assumed that the proposed development will be fully built-out by 2025. As such, a five-year horizon (2030) after the entire building process of the proposed development has been carried out for the study analysis.

4.2. Future Background Corridor Growth

A general growth rate of 2.0% compounded was applied to the all the movements on Mississauga Valley Boulevard and Elm Drive East to represent traffic growth from beyond the study area. It is our opinion that the proposed development will have negligible impact to the unsignalized intersection with no more than 2% of traffic volumes added to the existing traffic conditions. Based on the information provided by the City of Mississauga staff, the growth rate for the Hurontario Street from 2020 to 2023 will be -30% on northbound and -31% on southbound during AM peak hour, and -28% on

northbound and -30% on southbound during PM peak hour, respectively. These rate for Hurontario Street represents a one-time total change, and the changes in travel patterns as a result of LRT implementation. As such, for the conservative analysis, no corridor growth will be reflected in the analysis.

4.3. Background Development Applications

Based on the City of Mississauga development portal website, there are multiple background developments in the study area which will be included in the assessment are noted below.

- 16 Elm Street (Poulos Chung , Aug 2020): 1365 residential units, 5300 sqft daycare, 4870 sqft retail.
- 325 Burhamthorpe Road West (LEA Consulting Ltd., Nov 2021): 4300 residential units.
- 25 Hillcrest Avenue and 3154 Hurontario Stret (BA GROUP, May 2022): 2224 residential units, 6,270 sqm retail, 8,692 sqm commercial, 6,216 sqm community.
- 3085 Hurontario Street (CGH Transportation, July 2021): 1,081 residential units, 11,044 sqft of mixed-use spaces.
- 3420 &3442 Hurontario Street (Crozier, November 2020): 680 residential units, 2,001 sqm of retail.

4.4. Future Background Traffic Assessment

The estimated 2030 future background traffic volumes are illustrated in **Figure 9** and were analyzed using Synchro Version 11 software. The detailed calculations are provided in **Appendix E** and summarized in **Table 2**.

Figure 9 – 2030 Future Background Traffic Volumes

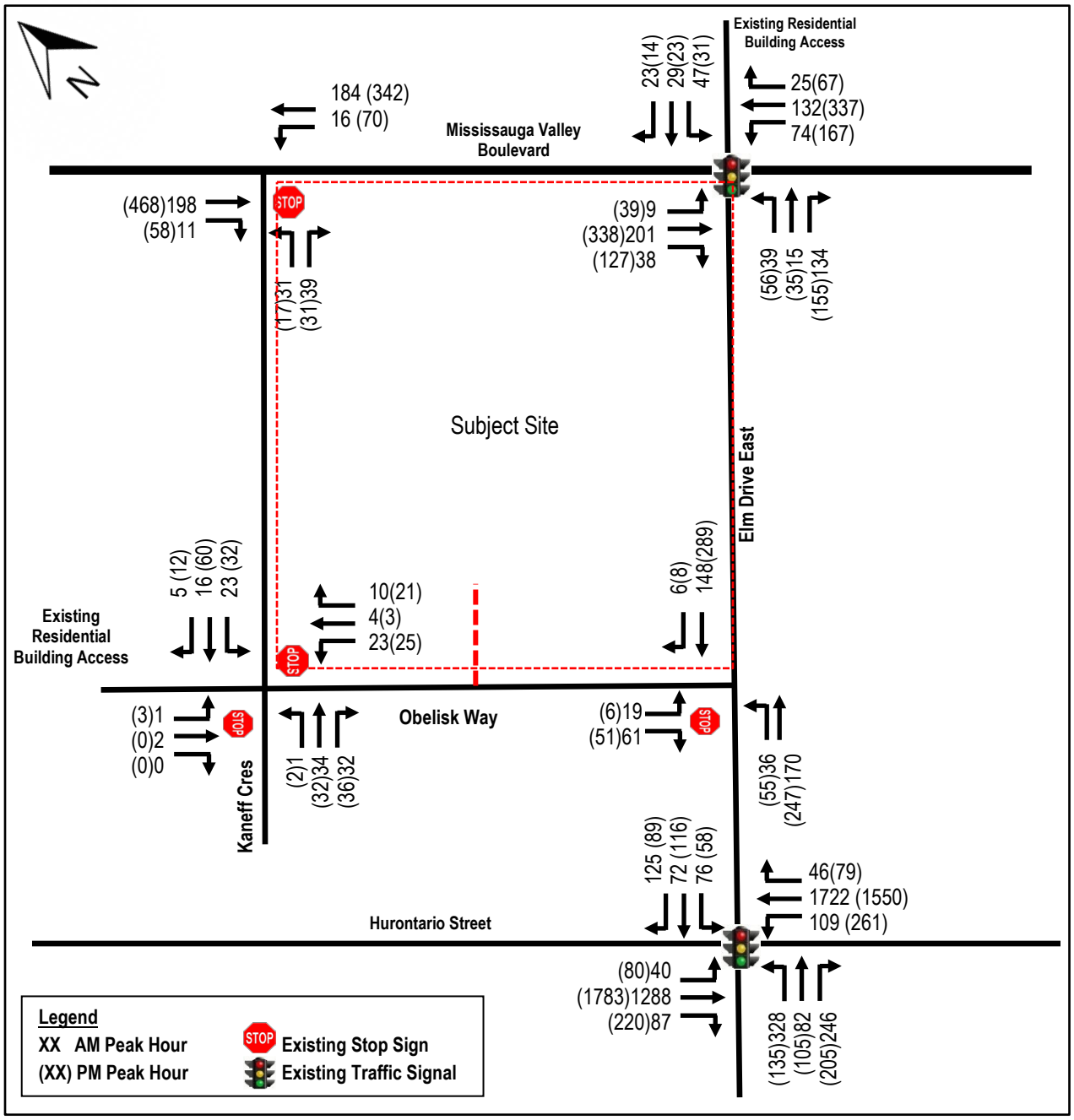


Table 2 – 2030 Future Background Levels of Service

Intersection	Key Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue 95th (m)	LOS (v/c)	Delay (s)	Queue 95th (m)
Mississauga Valley Boulevard and Elm Drive East (signalized)	**Overall**	**B (0.40)**	**11.7**		**B (0.58)**	**13.8**	
	EB – L	B (0.19)	16.0	9.5	B (0.30)	20.9	14.7
	EB – TR	B (0.18)	16.0	13.1	B (0.26)	20.4	18.3
	WB – LTR	B (0.33)	15.2	16.7	B (0.21)	18.5	14.1
	NB – L	A (0.14)	5.2	6.3	A (0.39)	6.8	14.3
	NB – TR	A (0.17)	5.5	14.0	A (0.41)	6.6	42.5
	SB – L	B (0.03)	10.6	3.0	B (0.11)	10.4	8.4
	SB - TR	B (0.50)	13.1	33.4	B (0.74)	18.6	90.4
Hurontario Street and Elm Drive (signalized)	**Overall**	**E (1.06)**	**63.5**		**E (1.11)**	**88.2**	
	EB – L	F (1.08)	126.4	191.1	E (0.82)	75.6	64.2
	EB – TR	D (0.54)	44.6	103.4	E (0.82)	65.3	107.7
	WB – L	D (0.39)	42.2	38.0	D (0.70)	71.3	33.5
	WB – TR	D (0.32)	40.4	61.1	F (0.56)	50.3	73.9
	NB – L	E (0.85)	107.6	84.6	C (2.24)	644.5	197.9
	NB -TR	E (1.05)	74.0	393.8	C (0.87)	28.1	317.1
	SB – L	D (0.72)	109.1	13.2	E (0.71)	79.3	54.4
	SB - TR	D (0.90)	44.6	248.4	E (1.08)	73.7	450.1
Elm Drive East and Obelisk Way (unsignalized)	EB – LT	A (0.03)	7.6	0.6	A (0.05)	8.0	1.2
	SB – LR	B (0.12)	10.6	3.1	B (0.10)	11.5	2.5
Obelisk Way and Kaneff Cres (unsignalized)	EB – LTR	A (0.00)	0.1	0.0	A (0.00)	0.2	0.0
	WB – LTR	A (0.02)	4.0	0.4	A (0.03)	2.4	0.5
	NB – LTR	A (0.05)	9.6	1.2	B (0.08)	10.0	1.7
	SB – LTR	B (0.00)	10.0	0.1	B (0.00)	10.7	0.1
Mississauga Valley Boulevard and Kaneff Crescent (unsignalized)	EB – LR	B (0.10)	10.4	2.6	B (0.11)	13.3	2.7
	NB - LT	A (0.01)	7.7	0.3	A (0.08)	8.9	1.9

Under the future background conditions, similar to the existing conditions, the intersection operation capacity analysis indicates that all intersections considered are expected to continue operating at acceptable levels of service, except for the intersection of Hurontario Street and Elm Drive, the eastbound left and northbound thru due to high turning movement of the background development, it is our recommendation that the City should monitor these movements in the future when the background developments fully build out. It should be noted that the lane configurations for Hurontario Street was provided by City of Mississauga's staff to respect the Hurontario LRT project that expected to complete on Fall 2024, was applied to this horizon year assessment. The lane reduction on Hurontario from three through lanes in each direction to two through, and left turn lanes will be protective only. As such, no physical improvement is required at this horizon year, due to the change of Hurontario LTR.

5.0 SITE TRAFFIC

5.1. Proposed Development

As indicated, the redevelopment proposal includes a 40-storey residential building with 467 dwelling units.

The 2016 Transportation Tomorrow Survey (TTS) and the Trip Generation Manual, 10th Edition published by the Institute of Transportation Engineers (ITE) were reviewed to estimate the modal split, trip distribution and trip generation for the proposed development.

5.2. Modes of Travel Assessment in the Area

Table 3 summarizes the travel mode split information, based on the review of the 2016 Transportation Tomorrow Survey data, for traffic zones 3863,3852,3864. The detailed analysis and TTS data extraction are included in **Appendix F**.

Table 3 – Modes of Travel based on 2016 TTS Data for Traffic Zones 3863,3852,3864

Time	Trips Made by Traffic Zones 3863					
	Auto Driver	Auto Passenger	Taxi/Paid Ride Share	Transit	Cycle	Walk
AM Peak Period (6:00-9:00 AM)	53%	10%	1%	26%	0%	10%
PM Peak Period (3:00-6:00 PM)	53%	18%	1%	9%	2%	17%

Based on the information outlines in the table above, the predominant modes of travel to and from the area is auto mode (auto drive and auto passenger), which account to nearly 64% during the morning peak periods and 72% during the afternoon peak periods.

5.3. Site Trip Generation

For the purposes of this assessment, the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE) was reviewed to estimate the site generated trips. Based on our review, the selected corresponding land use code is "Multifamily Housing High-Rise General/Suburban" Land Use Code (LUC) 222. **Table 4** summarizes the site trip generation estimate for the current development proposal based on the ITE trip rates using fitted curve equations, where appropriate.

The proposed development is expected to generate:

- 144 total two-way trips (35 inbound and 109 outbound) and 167 total two-way trips (102 inbound and 65 outbound) during the morning and afternoon peak hours, respectively.
- 92 total two-way auto trips (22 inbound and 70 outbound) and 120 total two-way auto trips (73 inbound and 47 outbound) during the morning and afternoon peak hours, respectively.
- 37 total two-way transit trips (9 inbound and 28 outbound) and 15 total two-way transit trips (9 inbound and 6 outbound) during the morning and afternoon peak hours, respectively.
- 15 total two-way active trips (4 inbound and 11 outbound) and 32 total two-way active trips (20 inbound and 12 outbound) during the morning and afternoon peak hours, respectively.

Table 4 – Site Total Trip Generation for Proposed Development

LUC	Magnitude (unit)	Parameter	Modal Split		Morning Peak			Afternoon Peak		
			AM	PM	IN	OUT	TOTAL	IN	OUT	TOTAL
Multifamily Housing (High-rise) (LUC 222) General Urban/Suburban	467	Total trips	100%	100%	35	109	144	102	65	167
		Transit Trips	**26%**	**9%**	**9**	**28**	**37**	**9**	**6**	**15**
		Walking Trips	10%	17%	4	11	15	18	11	29
		Cycling Trips	0%	2%	0	0	0	2	1	3
		Auto Trips	***64%***	***72%***	22	70	92	73	47	120

5.4. Site Trip Distribution and Assignment

The 2016 Transportation Tomorrow Survey (TTS) data was reviewed for traffic zones 3863,3852,3864 in order to estimate the general trip distribution for the proposed development.

Table 5 summarizes the site trip assignment based on the 2016 TTS and existing transportation network in the area for the residential component of proposed development.

Table 5 – Site Trip Distribution

General Direction of Travel (To/From)	AM		PM	
	IN	OUT	IN	OUT
North (Hurontario St/403)	42%	35%	41%	39%
South (Hurontario St/ QEW)	30%	31%	25%	29%
East (Burnhamthorpe Rd/Centre Parkway)	14%	17%	17%	16%
West (Burnhamthorpe Rd/Centre Parkway)	14%	17%	17%	16%
Total	***100%***	***100%***	***100%***	***100%***

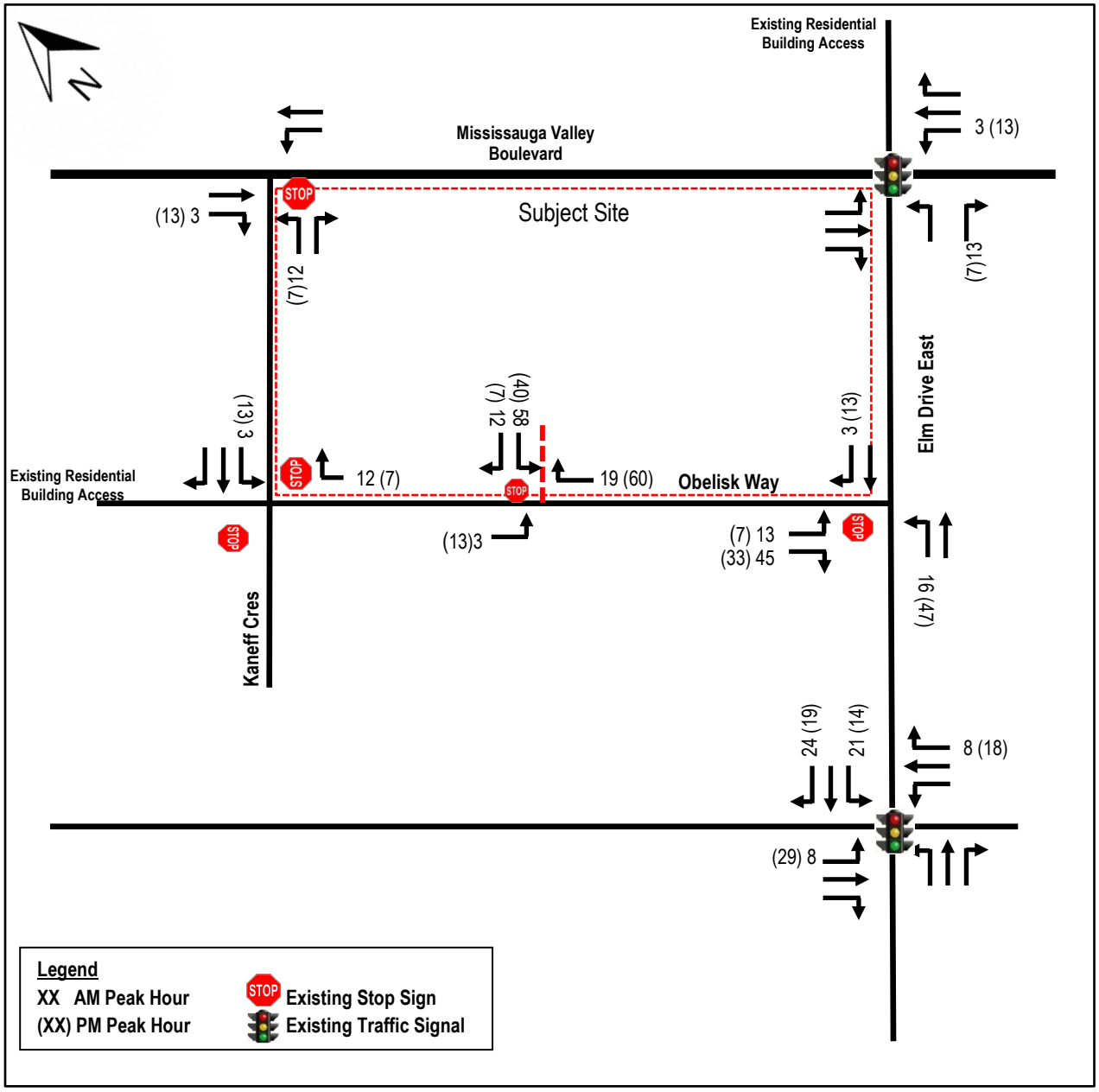
NexTrans also calculated the trip distribution based on the existing traffic turning movement count of the intersection Hurontario Street and Elm Drive, **Table 6** summarized the trip distribution based on the existing TMC. Based on the reviewing the Trip Generation between existing condition and TTS data, it appears that the percentage is similar, so to be consistent, Nextrans used the TTS data for trip distribution.

Table 6 – Existing Trip Distribution

General Direction of Travel (To/From)	AM	PM
North	46%	42%
South	39%	46%
East	7%	6%
West	8%	6%
Total	***100%***	***100%***

Figure 9 illustrates the proposed development generated traffic volumes. It should be noted that the auto site trip distribution and assignment have been taken into consideration the TTS information, existing turning restrictions, as well as existing intersection operations and capacity constraints.

Figure 10 – Site Generated Traffic Volumes



6.0 FUTURE TOTAL TRAFFIC CONDITIONS

6.1. Future Total Traffic Assessment for Auto Mode

The estimated future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 10** and were analyzed using Synchro Version 11 software. The detailed calculations are provided in **Appendix G** and summarized in **Table 7**.

The future total traffic volumes are illustrated in **Figure 10**, based on the layering of **Figure 9** and **Figure 8**.

Figure 11 –2030 Future Total Traffic Volumes

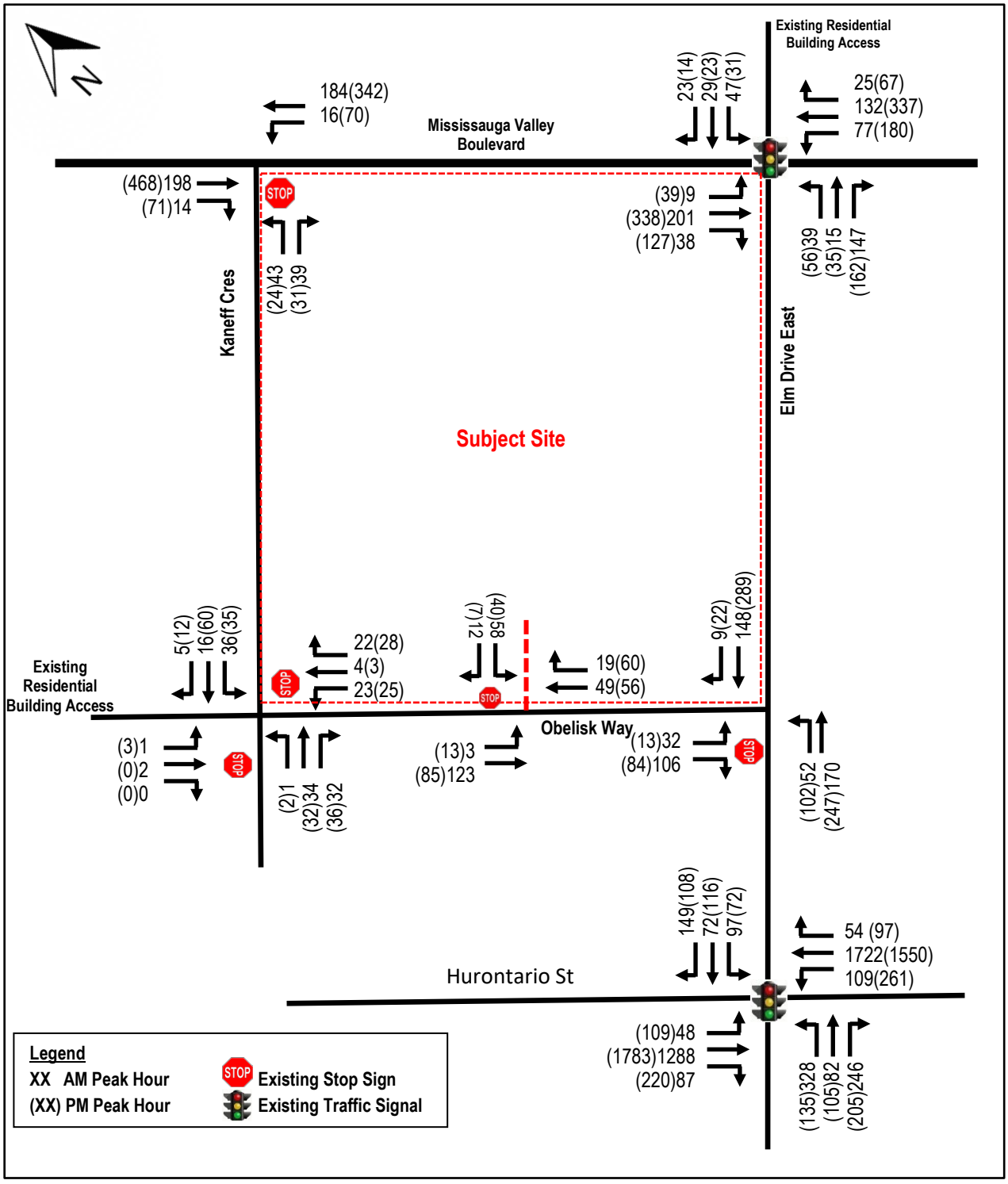


Table 7 – 2030 Future Total Levels of Service

Intersection	Key Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue 95th (m)	LOS (v/c)	Delay (s)	Queue 95th (m)
Mississauga Valley Boulevard and Elm Drive East (signalized)	**Overall**	**B (0.40)**	11.7		**B (0.58)**	13.9	
	EB – L	B (0.18)	15.9	9.5	C (0.30)	20.8	14.7
	EB – TR	B (0.19)	16.0	13.6	C (0.26)	20.4	18.5
	WB – LTR	B (0.33)	15.1	16.6	B (0.21)	18.5	14.1
	NB – L	A (0.15)	5.2	6.7	A (0.41)	6.9	15.1
	NB – TR	A (0.17)	5.3	14.2	A (0.41)	6.6	42.7
	SB – L	B (0.03)	10.7	3.1	B (0.11)	10.6	8.4
	SB - TR	B (0.50)	13.2	33.7	B (0.75)	18.9	90.6
Hurontario Street and Elm Drive (signalized)	**Overall**	**E (1.11)**	73.8		**F (1.13)**	90.3	
	EB – L	F (1.14)	148.7	198.0	F (0.90)	95.9	67.4
	EB – TR	D (0.54)	44.0	103.4	E (0.82)	65.3	107.7
	WB – L	D (0.48)	43.8	48.2	F (0.87)	105.7	45.6
	WB – TR	D (0.35)	40.5	67.5	D (0.61)	51.9	79.7
	NB – L	E (1.07)	180.6	84.6	F (2.24)	644.5	197.9
	NB -TR	E (1.09)	89.8	408.7	C (0.88)	29.3	323.5
	SB – L	D (0.62)	86.5	31.3	F (0.93)	121.0	78.5
	SB - TR	D (0.87)	41.0	248.4	E (1.08)	73.7	450.1
Elm Drive East and Obelisk Way (unsignalized)	EB – LT	A (0.04)	7.7	1.0	A (0.09)	8.2	2.3
	SB – LR	B (0.21)	11.4	6.0	B (0.18)	12.6	5.0
Obelisk Way and Kaneff Cres (unsignalized)	EB – LTR	A (0.00)	0.1	0.0	A (0.00)	0.2	0.0
	WB – LTR	A (0.03)	4.8	0.6	A (0.03)	2.6	0.6
	NB – LTR	A (0.06)	9.7	1.6	B (0.08)	10.0	1.9
	SB – LTR	B (0.00)	10.3	0.1	B (0.00)	10.9	0.1
Mississauga Valley Boulevard and Kaneff Crescent (unsignalized)	EB – LR	B (0.14)	11.7	3.7	C (0.19)	19.1	5.3
	NB - LT	A (0.01)	7.7	0.0	A (0.08)	8.9	1.9
Obelisk Way and Site Access (unsignalized)	WB – LR	A (0.09)	9.9	2.3	A (0.06)	9.9	1.6
	SB - LT	A (0.00)	0.2	0.0	A (0.01)	1.1	0.2

Under the future total conditions, similar to the future background conditions, the intersection operation capacity analysis indicates that all intersections considered are expected to operate at acceptable levels of service, except for the intersection of Hurontario Street and Elm Drive, the eastbound left and northbound thru due to high turning movement of the background development, it is our recommendation that the City should monitor these movements in the future when the background developments fully build out.

The analysis indicates that the proposed access onto Obelisk Way is expected to operate at acceptable levels of service with minimal delays or queues. No improvement to the existing road network is required to accommodate the proposed development.

6.2. Active Transportation Mode Assessment

Sidewalk

Currently, there are sidewalks located on both sides of the Hurontario Mississauga Valley Boulevard, Kaneff Crescent, Obelisk Way and Elm Drive East in the vicinity of the proposed development.

Since the proposed development will utilize the sidewalks on Kaneff Crescent and Mississauga Valley Boulevard, no improvements are necessary to accommodate the proposed development. Appropriate suggestions will be provided in later sections of the report that will speak to the pedestrian requirement as part of the proposed development.

Bicycle Facility

Currently, there are two dedicated cycling routes in the general area:

- Dedicated north-south bicycle lanes along Mississauga Valley Boulevard;
- Dedicated east-west bicycle lanes along Elm Drive East.

It is Nextrans' opinion that cycling facilities could be improved in the area, as part of the future City capital projects or cycling initiatives. These types of projects are beyond the scope of the proposed development. To continue to support the modal split and transportation demand management incentives for the area, it is recommended that, at the minimum, the proposed development meet the City's bicycle parking requirements.

6.3. Transit Mode Assessment

As indicated, the proposed development is expected to generate 37 new two-way transit trips (9 inbound and 28 outbound) and 15 new two-way transit trips (9 inbound and 6 outbound) during the morning and afternoon peak hours, respectively.

Table 8 summarizes the transit trip assignments based on the transit trip generation and distribution estimated from the 2016 Transportation Tomorrow Survey data.

Table 8 – Site Transit Trip Assignment

Transit Route	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Transit Trips	***9***	***28***	***37***	***9***	***6***	***15***
8 Cawthra Northbound	1	4	5	1	1	2
8 Cawthra Southbound	1	4	5	1	1	2
3 Bloor Eastbound	1	5	6	1	1	2
3 Bloor Westbound	1	5	6	1	1	2
53 Kennedy Northbound	4	5	9	4	1	5
53 Kennedy Southbound	1	5	6	1	1	2

Nextrans has reviewed the existing transit schedules for the Miway Bus Route during the weekday morning and afternoon peak hours. **Table 9** summarizes the existing Miway bus route frequency. It should be noted that the numbers of transit vehicles per hour were calculated using the 60 minutes divided by the vehicle headway based on the latest schedules available on Miway Website (https://web.mississauga.ca/miway-transit/).

Table 9 – Transit Service Frequency

Transit Route	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Headway	No. transit veh/hr	Headway	No. transit veh/hr
8 Cawthra Northbound	10 mins	6	10 mins	6
8 Cawthra Southbound	10 mins	6	10 mins	6
3 Bloor Eastbound	10 mins	6	10 mins	6
3 Bloor Westbound	10 mins	6	10 mins	6
53 Kennedy Northbound	20 mins	3	20 mins	3
53 Kennedy Southbound	20 mins	3	20 mins	3

Table 10 summarizes the future transit passenger demand from the proposed development per each transit vehicle during the morning and afternoon peak hours. The numbers of passenger demand per transit vehicle was calculated by using the total peak hour passenger demand generated by the proposed development divided by the numbers of transit vehicles per hour.

Table 10 – Future Transit Passenger Demand from the Proposed Development

Transit Route	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound
8 Cawthra Northbound	0.2 pass/veh	0.6 pass/veh	0.2 pass/veh	0.2 pass/veh
8 Cawthra Southbound	0.2 pass/veh	0.6 pass/veh	0.2 pass/veh	0.2 pass/veh
3 Bloor Eastbound	0.2 pass/veh	0.8 pass/veh	0.2 pass/veh	0.2 pass/veh
3 Bloor Westbound	0.2 pass/veh	0.8 pass/veh	0.2 pass/veh	0.2 pass/veh
53 Kennedy Northbound	1.3 pass/veh	1.6 pass/veh	1.3 pass/veh	0.3 pass/veh
53 Kennedy Southbound	0.3 pass/veh	1.6 pass/veh	0.3 pass/veh	0.3 pass/veh

As indicated in Table 10, the transit passenger demands generated by the proposed development per transit vehicle is very low (at most 4 passenger per transit vehicle per hour). As such, the proposed development impact on transit service is negligible and no improvements are required.

In reality, some of passengers could be bunched together during the peak 15 minutes, instead of spreading during the entire peak hour. Even if this is the case, our estimates indicate that the demand per vehicle is extremely low and can be accommodated without the need for additional transit vehicles or improvements during both the morning and afternoon peak periods.

7.0 SITE PLAN REVIEW

7.1. Loading Requirement

As indicated, the redevelopment proposal consists of total 467 rental dwelling unit.

The City of Mississauga By-Law Part 3 – Parking, Loading and Stacking Lane Regulations (Revised: 2017 November 30) was reviewed to determine the loading requirement for the proposed development. Based on the current City's By-law, the proposed development will require one loading space that have an obstructed rectangular area with a minimum width of 3.5 m and a minimum length of 9.0m.

AutoTURN software was used (Garbage Truck) to generate vehicular turning templates to confirm and demonstrate the accessibility for the required loading space. **Figure 12** illustrates the turning movement templates for passenger vehicles and Garbage truck.

Based on our review of the site plan, the warning light and a convex mirror will be installed on the wall where applicable to warning the passengers car going out from the underground parking, for safety concerns.

7.2. Site Access Review

Under the existing condition, a full moves access is provided onto Obelisk Way. The redevelopment proposal will provide one full movement access via Obelisk Way. The analysis indicates that the proposed access onto Obelisk Way is expected to operate at acceptable levels of service with minimal delays or queues.

7.2.1. TAC 2017 Guidelines

The Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads 2017 Edition describes spacing considerations for driveways on opposite side of a roadway. **Section 8.9.9. Spacing Considerations FOR DRIVEWAYS On Opposite Sides Of The Road** states that " *For low volume roadway, such as locals and most collectors, the spatial relationship between driveways on opposite sides of the road is not necessary design consideration. Similarly, if one or both of the driveways are low volume, this relationship does not impact traffic operations*." Both of the proposed development and the Obelisk One development have been considered as low volume of traffic come in and out, therefore, it is our opinion that the proposed access location will not impact traffic operations.

Pedestrian Safety

According to the Section 6.4.4 Corner Radii, it states that *" In general, a smaller corner radius provides more pedestrian queuing space, facilitates a shorter crossing distance, enables straight and direct connections between sidewalk, curb ramp and crosswalk, and increases the visibility of pedestrians. A small corner radius may also encourage slower motor vehicle turning speeds. Figure 6.4.5 illustrates the effect of corner radius on pedestrian crossing distance and directness. As corner radius increases, the pedestrian crossing distance increases or directness is reduced to minimize crossing distance, changes in directness of crossing can impact visibility and likelihood of pedestrian crossing within the marked crosswalk."* Based on the latest site plan, the sidewalk will be continuous across the proposed access, with a crossing setback of 1.455 meter, to provide the safety for the pedestrian from turning vehicle. The proposed access curb northside radius is 4.5m and 6.0m; and southside radius is 5.4m and 10.53m, this can helps reduce the cross-walking distance and provide safety from turning vehicle ingress and egress.

Corner Clearances at Minor Intersections

According to the Section 8.9.7 Corner Clearances at Minor Intersections, it states that "*A corner clearance is the distance between the near curb of a roadway intersection and the near edge of a driveway throat. The distance is made up of three components: the intersection corner curb radius, a tangent section (C) and the radius or flare for the driveway.*

Short tangent separations (C) are acceptable for residential land uses where driveway and roadway traffic volumes are normally low. A minimum distance (C) of 2.0 m is suggested for residential driveway. The result minimum corner clearance is than about 11.0 m: 6.0 m for the minimum corner curb radius, the 2.0 m distance (C), and a 3.0 m minimum driveway curb radius."

Figure 8.9.2: Driveway Spacing Guidelines- Locals and Collectors

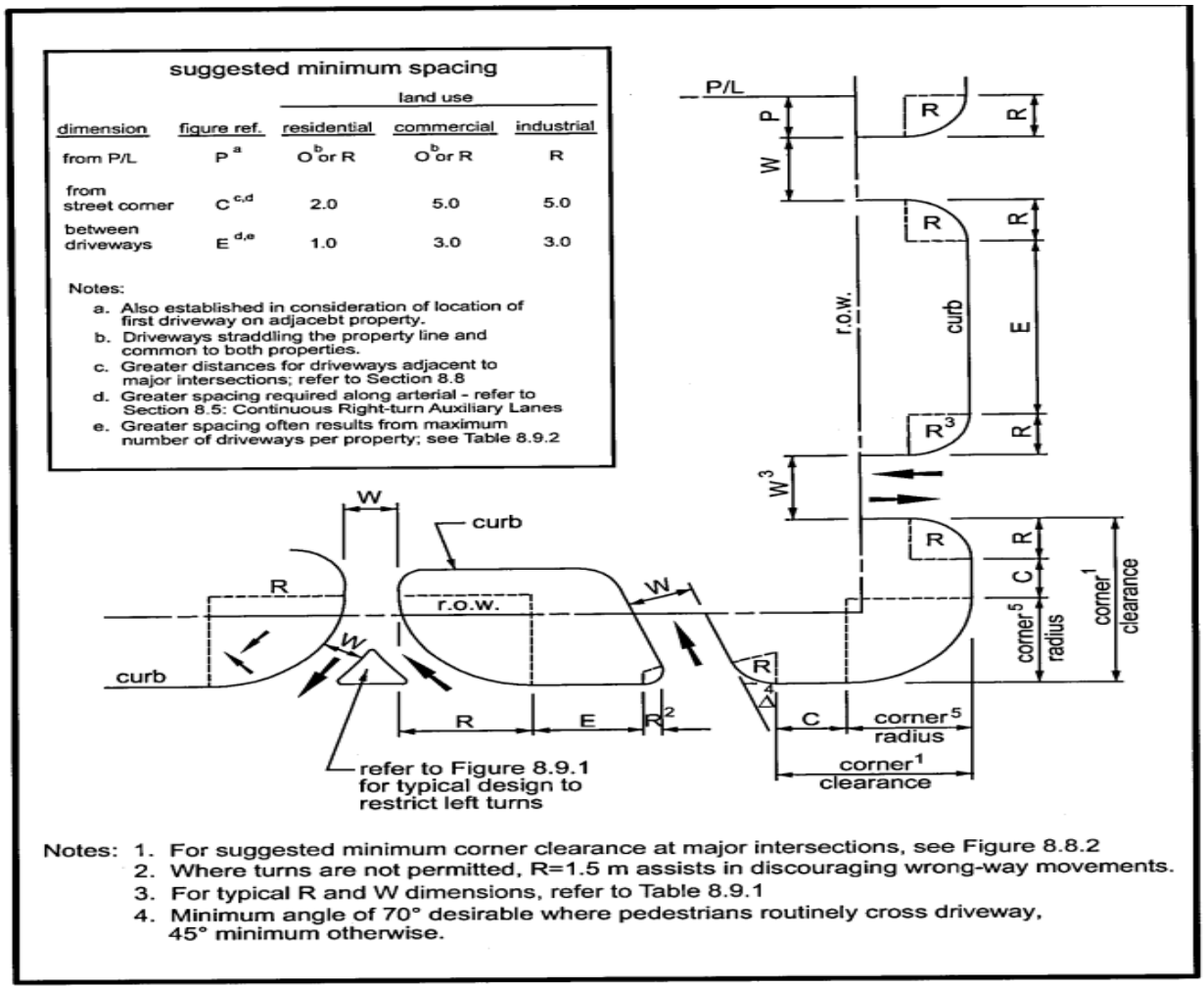
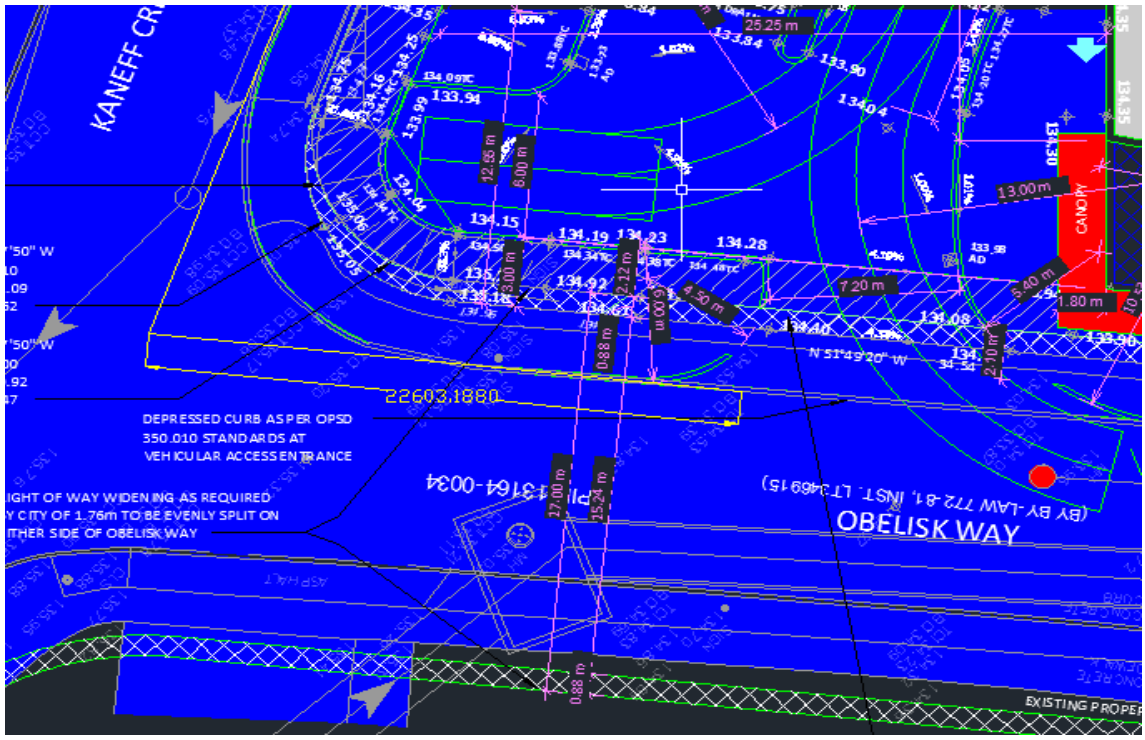


Figure 13 – Proposed Site Access Spacing



Based on the TAC, the minimum requirement for the corner clearance is 17m (corner radius is 9m + C is 2m + curb radius is 6m). Based on the latest site plan, the corner radius is 9 m, C is 7.6 m, and curb radius is 6m, in total result of corner clearance is 22.6 m, which is meet the minimum requirements of the corner clearance.

It is our opinion that, the proposed access location is safety and meet the TAC standard, NexTrans only recommends the crossing sidewalk should be painted as striping, and the stop sign will be installed at the access to provide the most convenient and safety for the pedestrian.

7.3. Sight Distance Analysis

7.3.1. Stopping Sight Distance

For the purpose of sight distance assessment, a design speed of 40 km/hr under stop control was utilized. Sight distance requirements were considered for passenger vehicles approaching and departing the stopped position at the proposed site access onto Campus Road.

It is noted that there is a negligible change in elevation for all approaches on both Obelisk Way. As such, a road grade of 0% was used.

In accordance with the Geometric Design Guide for Canadian Roads by the Transportation Association of Canada (TAC 2017), the required stopping distance for left turn from stop sight distance- case B1 based on the **Table 9.9.4** of the TAC 2017.

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

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

Table 3 – Stopping Sight Distance Assessment for the proposed access

Obelisk Way and Site Access	Stopping Sight Distance		
	Required	Achieved	Difference
North approach	50 m	23 m	-27m
South approach	50 m	70m	20m

As summarized in **Table 11**, the required stopping sight distance for the northbound and southbound approaches are 50 m. In comparing the difference between the required and the achieved stopping sight distances for the north and southbound approaches, there is a short of 27 meters and surplus of 20 meters, respectively. **As such, it is our opinion that there are adequate stopping sight distances from the west approach for the proposed driveways onto Obelisk Way**.

The minimum and maximum achieved stopping sight distance for the proposed driveways onto Obelisk Way from the north approach is 23 m. In comparing the achieved stopping sight distances with the requirement of 50 meters, it is noted that there is shortfall of 27 meters, respectively. It is critical to note that the north approach on Obelisk Way terminates at the T-intersection of Obelisk Way and Kaneff Cres, and as such, vehicles turning onto Obelisk Way from Kaneff Cres will be decelerating as they approach Obelisk Way, allowing approaching drivers to reduce their breaking distance as they are already travelling at slower speeds. **On this basis, it is our opinion that there are adequate stopping sight distances from the east approach for the proposed driveways onto Obelisk Way**.

7.3.2. Departure Sight Distance

To assesses scenarios where vehicles are departing from the location of the proposed driveway, the departure sight distance was assessed under Case B1 – Left Turn from the Minor Road, in accordance with the *Geometric Design Guide for Canadian Roads (TAC 2017)*. The departure sight distance was assumed to be under stop-controlled conditions.

As stipulated in the *Geometric Design Guide for Canadian Roads (TAC 2017)*, the intersection sight distance along the major road is determined as follows:

$$ISD = 0.278\ V_{major}\ t_g$$

Where:

ISD = Intersection sight distance (length of the leg of sight triangle along the major road) (m);

V_{major} = design speed of the major road (km/h); and,

T_g = time gap for minor road vehicle to enter the major road (s)

Case B1 – Minimum intersection sight distance for vehicles turning left from the proposed driveway onto Campus Road:

ISD = 0.278 x 40 x 7.5
= 83.4 m say 85 m

As previously mentioned, actual departure sight distances at the proposed site access have been determined through vertical profile attached in the appendix H. The departure sight distances at the proposed site access are summarized in **Table 12**.

Table 4 – Departure Sight Distance Assessment for Left Turning Vehicle at the proposed access

Obelisk Way and Site Access	Departure Sight Distance		
	Required	Achieved	Difference
North approach	85 m	23 m	-62 m
South approach	85 m	70m	-15 m

As summarized in **Table 12**, the required departure sight distance for the westbound and eastbound approaches are 105 meters, respectively. The minimum and maximum achieved departure sight distances of the proposed driveways onto Obelisk Way from the north and south approach are 23 meters and 70 meters, respectively. In comparing the achieved departure sight distances with the requirement of 85 meters, it is noted that there are minimum and maximum shortfalls of 62 meters and 15 meters, respectively. As previously stated, it is critical to note that as the intersection of Obelisk Way and Kaneff Cres; and Obelisk Way and Elm Drive E are t-configuration, and as such, vehicles turning onto Obelisk Way from Kaneff Cres and Elm Drive E will be decelerating as they approach Obelisk Way, which will provide drivers exiting their driveways enough time to determine whether or not it is safe to exit their driveway. **On this basis, it is our opinion that there are adequate departure sight distances from the east approach for the proposed driveways onto Obelisk Way**.

8.0 PARKING ASSESSMENT

8.1. Vehicle Parking Requirement

The City of Mississauga By-Law 0225-2007 Part 3 – Parking, Loading and Stacking Lane Regulations (Revised: 2017 November 30) is applied to the proposed development. The parking requirement and supply for the proposed development is summarized in **Table 13**.

Table 13 – City of Mississauga By-Law Vehicle Parking Requirements

Type	No. of Unit	Parking Rates	Parking Requirement	Parking Provided	Difference
Residential – Rental	302 units (one bedroom)	0.8 spaces/unit	242	254	-120
	164 units (two bedroom)	0.8 spaces/unit	131		
	1 unit (three bedroom)	0.8 spaces/unit	1		
	467 units	0.20 visitor spaces/unit	93	46	-47
Total			***467***	***300***	***-167***

Based on the City of Mississauga By-Law 0225-2007 Part 3 – Parking, Loading and Stacking Lane Regulations, a total of 467 parking spaces are required for the proposed development. It is our understanding that the proposed development provides 300 vehicle parking spaces (including 254 parking spaces for resident and 46 parking spaces for visitor) or in

rate of 0.54 spaces/ unit for resident and 0.10 spaces/unit for visitor parking, this presenting a technical shortfall of 167 resident parking spaces (~35.7% reduction).

Given that the proposed development is well-served by existing active transportation network, Mississauga Transit service, future Hurontario LRT and its proximity to all the amenities in the area. It is NexTrans' opinion that the parking rates for the proposed development can and shall be reduced to support transit and TDM measures in order to reduce the numbers of single-occupant-vehicle trips to and from the proposed development.

8.1.1. Recommend Parking Rates for the Proposed Development

The recommended parking rates for the proposed development to support alternative and sustainable modes of transportation are summarized in **Table 14** below, based on the following justifications:

1. Proposed development context;
2. Existing mode share;
3. Household demographic in the area;
4. Existing Mississauga Transit Service;
5. Available On-Street Parking and Carshare Locations in the Area
6. Neighbourhood Context;
7. Increase Housing Supply
8. Covid-19 Pandemic and Working from Home
9. A Reduction to the Minimum Vehicle Parking Requirements is Consistent with Provincial and Regional Direction
10. High Residential Vehicle Parking Rates Result in More Car Ownership and More Driving While Reducing Transit Usage
11. A Reduce to The Minimum Vehicle Parking Requirements Increases The Supply Of Affordable Housing
12. A Reduce to The Minimum Vehicle Parking Requirements Will Help Supporting Local Businesses
13. A Reduction to The Minimum Vehicle Parking Requirements Has A Number Of General Benefits and
14. Transportation Demand Management.

Table 14 – Recommended Parking Rates for the Proposed Development

Type	No of Unit	Ratio	Required
Residential Uses	467 units	0.54 space per unit	254 spaces
Visitor Use		0.10 space per unit	46 spaces
Total Parking Required		***0.64 spaces per unit***	***300 spaces***

Based on the recommended parking rates noted above, the proposed development will require 300 parking spaces or in rate of 0.64 spaces per dwelling unit. The detail justifications for the proposed reduction and provision for shared parking are outlined the sections below.

8.1.2. Proposed Development Context

As indicated, the redevelopment proposed includes a 40-storey residential building with 467 dwelling units.

Based on NexTrans comprehensive review of the study area, it is evident that there is wide range of different types of land uses currently exist in this area such as mid-rise, high-rise residential, grocery store (Metro), medical offices and pharmacies, schools, churches, employment, banks, restaurant and retail commercial. There are high-rise apartment buildings located immediately north, south, east and west of the site. It should be noted that the site is located approximately 1 km from Square One Shopping Center, or less than 15-minute walk, and approximately 100m from Iona Plaza, or less than 2-minute walk.

8.1.3. Existing Mode Share

NexTrans has conducted a review of the existing mode share based the review of the 2016 Transportation Tomorrow Survey data, for traffic zone 3863,3852,3864. **Table 15** summarizes the mode of travel for the traffic zone 3863,3852,3864 and the detailed analysis and TTS data extraction are included in **Appendix F**.

Table 15 – Modes of Travel based on 2016 TTS Data for Traffic Zones 3863,3852,3864

Time	Trips Made by Traffic Zones 3863					
	Auto Driver	Auto Passenger	Taxi/Paid Ride Share	Transit	Cycle	Walk
AM Peak Period (6:00-9:00 AM)	53%	10%	1%	26%	0%	10%
PM Peak Period (3:00-6:00 PM)	53%	18%	1%	9%	2%	17%

Based on the information outlines in the table above, the predominant modes of travel to and from the area is auto mode (auto drive and auto passenger), which account to nearly 64% during the morning peak periods and 72% during the afternoon peak periods.

It is NexTrans' opinion that if vehicle parking is not provided, residents will make smart and more sustainable choice.

8.1.4. Household Demographic and Car Ownership

NexTrans also reviewed the vehicle ownership for the City of Mississauga Ward 4. **Table 19** summarizes the vehicle ownership based on the 2016 Transportation Tomorrow Survey Data, while the detailed extraction is included in **Appendix F.**

Table 19 - Vehicle Ownership for Ward 4 Based on 2016 TTS Data

Household Type			Household Size					Number of Available Vehicles				
House	Townhouse	Apartment	1	2	3	4	5+	0	1	2	3	4+
25%	11%	64%	24%	32%	18%	16%	11%	11%	51%	30%	6%	1%

As indicated in Table 18 above, there is a large percentage of apartment household in the area (79%), about 24% of a single person and 11% of households not own a car.

Parking management could help increase the number of households that does not own a car as parking management is the best Transportation Demand Management measure that helps reducing the number single-occupant-vehicle trips to and from the proposed development, which is consistent with the City of Mississauga Official Plan policies and sustainability objectives (indicated below).

8.1.5. City of Mississauga Official Plan (2015)

Over the last several decades, the City of Mississauga has relied on the public transit system such as Miway, Metrolinx, GO Transit and other modes of transportation. The integration of transportation and land use planning allows the City to enjoy its success today without widening or building more roads to accommodate population growth.

As indicate in Chapter 8: Create a Multi-Modal City of the Official Plan, future growth within Mississauga will be focused in the area which are well served by the existing public transit system, the existing road network and that have a number of properties with redevelopment potential. The growth areas are generally the locations where good transit access can be provided along bus and Go train stations.

The Official Plan also indicates that: *"The City will create a multi-modal transportation network for the movement of people and goods that supports more sustainable communities. The multi-modal transportation system is composed of the following modes of travel:*

- *Transit;*
- *Vehicular (e.g., cars and trucks);*
- *Active transportation (e.g., walking and cycling);*
- *Rail (passenger and freight); and*
- *Air travel (passenger and freight).*

While vehicle trips will continue to account for a significant share of the total trips, the length of these trips should shorten in response to the to the creation of mixed use nodes that support the daily needs of surrounding residential and business communities, and the share of auto trips will be reduced as opportunities to travel by transit, cycling and walking improve."

Our review of the Official Plan Transportation Policies and directions indicate that there is a need to reduce automobile trips by managing parking in the City in order to reduce single-occupant-vehicle trips and to support other modes of transportation such as public transit and active transportation.

8.1.6. Existing Mississauga Transit Service

The subject site is located adjacent to Miway Bus Routes 8 Cawthra, 53 Kennedy and 3 Bloor, those routes will connect to the City Center Transit Terminal. The proposed development is located about 1 km from City Centre Transit Terminal, which is part of Mississauga Transitway project that delivers 18 kilometers of dedicated busway. The City Centre Transit Terminal is linked to other 11 stations from Winston Churchill Boulevard to Renforth Drive. The proposed development also located about 500 m to Hurontario St and Burnhamthorpe Road intersection which will be part of Hurontario Light Rail (LRT) project that expected to complete on 2024. The Hurontario LRT will delivers 18 kilometres of dedicated bus lane with 19 stops, linking local transit like MiWay, Brampton Transit, Zum and Mississauga Transitway at Square One, in between Brampton and Mississauga.

It is NexTrans opinion that the vehicle parking is required for the residents who need, of the proposed development, and this provision is necessary to support transit and TDM measures in order to eliminate the numbers of single-occupant-vehicle trips to and from the proposed development.

Figure 14 illustrates the Mississauga Transitway.

Figure 14 – Mississauga Transitway

Source: www.metrolinx.com/en/greaterregion/projects/hurontario-lrt.aspx

8.1.7. Available On-Street Parking and Car-share Locations in the Area

Currently, there are on-street parking along north side of Elm Drive East within a few minutes walk to the proposed development.

Carshare services or membership also play an important role in car ownership reduction. This helps minimizing the car ownership costs, as well as the numbers of auto trips to and from the proposed development. This is also a great option for the residents that only need to use the cars on the weekend for grocery shopping or for non-work-related trips. Based on NexTrans' review of the area, there are some available rental car services located within walking distance from the proposed development.

Figure 15 illustrates the Zipcar locations and on-street parking

Figure 15 – Available On-street Parking and Zipcar Locations

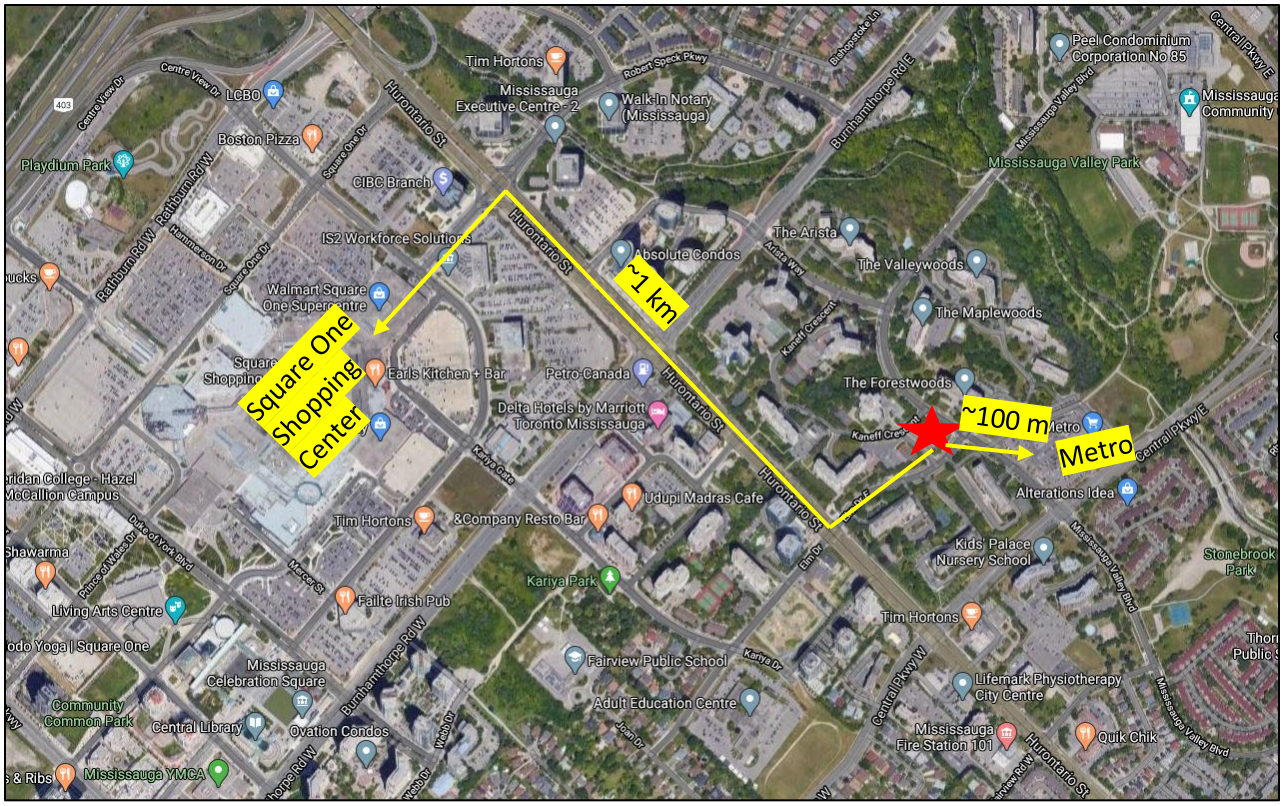
Source: Google Maps

8.1.8. Neighbourhood Context

Based on NexTrans comprehensive review of the study area, it is evident that there is a wide range of different types of land uses currently exist in this area such as high-rise, low-rise residential, grocery store (Metro), medical offices and pharmacies, schools, employment, banks, restaurant and retail commercial. It should be noted that the site is located approximately 1 km from Square One Shopping Center or less than 15-minute walk, and 100 m from Iona Plan that including Metro, or less than 2-minute walk.

Figure 16 illustrate the approximate walking distance (approximately 15-minute walk or less) to/from the proposed development.

Figure 16 – Available Amenities in the Area Within Walking Distance



Source: Google Maps

8.1.9. Increase Housing Supply

The Greater Toronto Area, including the City of Mississauga, is currently facing a housing shortage and affordability issues. Demand for new housing is high; especially during the COVID-19 pandemic. Once the pandemic is over, housing availability and affordability are expected to further decline. One component that increases the cost of new units in multi-storey buildings, is the requirement to provide a minimum rate of parking; even in areas well serviced by transit with historically low vehicle ownership and use rates. The cost of providing one underground parking space is in the range of $48,000 to $160,000 per space due to the aggregate impact of land costs, constructability, site constraints and other factors leading to high construction costs (Source: City of Toronto Presentation: Review of Parking Requirements for New Development - Sept 2021).

Furthermore, the more residential or visitor parking spaces that a proposed development has to provide, the more expensive the maintenance costs will be for the owners. Monthly maintenance cost for a parking space could be up to

$100 per month, on top of the capital costs of a parking space. The provision of less parking can reduce overall maintenance costs and result in lower housing costs/greater housing affordability.

8.1.10. Covid-19 Pandemic and Working from Home

As the COVID-19 pandemic is still impacting globally, in Canada, the Province of Ontario, and particularly, the Town of Aurora and York Region, this pandemic will permanently alter the way people work and travel in the future. For example, since the lockdown in March 2020, the Town experienced a significant decrease in peak hour travel on both private vehicles and other trips in general. This is due to the fact that many office employees and employers elected to work from home.

Based on various reporting from media, this working from home trend for office workers may continue even when the pandemic is over as both employees and employers have invested significantly in remote working equipment and

infrastructures, as well as faster internet and online meeting platforms such as Zoom, Microsoft Teams and Skype for business.

8.1.11. A Reduction to the Minimum Vehicle Parking Requirements is Consistent with Provincial and Regional Direction

The Provincial Policy Statement, 2020 provides policy direction province-wide on land use planning and development to promote strong communities, a strong economy, and a clean and healthy environment. It includes policies which encourage land use patterns that minimize the length and number of vehicle trips and support current and future use of transit and active transportation.

The Growth Plan (2019) contains policies related to reducing dependence on the automobile and promoting and supporting active transportation and transit. Discouraging auto-dependence requires that there are reasonable alternatives to cars available. The Region is working with the Province to ensure that areas near new stations develop in a transit-supportive way. Widely available automobile parking, mandated by parking minimums, supports continued widespread automobile use and puts the financial viability of the transit investments at risk. This is also addressed by the Growth Plan (2019) Policy 2.2.4.9 which says that "within all major transit station areas, development will be supported, where appropriate, by: c) providing alternative development standards, such as reduced parking standards."

8.1.12. High Residential Vehicle Parking Rates Result in More Car Ownership and More Driving While Reducing Transit Usage

Many municipalities have historically required new development projects to include parking, out of fear that if new residents are not provided with parking they will park around the local community, and this will cause issues. The assumption here, behind both the policy and the pushback on reductions, is that people will always choose to drive, and the urban environment should be designed to accommodate that inevitable choice. But new research shows how that assumption is often backwards — offering the strongest evidence yet that parking doesn't just follow driving in cities, but can actually cause it. The new work comes from a group of urban planning scholars at UCLA and UC-Santa Cruz, led by Adam Millard- Ball, and has been published in an issue of the journal Urban Studies. Using an innovative and elegant study method, the researchers show clearly that "increased parking causes more car ownership and more driving while reducing transit use." They continue: "In summary, the evidence from our study robustly supports that urban residents' transportation behavior— but not their employment — is affected by local features of the built environment, and particularly so by parking." The conclusion underscores the importance of urban design in shaping behavior.

This new study distinguishes itself by finding a way to effectively (and ethically) randomize a population: San Francisco's housing lottery. In San Francisco, inclusionary zoning regulations typically require new developments with 10 or more residential units to provide affordable housing, which is offered to income-eligible households through a lottery. This is the gold standard for showing causation through a randomized trial.

In spring 2019 — pre-pandemic — the researchers mailed a travel behavior survey to housing lottery winners in 197 development projects across San Francisco. The short questionnaire, provided in four different languages, asked about typical travel mode (car, transit, bike, walking), car-ownership status, and employment status. Roughly 780 households responded.

When the researchers matched travel behavior to parking requirements, they found "a clear and substantive trend:" as parking supply rose, so did car-ownership. In buildings without any parking, only 38 percent of respondents owned a car. Car-ownership climbed as parking requirements increased, reaching 81 percent of respondents in buildings that required one parking space per housing unit. **Figure 17** illustrates the survey responses for car ownership by residential parking ratio.

Figure 17 – Survey Responses for Car Ownership by Residential Parking Ratio

Owning a car isn't the same as using it, but further analysis found a statistically significant relationship between parking supply and driving, too. Generally speaking, households that lived near public transit, or that had good walking or cycling access, tended to use those options more often than households that did not. But when it came to using transit the effect of a building's parking ratio was "more than twice as large" as that of its transit access.

In other words, even in buildings with transit access, parking supply was the stronger pull — increasing driving behavior by the same amount it reduced transit use. When buildings provide ample parking, residents buy a car and drive. But when buildings have transit access without easy parking, residents use other ways to get around.

"Where streets are relatively walkable and transit service is frequent," writes the research team, "parking emerges as the key factor shaping household travel behavior."

One final, critical result: the researchers found no connection at all between parking supply and full-time employment status. That's very important, because it suggests that reducing or eliminating parking spaces won't negatively impact a household's ability to keep a job, as is often feared.

The study represents a significant step forward for urban mobility policy and offers robust, conclusive, and definitive evidence through a controlled study that parking minimums do indeed cause more driving. In alignment with this study, San Francisco eliminated parking minimums. And likewise, supported by this study, San Jose; Cambridge, Massachusetts; Culver City, California; Lexington, Kentucky; and Anchorage, Alaska has all eliminated parking minimums as of October of last year.

The results of this "gold standard" study was published after the preparation of the parking background study, Parking Master Plan and Implementation Strategy, May 2019, prepared by WSP which was used to inform the current Mississauga parking rates implemented December 6, 2021. Had this study proving the direct causation between providing a 0.6 spaces/unit and driving been available before the preparation of their report, it is expected that WSP would have

recommended a much lower minimum parking rate nearing 0.3 to 0.4 spaces/unit and / or recommended a complete elimination of minimum rates in areas well-served by transit.

(Source: https://people.ucsc.edu/~jwest1/articles/MillardBall_West_Rezaei_Desai_SFBMR_UrbanStudies.pdf).

8.1.13. A Reduction to the Minimum Vehicle Parking Requirements Increases the Supply of Affordable Housing

Increasing the supply of affordable housing is a Provincial, Region of Peel and City of Mississauga priority. Parking minimums increase the cost of housing, by adding to construction costs which may in turn be passed on to residents. Typical underground parking costs in the GTA Complex conditions can add up to $200/ft2 more (Source: AltusGroup - 2021 Canadian Cost Guide). This translates to a $48,000 - $160,000 increase in the cost of housing. There are also short term and long-term maintenance/condo fees related to this parking. The ability to avoid the cost of parking by choosing housing without parking is limited by the existence of minimum parking requirements. Many municipalities in Ontario, Canada and abroad have acknowledged that current automobile parking standards represent a barrier to the City achieving its housing vision and have recently made decisions to severely reduce and / or eliminate parking minimums in areas well- served by transit:

8.1.14. A Reduction to the Minimum Vehicle Parking Requirements Will Help Supporting Local Businesses

A lower parking rate can help to support local businesses and improve the overall vibrancy of the community. When tenants are encouraged to use alternative forms of transportation, they are more likely to walk or bike to local shops, restaurants, and other businesses. This can help to support the local economy and create a more vibrant and dynamic community. A study from London England found that implementing policies aimed at reducing auto-dependence and encouraging transportation alternatives to automobiles, increased retail spends by 30% in local town centres and on main streets. And over a month, people who walk to the main street spend up to 40% more than people who drive there.

(Source: https://content.tfl.gov.uk/town-centres-report-13.pdf).

This is consistent with other policy and design interventions implemented in other cities like the City of Toronto, New York City and Seattle. For example, the introduction of bike lanes, and the recent removal of parking minimums, on Vanderbilt Avenue, in New York City, led to a 102% increase in retails sales and, similarly, on Latona Avenue and 65 Street, in Seattle, a similar intervention increased retail sale by 400%.

(Source:https://www.toronto.ca/wp-content/uploads/2019/11/8fd3-Bloor-Bike-Lane-Economic-Impact-ResearchSummary-2019.pdf).

8.1.15. A Reduction to the Minimum Vehicle Parking Requirements has a Number of General Benefits

A reduction in the minimum parking requirements which decreases vehicle trips and increases transit usage (as proven via the UCLA study above) also provides the following benefits:

- Reduced traffic congestion in the area. Refer to Section 5.2 (2016 TTS Mode Share) of this report which demonstrates that a reduction in vehicle parking reduces the number single-occupancy trips.

- Reduced GHG emissions. The grams of CO2 per person kilometer traveled for a car is 243.8 grams, 20 grams for a streetcar, and zero grams for walking and biking.

(Source: https://sensibletransport.org.au/project/transport-and-climate-change/)

- Safer streets for all road users, other drivers, bicyclists, pedestrians. A new controlled study from the Department of Safety and the Environment Institute of Transport Economics in Oslo, Norway showed that the more bikes there were,

the more drivers saw bikes and were able to coexist safely with riders. The number of accidents between cars and bicycles decreased substantially as the number of people riding bicycles increased.

8.1.16. Transportation Demand Management Measures

The main objective of the Transportation Demand Management (TDM) is to encourage residents to take alternative modes of transportation such as public transit, walking, cycling and carpooling. Based on NexTrans' experience in conducting transportation impact studies in various jurisdictions in the Great Toronto and Hamilton Area, parking management is the best Transportation Demand Management measure that helps reducing the number single-occupant-vehicle trips to and from the proposed development, which is consistent with the City of Mississauga Official Plan policies and sustainability objectives. NexTrans provides additional recommendations for the TDM measures in Section 9 of this study to support the recommended parking rates reduction for the proposed development.

8.2. Bicycle Parking

It is our understand that the City Zoning Bylaw has implemented a minimum requirement of 0.6 bicycle parking spaces per unit (Class A – long term) and 0.05 bicycle parking spaces (Class B – short term). therefore, the proposed development will require 303 Class A bicycle spaces and 16 Class B bicycle spaces. The proposed development will provide 280 Class A bicycle parking spaces and 23 Class B bicycle spaces (which will be provided by landscapes with the next SPA submission) which meets the bylaw requirement.

9.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a co-ordinated series of actions aimed at maximizing the people moving capability of the transportation system. It is intended help reduce single-occupant auto use. Potential TDM measures may include but not limited to: TDM supportive land use, bicycle and pedestrian programs and facilities, public transit improvements, preferential treatments for buses and high occupancy vehicles (if applicable), ridesharing, and employee incentives.

Based on the review of the context of the proposed development in relation to the TDM requirements in the City of Mississauga Traffic Impact Study Guidelines, the following TDM measures and incentives are recommended for the proposed development and summarizes in **Table 20**.

Table 20 – Recommended TDM Measures for the Proposed Development

Category	TDM Initiative suggested by NexTrans	Recommended Actions	Responsibility
Cycling	• Visible, well-lit, short-term bicycle parking for visitors • Secure, indoor bicycle parking storage spaces for tenants/residents • Ensure development connects to bicycle network	• Provide 303 bicycle parking spaces including short-term and long-term	• Applicant
Walking	• Safe, attractive and direct walkways for pedestrian linking building entrances with public sidewalks and with key destinations such as schools. • Enhanced pedestrian amenities on-site (benches, landscaping, lighting)	• Provide direct shared pedestrian and cycling connections from the proposed development to Mississauga Valley Boulevard and Elm Drive East	• Applicant

Transit	• Enhanced walking routes between main building entrance(s) and transit stops/stations • Bicycle parking located at or near transit stops	• Provide direct connections from the proposed development to the closest bus stop on Mississauga Valley Drive	• Applicant
Parking	• Reduced minimum parking requirements based on proximity to transit and non-auto mode • Shared parking with nearby developments or on-street spaces • Unbundle parking costs from unit costs	• Consider unbundle parking rent with the unit. • Reduced parking supply to support TDM and transit	• Applicant
Information Brochure/Letter	• Provide an information brochure/letter for each residential unit that including Mississauga Transit System (Miway) schedules, GO Transit, Cycling maps, and community maps	• Provide a brochure (or letter) to new residents that includes all website links to Mississauga Transit System (Miway) schedules, community maps and cycling maps. The information package can be distributed at the rental office.	• Applicant

10.0 CONCLUSIONS / FINDINGS

10.1. Study Conclusions

The findings and conclusions of the analysis are as follows:

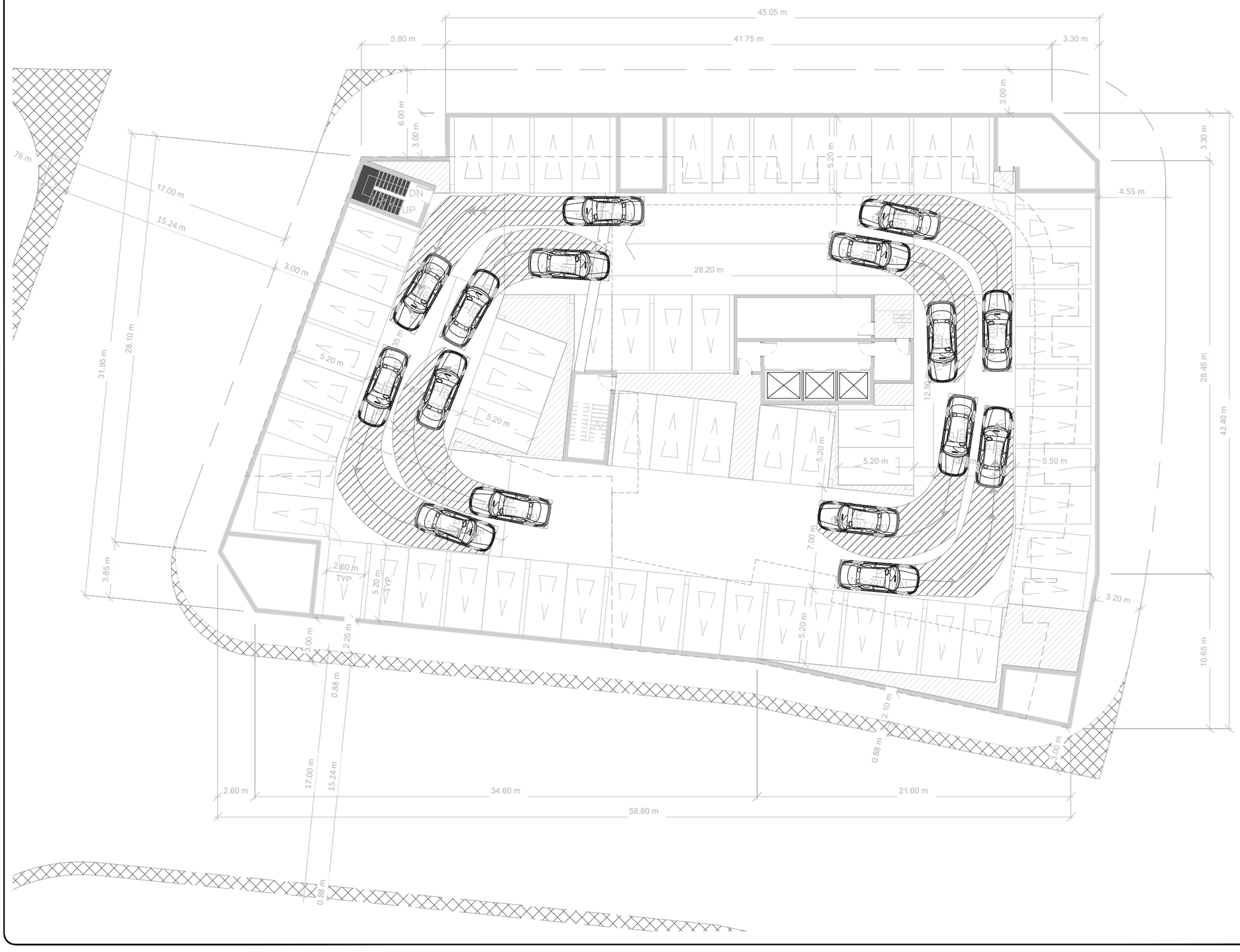
- The proposed development is expected to generate:
    - 144 total two-way trips (35 inbound and 109 outbound) and 167 total two-way trips (102 inbound and 65 outbound) during the morning and afternoon peak hours, respectively.
    - 92 total two-way auto trips (22 inbound and 70 outbound) and 120 total two-way auto trips (73 inbound and 47 outbound) during the morning and afternoon peak hours, respectively.
    - 37 total two-way transit trips (9 inbound and 28 outbound) and 15 total two-way transit trips (9 inbound and 6 outbound) during the morning and afternoon peak hours, respectively.
    - 15 total two-way active trips (4 inbound and 11 outbound) and 32 total two-way active trips (20 inbound and 12 outbound) during the morning and afternoon peak hours, respectively.
- Under the existing, future background and future total conditions, the intersection operation capacity analysis indicates that all intersections considered are expected to operate at acceptable levels of service except for the intersection of Hurontario Street and Elm Drive, the eastbound left and northbound thru due to high turning movement of the background development, it is our recommendation that the City should monitor these movements in the future when the background developments fully build out. It should be noted that the lane configurations for Hurontario Street was provided by City of Mississauga's staff to respect the Hurontario LRT project that expected to complete on Fall 2024, was applied to this horizon year assessment. The lane reduction on Hurontario from three through lanes in each direction to two through, and left turn lanes will be protective only. As such, no physical improvement is required at this horizon year, due to the change of Hurontario LTR.

- The analysis indicates that the proposed access via Obelisk Way is expected to operate at acceptable levels of service with minimal delays or queues. No improvement to the existing road network is required to accommodate the proposed development.
- For the reasons noted above, it is our opinion that the existing transportation network is adequate and Nextrans does not recommend any additional physical improvements for the area at this time under the future total conditions.
- Based on the City of Mississauga By-Law 0225-2007 Part 3 – Parking, Loading and Stacking Lane Regulations, a total of 467 parking spaces are required for the proposed development. It is our understanding that the proposed development provides 300 vehicle parking spaces (including 254 parking spaces for resident and 46 parking spaces for visitor) or in rate of 0.54 spaces/ unit for resident and 0.10 spaces/unit for visitor parking, this presenting a technical shortfall of 167 resident parking spaces (~35.7% reduction).
- It is our understand that the City Zoning Bylaw has implemented a minimum requirement of 0.6 bicycle parking spaces per unit (Class A – long term) and 0.05 bicycle parking spaces (Class B – short term). therefore, the proposed development will require 303 Class A bicycle spaces and 16 Class B bicycle spaces. The proposed development will provide 280 Class A bicycle parking spaces and 23 Class B bicycle spaces (which will be provided by landscapes with the next SPA submission) which meets the bylaw requirement.
- The proposed development will use the private garbage pick up and a loading space is provided for garbage pick up that will meet the City's By-Law requirement. AutoTURN software was used to demonstrate the turning movement requirements for garbage pick-up, delivery and passenger vehicles at the proposed access via Obelisk Way, the proposed loading and internal circulation to the underground parking.

10.2. Study Recommendations

Based on the assessment, our report recommends that:

- The proposed development implements the TDM measures and incentives identified in this report to support active transportation and transit and to reduce the numbers of single-occupant-vehicle trips to and from the proposed development.
- The proposed development provides direct shared pedestrian and cycling connections from the proposed development building entrances directly to public streets, where appropriate.
- The proposed development considers reduce 35.7% of required parking supply (or 0.64 spaces/unit) to support TDM and transit.
- Based on our review of the site plan, the warning light and a convex mirror will be installed on the wall where applicable to warning the passengers car going out from the underground parking, for safety concerns.
- The City should monitor the eastbound and northbound left movements due to high turning movements of the background developments.



KEY PLAN

BENCHMARK

REVISIONS

NO.	REVISION	DATE

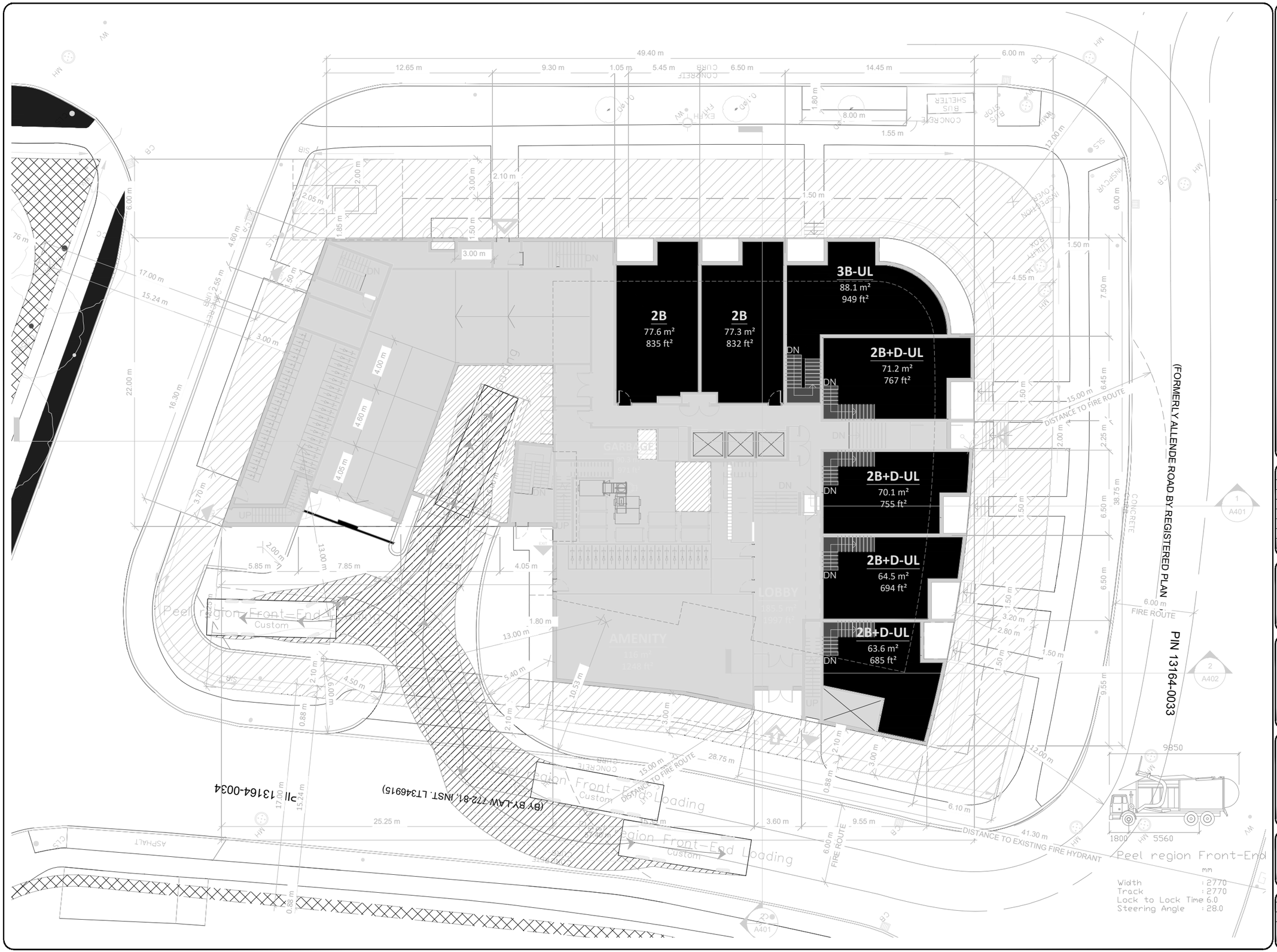
STAMP

nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

PROJECT NAME:
RESIDENTIAL DEVELOPMENT
3575 Kaneff Crescent
(City of Mississauga)

DRAWING TITLE:
AutoTURN Analysis
(P TAC-2017)

DESIGN BY: K.A.	DATE: October 19, 2022
CHECKED BY: R.P.	PROJECT NO. NT-19-174
DRAWN BY: K.A.	
SCALE: NTS	DRAWING NO. Figure 12



KEY PLAN

BENCHMARK

REVISIONS

NO	REVISION	DATE	BY

STAMP

nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

PROJECT NAME:

RESIDENTIAL DEVELOPMENT
3575 Kaneff Crescent
(City of Mississauga)

DRAWING TITLE:

AutoTURN Analysis
(Peel Region
Front-End Loading)

DESIGN BY: K.A.	DATE: October 18, 2022
CHECKED BY: R.P.	PROJECT NO. NT-19-174
DRAWN BY: K.A.	
SCALE: NTS	DRAWING NO. Figure 12

APPENDIX A

Existing Traffic Data

Turning Movement Count (1 . HURONTARIO ST & ELM DR)

Start Time	N Approach HURONTARIO ST						E Approach ELM DR						S Approach HURONTARIO ST						W Approach ELM DR						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	9	235	6	0	11	250	22	8	14	0	16	44	3	231	9	0	9	243	17	8	25	0	7	50	587	
07:15:00	2	222	7	0	10	231	25	4	8	0	11	37	8	305	6	0	5	319	14	6	26	0	6	46	633	
07:30:00	8	283	10	0	19	301	31	9	29	0	10	69	5	305	12	0	7	322	15	9	28	0	16	52	744	
07:45:00	6	319	8	0	17	333	32	14	24	0	11	70	8	361	11	0	9	380	21	15	33	0	15	69	852	2816
08:00:00	10	377	10	1	11	398	25	16	11	0	11	52	9	400	13	0	7	422	24	7	37	0	6	68	940	3169
08:15:00	9	296	11	0	13	316	33	9	24	0	12	66	17	335	16	0	8	368	19	13	39	0	9	71	821	3357
08:30:00	11	238	11	2	14	262	35	24	17	0	6	76	12	341	26	0	9	379	16	14	22	0	8	52	769	3382
08:45:00	18	252	14	0	8	284	18	16	14	0	12	48	11	387	20	0	25	418	17	15	35	0	14	67	817	3347
09:00:00	14	227	17	1	11	259	17	21	10	0	13	48	5	348	24	0	4	377	15	8	33	0	8	56	740	3147
09:15:00	11	224	11	0	12	246	20	18	9	0	10	47	10	301	17	0	14	328	10	12	25	0	13	47	668	2994
09:30:00	8	230	9	2	15	249	13	9	8	0	13	30	9	314	14	0	5	337	13	10	12	0	6	35	651	2876
09:45:00	8	253	18	0	14	279	16	15	12	0	1	43	11	251	12	0	9	274	15	11	25	0	5	51	647	2706
BREAK																										
16:00:00	10	337	23	0	16	370	19	17	12	0	18	48	18	317	17	0	1	352	28	21	16	0	2	65	835	
16:15:00	8	396	19	0	12	423	16	19	5	0	13	40	16	337	20	0	4	373	41	19	10	0	6	70	906	
16:30:00	10	410	18	2	14	440	13	24	9	0	17	46	20	284	11	0	2	315	29	20	11	0	15	60	861	
16:45:00	14	398	20	2	20	434	21	26	8	0	14	55	23	303	15	0	10	341	30	20	11	0	11	61	891	3493
17:00:00	21	460	17	3	10	501	17	19	16	0	10	52	18	289	18	0	6	325	23	23	13	0	14	59	937	3595
17:15:00	8	404	27	0	13	439	20	28	15	0	24	63	18	304	25	0	8	347	31	14	6	0	11	51	900	3589
17:30:00	20	410	22	0	19	452	23	21	16	0	26	60	13	347	8	0	9	368	31	21	10	0	12	62	942	3670
17:45:00	9	383	14	1	19	407	30	23	13	0	19	66	28	316	21	0	10	365	17	18	7	0	21	42	880	3659
18:00:00	6	400	18	1	16	425	21	24	15	0	17	60	20	370	18	0	14	408	27	19	13	0	20	59	952	3674
18:15:00	11	411	26	1	12	449	15	19	14	0	21	48	18	385	22	0	7	425	26	18	11	0	12	55	977	3751
18:30:00	10	371	23	2	14	406	26	21	15	0	8	62	18	340	20	0	12	378	26	25	21	0	19	72	918	3727
18:45:00	10	328	16	1	10	355	14	23	10	0	19	47	15	322	16	0	4	353	25	17	7	0	15	49	804	3651
Grand Total	251	7864	375	19	330	8509	522	427	328	0	332	1277	333	7793	391	0	198	8517	530	363	476	0	271	1369	**19672**	-
Approach%	2.9%	92.4%	4.4%	0.2%		-	40.9%	33.4%	25.7%	0%		-	3.9%	91.5%	4.6%	0%		-	38.7%	26.5%	34.8%	0%		-	-	-
Totals %	1.3%	40%	1.9%	0.1%		43.3%	2.7%	2.2%	1.7%	0%		6.5%	1.7%	39.6%	2%	0%		43.3%	2.7%	1.8%	2.4%	0%		7%	-	-
Heavy	10	217	5	0		-	7	63	1	0		-	6	208	6	0		-	3	61	19	0		-	-	-
Heavy %	4%	2.8%	1.3%	0%		-	1.3%	14.8%	0.3%	0%		-	1.8%	2.7%	1.5%	0%		-	0.6%	16.8%	4%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

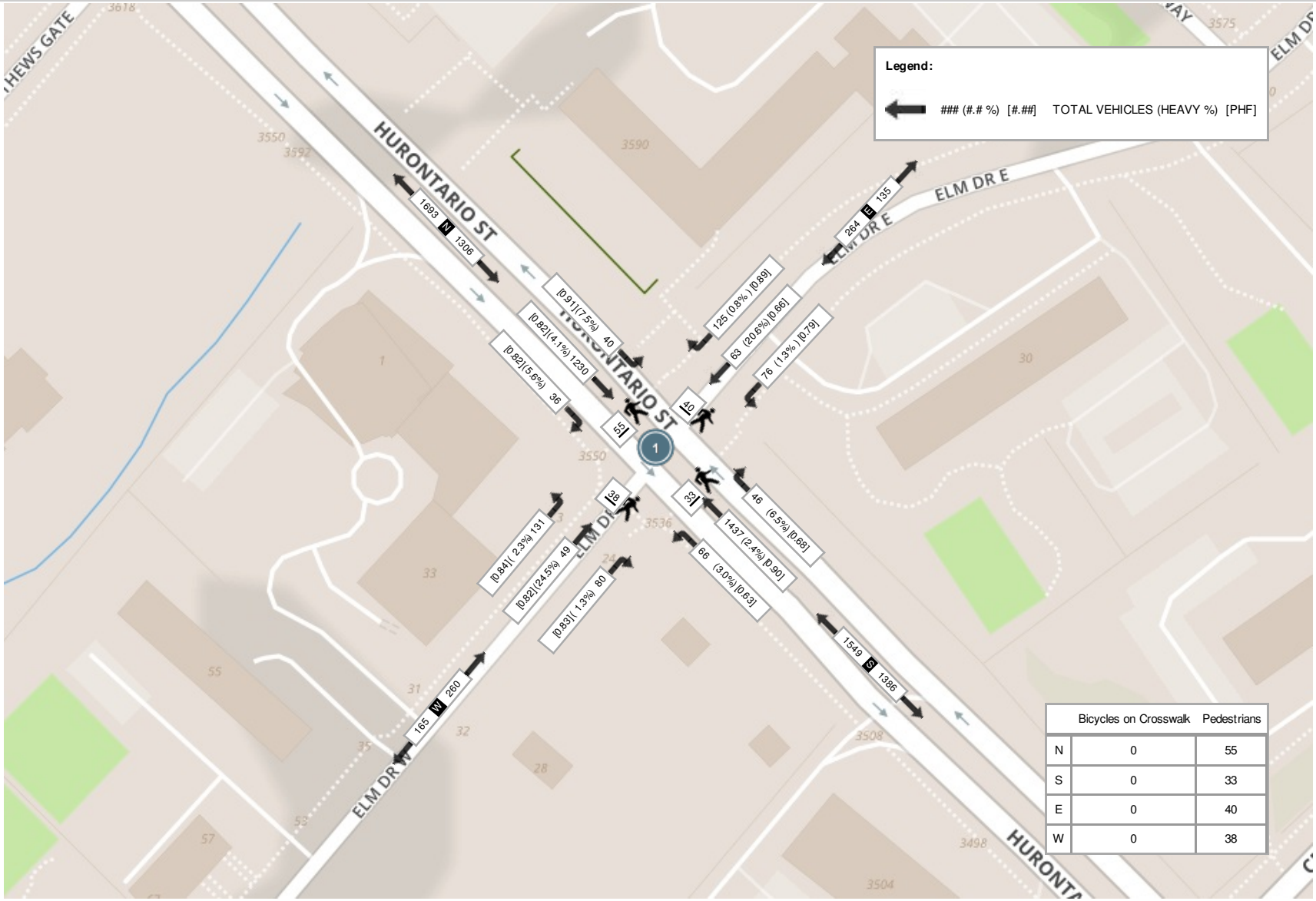
Peak Hour: 07:45 AM - 08:45 AM Weather: Few Clouds (-2.64 °C)

Start Time	N Approach HURONTARIO ST						E Approach ELM DR						S Approach HURONTARIO ST						W Approach ELM DR						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	6	319	8	0	17	333	32	14	24	0	11	70	8	361	11	0	9	380	21	15	33	0	15	69	852
08:00:00	10	377	10	1	11	398	25	16	11	0	11	52	9	400	13	0	7	422	24	7	37	0	6	68	940
08:15:00	9	296	11	0	13	316	33	9	24	0	12	66	17	335	16	0	8	368	19	13	39	0	9	71	821
08:30:00	11	238	11	2	14	262	35	24	17	0	6	76	12	341	26	0	9	379	16	14	22	0	8	52	769
Grand Total	36	1230	40	3	55	1309	125	63	76	0	40	264	46	1437	66	0	33	1549	80	49	131	0	38	260	**3382**
Approach%	2.8%	94%	3.1%	0.2%		-	47.3%	23.9%	28.8%	0%		-	3%	92.8%	4.3%	0%		-	30.8%	18.8%	50.4%	0%		-	**-**
Totals %	1.1%	36.4%	1.2%	0.1%		38.7%	3.7%	1.9%	2.2%	0%		7.8%	1.4%	42.5%	2%	0%		45.8%	2.4%	1.4%	3.9%	0%		7.7%	**-**
PHF	0.82	0.82	0.91	0.38		0.82	0.89	0.66	0.79	0		0.87	0.68	0.9	0.63	0		0.92	0.83	0.82	0.84	0		0.92	**-**
Heavy	2	50	3	0		55	1	13	1	0		15	3	35	2	0		40	1	12	3	0		16	**-**
Heavy %	5.6%	4.1%	7.5%	0%		4.2%	0.8%	20.6%	1.3%	0%		5.7%	6.5%	2.4%	3%	0%		2.6%	1.3%	24.5%	2.3%	0%		6.2%	**-**
Lights	34	1180	37	3		1254	124	50	75	0		249	43	1402	64	0		1509	79	36	128	0		243	**-**
Lights %	94.4%	95.9%	92.5%	100%		95.8%	99.2%	79.4%	98.7%	0%		94.3%	93.5%	97.6%	97%	0%		97.4%	98.8%	73.5%	97.7%	0%		93.5%	**-**
Single-Unit Trucks	1	18	0	0		19	0	0	0	0		0	0	9	0	0		9	0	0	1	0		1	**-**
Single-Unit Trucks %	2.8%	1.5%	0%	0%		1.5%	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.6%	0%	0%	0.8%	0%		0.4%	**-**
Buses	1	31	3	0		35	1	13	1	0		15	3	24	2	0		29	1	12	2	0		15	**-**
Buses %	2.8%	2.5%	7.5%	0%		2.7%	0.8%	20.6%	1.3%	0%		5.7%	6.5%	1.7%	3%	0%		1.9%	1.3%	24.5%	1.5%	0%		5.8%	**-**
Articulated Trucks	0	1	0	0		1	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	**-**
Articulated Trucks %	0%	0.1%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0.1%	0%	0%		0.1%	0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	2%	0%	0%		0.4%	**-**
Pedestrians	-	-	-	-	55	-	-	-	-	-	40	-	-	-	-	-	33	-	-	-	-	-	38	-	**-**
Pedestrians%	-	-	-	-	33.1%		-	-	-	-	24.1%		-	-	-	-	19.9%		-	-	-	-	22.9%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

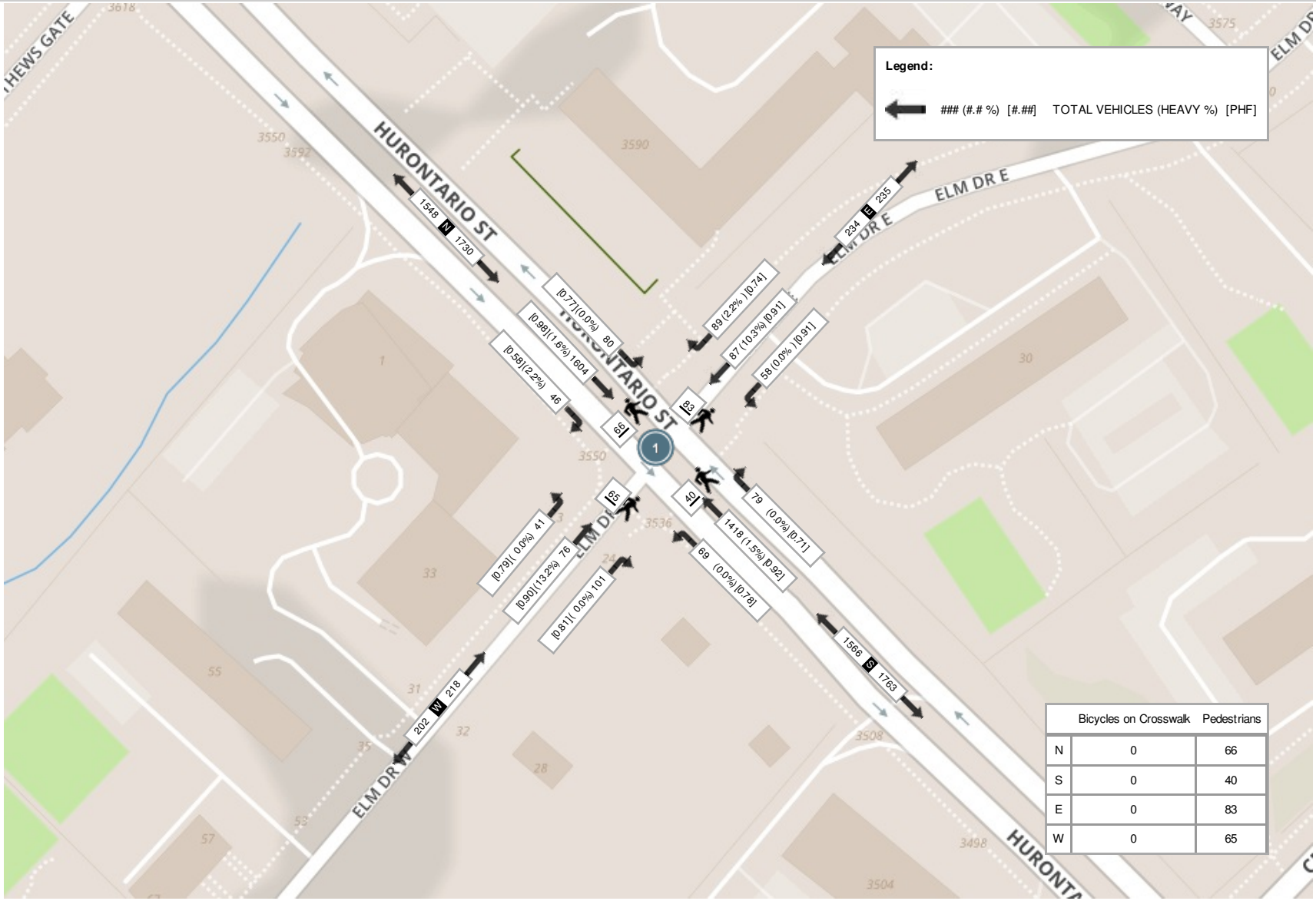
Peak Hour: 05:30 PM - 06:30 PM Weather: Scattered Clouds (5.31 °C)

Start Time	N Approach HURONTARIO ST						E Approach ELM DR						S Approach HURONTARIO ST						W Approach ELM DR						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:30:00	20	410	22	0	19	452	23	21	16	0	26	60	13	347	8	0	9	368	31	21	10	0	12	62	942
17:45:00	9	383	14	1	19	407	30	23	13	0	19	66	28	316	21	0	10	365	17	18	7	0	21	42	880
18:00:00	6	400	18	1	16	425	21	24	15	0	17	60	20	370	18	0	14	408	27	19	13	0	20	59	952
18:15:00	11	411	26	1	12	449	15	19	14	0	21	48	18	385	22	0	7	425	26	18	11	0	12	55	977
Grand Total	46	1604	80	3	66	1733	89	87	58	0	83	234	79	1418	69	0	40	1566	101	76	41	0	65	218	**3751**
Approach%	2.7%	92.6%	4.6%	0.2%		-	38%	37.2%	24.8%	0%		-	5%	90.5%	4.4%	0%		-	46.3%	34.9%	18.8%	0%		-	**-**
Totals %	1.2%	42.8%	2.1%	0.1%		46.2%	2.4%	2.3%	1.5%	0%		6.2%	2.1%	37.8%	1.8%	0%		41.7%	2.7%	2%	1.1%	0%		5.8%	**-**
PHF	0.58	0.98	0.77	0.75		0.96	0.74	0.91	0.91	0		0.89	0.71	0.92	0.78	0		0.92	0.81	0.9	0.79	0		0.88	**-**
Heavy	1	25	0	0		26	2	9	0	0		11	0	21	0	0		21	0	10	0	0		10	**-**
Heavy %	2.2%	1.6%	0%	0%		1.5%	2.2%	10.3%	0%	0%		4.7%	0%	1.5%	0%	0%		1.3%	0%	13.2%	0%	0%		4.6%	**-**
Lights	45	1579	80	3		1707	87	78	58	0		223	79	1397	69	0		1545	101	66	41	0		208	**-**
Lights %	97.8%	98.4%	100%	100%		98.5%	97.8%	89.7%	100%	0%		95.3%	100%	98.5%	100%	0%		98.7%	100%	86.8%	100%	0%		95.4%	**-**
Single-Unit Trucks	1	6	0	0		7	2	0	0	0		2	0	4	0	0		4	0	0	0	0		0	**-**
Single-Unit Trucks %	2.2%	0.4%	0%	0%		0.4%	2.2%	0%	0%	0%		0.9%	0%	0.3%	0%	0%		0.3%	0%	0%	0%	0%		0%	**-**
Buses	0	19	0	0		19	0	9	0	0		9	0	15	0	0		15	0	10	0	0		10	**-**
Buses %	0%	1.2%	0%	0%		1.1%	0%	10.3%	0%	0%		3.8%	0%	1.1%	0%	0%		1%	0%	13.2%	0%	0%		4.6%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.1%	0%	0%		0.1%	0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	66	-	-	-	-	-	83	-	-	-	-	-	40	-	-	-	-	-	65	-	**-**
Pedestrians%	-	-	-	-	26%		-	-	-	-	32.7%		-	-	-	-	15.7%		-	-	-	-	25.6%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM Weather: Few Clouds (-2.64 °C)



Peak Hour: 05:30 PM - 06:30 PM Weather: Scattered Clouds (5.31 °C)



Turning Movement Count (4 . ELM DR E & MISSISSAUGA VALLEY BLVD)

Start Time	N Approach						E Approach						S Approach						W Approach						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	3	24	2	0	2	29	1	6	12	0	2	19	7	24	5	0	1	36	19	0	4	0	1	23	107	
07:15:00	3	23	1	0	5	27	6	5	6	0	2	17	1	26	5	0	2	32	14	2	4	0	1	20	96	
07:30:00	3	42	2	0	8	47	8	4	12	0	8	24	4	29	9	0	6	42	26	1	8	0	4	35	148	
07:45:00	3	35	2	0	8	40	4	6	13	0	8	23	2	22	7	0	6	31	14	2	13	0	7	29	123	474
08:00:00	9	44	3	0	12	56	6	5	21	0	11	32	4	22	13	0	12	39	26	3	6	0	10	35	162	529
08:15:00	6	45	1	0	4	52	5	8	8	0	1	21	9	21	13	0	7	43	13	2	10	0	5	25	141	574
08:30:00	4	27	1	0	10	32	9	6	8	0	4	23	4	29	10	0	7	43	25	2	7	0	7	34	132	558
08:45:00	4	46	2	0	8	52	3	10	10	0	6	23	3	34	16	0	1	53	17	5	8	0	10	30	158	593
09:00:00	6	36	1	0	3	43	2	7	8	0	8	17	5	36	12	0	9	53	17	4	8	0	0	29	142	573
09:15:00	6	35	1	0	7	42	1	4	13	0	12	18	7	35	13	0	7	55	22	3	4	0	0	29	144	576
09:30:00	6	38	3	0	5	47	3	6	8	0	6	17	3	22	12	0	3	37	15	3	8	0	5	26	127	571
09:45:00	5	29	2	0	6	36	3	2	5	0	4	10	3	26	9	0	6	38	11	3	6	0	8	20	104	517
BREAK																										
16:00:00	8	64	9	0	7	81	4	5	6	0	11	15	14	50	23	0	12	87	26	3	10	0	9	39	222	
16:15:00	11	65	3	0	10	79	1	3	9	0	18	13	11	48	24	0	12	83	29	5	7	0	7	41	216	
16:30:00	16	65	4	0	6	85	4	0	7	0	19	11	11	42	34	0	10	87	28	3	5	0	9	36	219	
16:45:00	16	65	9	0	5	90	5	4	5	0	20	14	17	67	18	0	12	102	31	2	8	0	5	41	247	904
17:00:00	11	67	11	0	8	89	2	3	13	0	10	18	9	64	31	0	15	104	27	4	7	0	11	38	249	931
17:15:00	20	72	9	0	9	101	2	5	4	0	14	11	10	68	26	0	8	104	27	6	9	0	14	42	258	973
17:30:00	20	63	6	0	7	89	3	8	7	0	24	18	18	69	18	0	8	105	24	9	12	0	5	45	257	1011
17:45:00	28	70	5	0	15	103	7	7	7	0	21	21	17	70	36	0	15	123	23	9	17	0	11	49	296	1060
18:00:00	11	56	4	0	14	71	3	4	11	0	16	18	16	56	29	0	9	101	13	5	7	0	9	25	215	1026
18:15:00	10	50	6	0	9	66	3	4	9	0	15	16	15	71	21	0	7	107	25	6	11	0	8	42	231	999
18:30:00	15	50	8	0	6	73	2	4	16	0	22	22	10	61	37	0	16	108	20	3	7	0	8	30	233	975
18:45:00	14	41	7	0	7	62	1	3	6	0	12	10	5	35	22	0	10	62	20	4	14	0	4	38	172	851
Grand Total	238	1152	102	0	181	1492	88	119	224	0	274	431	205	1027	443	0	201	1675	512	89	200	0	158	801	**4399**	-
Approach%	16%	77.2%	6.8%	0%		-	20.4%	27.6%	52%	0%		-	12.2%	61.3%	26.4%	0%		-	63.9%	11.1%	25%	0%		-	**-**	-
Totals %	5.4%	26.2%	2.3%	0%		33.9%	2%	2.7%	5.1%	0%		9.8%	4.7%	23.3%	10.1%	0%		38.1%	11.6%	2%	4.5%	0%		18.2%	**-**	-
Heavy	26	29	0	0		-	0	2	1	0		-	2	24	39	0		-	48	3	21	0		-	**-**	-
Heavy %	10.9%	2.5%	0%	0%		-	0%	1.7%	0.4%	0%		-	1%	2.3%	8.8%	0%		-	9.4%	3.4%	10.5%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

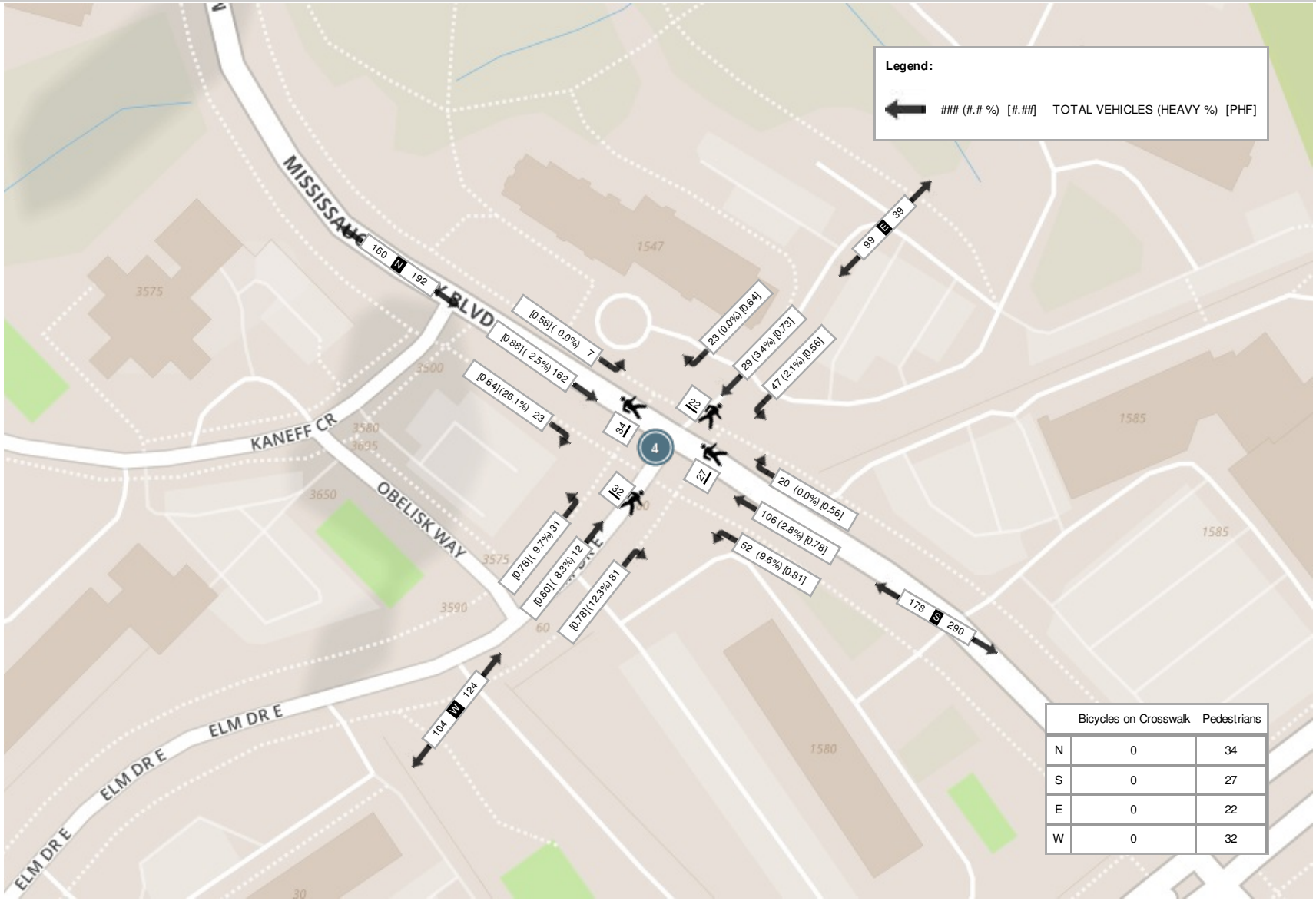
Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (1 °C)

Start Time	N Approach						E Approach						S Approach						W Approach						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	9	44	3	0	12	56	6	5	21	0	11	32	4	22	13	0	12	39	26	3	6	0	10	35	162
08:15:00	6	45	1	0	4	52	5	8	8	0	1	21	9	21	13	0	7	43	13	2	10	0	5	25	141
08:30:00	4	27	1	0	10	32	9	6	8	0	4	23	4	29	10	0	7	43	25	2	7	0	7	34	132
08:45:00	4	46	2	0	8	52	3	10	10	0	6	23	3	34	16	0	1	53	17	5	8	0	10	30	158
Grand Total	23	162	7	0	34	192	23	29	47	0	22	99	20	106	52	0	27	178	81	12	31	0	32	124	**593**
Approach%	12%	84.4%	3.6%	0%		-	23.2%	29.3%	47.5%	0%		-	11.2%	59.6%	29.2%	0%		-	65.3%	9.7%	25%	0%		-	-
Totals %	3.9%	27.3%	1.2%	0%		32.4%	3.9%	4.9%	7.9%	0%		16.7%	3.4%	17.9%	8.8%	0%		30%	13.7%	2%	5.2%	0%		20.9%	-
PHF	0.64	0.88	0.58	0		0.86	0.64	0.73	0.56	0		0.77	0.56	0.78	0.81	0		0.84	0.78	0.6	0.78	0		0.89	-
Heavy	6	4	0	0		10	0	1	1	0		2	0	3	5	0		8	10	1	3	0		14	-
Heavy %	26.1%	2.5%	0%	0%		5.2%	0%	3.4%	2.1%	0%		2%	0%	2.8%	9.6%	0%		4.5%	12.3%	8.3%	9.7%	0%		11.3%	-
Lights	17	158	7	0		182	23	28	46	0		97	20	103	47	0		170	71	11	28	0		110	-
Lights %	73.9%	97.5%	100%	0%		94.8%	100%	96.6%	97.9%	0%		98%	100%	97.2%	90.4%	0%		95.5%	87.7%	91.7%	90.3%	0%		88.7%	-
Single-Unit Trucks	1	1	0	0		2	0	1	0	0		1	0	0	0	0		0	3	1	0	0		4	-
Single-Unit Trucks %	4.3%	0.6%	0%	0%		1%	0%	3.4%	0%	0%		1%	0%	0%	0%	0%		0%	3.7%	8.3%	0%	0%		3.2%	-
Buses	5	3	0	0		8	0	0	1	0		1	0	3	5	0		8	7	0	3	0		10	-
Buses %	21.7%	1.9%	0%	0%		4.2%	0%	0%	2.1%	0%		1%	0%	2.8%	9.6%	0%		4.5%	8.6%	0%	9.7%	0%		8.1%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	34	-	-	-	-	-	22	-	-	-	-	-	27	-	-	-	-	-	32	-	-
Pedestrians%	-	-	-	-	29.6%		-	-	-	-	19.1%		-	-	-	-	23.5%		-	-	-	-	27.8%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (1.65 °C)

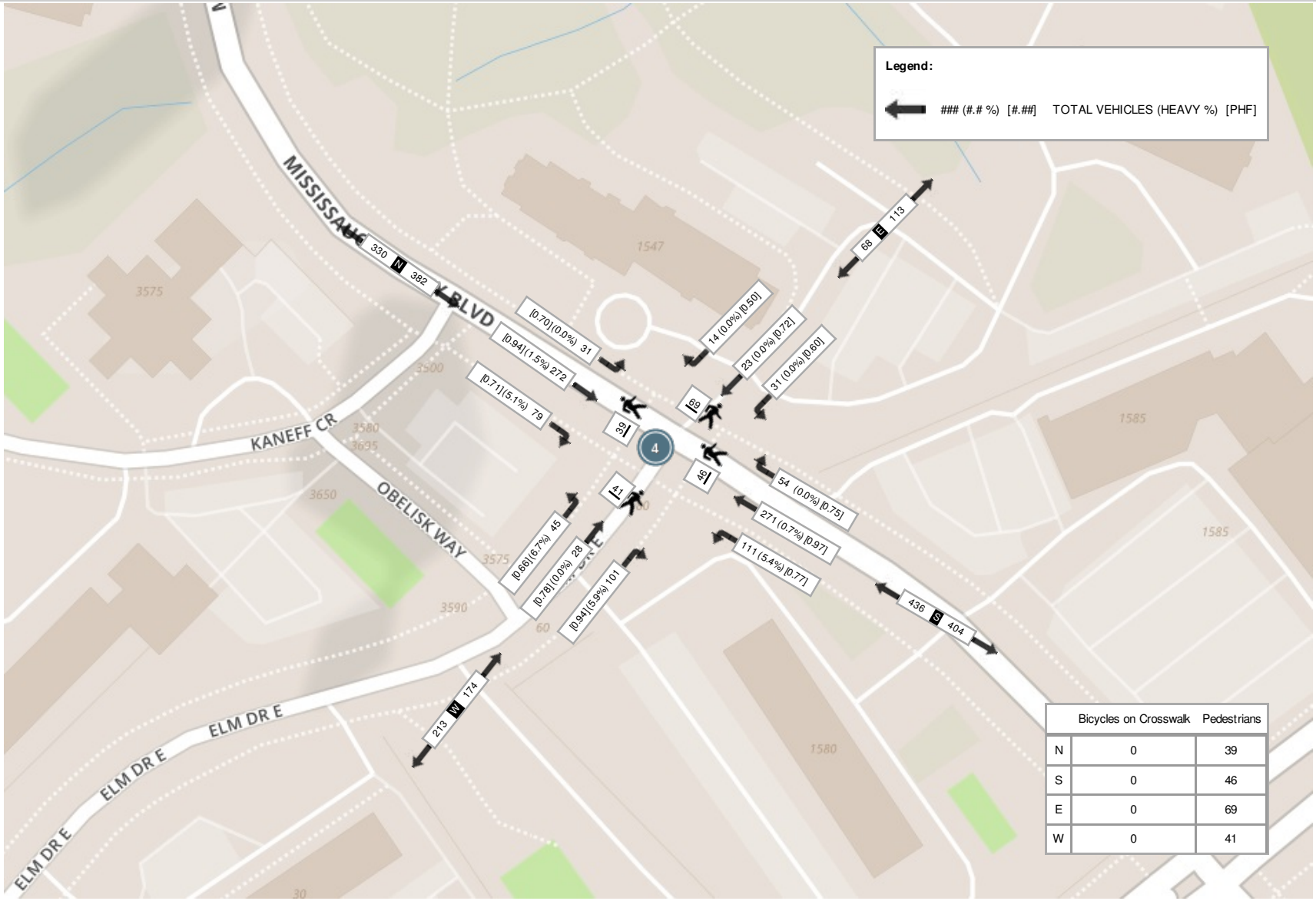
Start Time	N Approach						E Approach						S Approach						W Approach						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	11	67	11	0	8	89	2	3	13	0	10	18	9	64	31	0	15	104	27	4	7	0	11	38	249
17:15:00	20	72	9	0	9	101	2	5	4	0	14	11	10	68	26	0	8	104	27	6	9	0	14	42	258
17:30:00	20	63	6	0	7	89	3	8	7	0	24	18	18	69	18	0	8	105	24	9	12	0	5	45	257
17:45:00	28	70	5	0	15	103	7	7	7	0	21	21	17	70	36	0	15	123	23	9	17	0	11	49	296
Grand Total	79	272	31	0	39	382	14	23	31	0	69	68	54	271	111	0	46	436	101	28	45	0	41	174	**1060**
Approach%	20.7%	71.2%	8.1%	0%		-	20.6%	33.8%	45.6%	0%		-	12.4%	62.2%	25.5%	0%		-	58%	16.1%	25.9%	0%		-	-
Totals %	7.5%	25.7%	2.9%	0%		36%	1.3%	2.2%	2.9%	0%		6.4%	5.1%	25.6%	10.5%	0%		41.1%	9.5%	2.6%	4.2%	0%		16.4%	-
PHF	0.71	0.94	0.7	0		0.93	0.5	0.72	0.6	0		0.81	0.75	0.97	0.77	0		0.89	0.94	0.78	0.66	0		0.89	-
Heavy	4	4	0	0		8	0	0	0	0		0	0	2	6	0		8	6	0	3	0		9	-
Heavy %	5.1%	1.5%	0%	0%		2.1%	0%	0%	0%	0%		0%	0%	0.7%	5.4%	0%		1.8%	5.9%	0%	6.7%	0%		5.2%	-
Lights	75	267	31	0		373	14	23	31	0		68	54	268	105	0		427	94	28	42	0		164	-
Lights %	94.9%	98.2%	100%	0%		97.6%	100%	100%	100%	0%		100%	100%	98.9%	94.6%	0%		97.9%	93.1%	100%	93.3%	0%		94.3%	-
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Buses	4	4	0	0		8	0	0	0	0		0	0	2	6	0		8	6	0	3	0		9	-
Buses %	5.1%	1.5%	0%	0%		2.1%	0%	0%	0%	0%		0%	0%	0.7%	5.4%	0%		1.8%	5.9%	0%	6.7%	0%		5.2%	-
Bicycles on Road	0	1	0	0		1	0	0	0	0		0	0	1	0	0		1	1	0	0	0		1	-
Bicycles on Road %	0%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.2%	1%	0%	0%	0%		0.6%	-
Pedestrians	-	-	-	-	39	-	-	-	-	-	69	-	-	-	-	-	46	-	-	-	-	-	41	-	-
Pedestrians%	-	-	-	-	20%		-	-	-	-	35.4%		-	-	-	-	23.6%		-	-	-	-	21%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (1 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	34
S	0	27
E	0	22
W	0	32

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (1.65 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	39
S	0	46
E	0	69
W	0	41

Turning Movement Count (1 . KANEFF CRES & MISSISSAUGA VALLEY BLVD)

Start Time	N Approach					S Approach					W Approach					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	2	20	0	2	22	22	7	0	0	29	9	8	0	3	17	68	
07:15:00	2	20	0	0	22	34	2	0	0	36	8	8	0	1	16	74	
07:30:00	1	36	0	0	37	30	4	0	1	34	10	10	0	5	20	91	
07:45:00	3	29	0	2	32	37	1	0	1	38	10	7	0	0	17	87	320
08:00:00	1	50	0	1	51	32	3	0	0	35	5	8	0	4	13	99	351
08:15:00	1	45	0	0	46	31	4	0	0	35	7	11	0	1	18	99	376
08:30:00	4	23	0	2	27	43	3	0	0	46	14	7	0	3	21	94	379
08:45:00	3	34	0	1	37	42	3	0	0	45	13	5	0	5	18	100	392
09:00:00	2	38	0	0	40	43	3	0	2	46	4	5	0	2	9	95	388
09:15:00	1	35	0	2	36	33	7	0	0	40	7	7	0	1	14	90	379
09:30:00	2	42	0	0	44	29	3	0	1	32	5	1	0	5	6	82	367
09:45:00	2	26	0	0	28	32	4	0	0	36	10	3	0	4	13	77	344
BREAK																	
16:00:00	7	77	0	2	84	54	10	0	1	64	2	2	0	3	4	152	
16:15:00	14	75	0	1	89	50	5	0	1	55	8	5	0	2	13	157	
16:30:00	14	71	0	0	85	45	7	0	1	52	11	1	0	6	12	149	
16:45:00	15	84	0	2	99	67	12	0	0	79	8	2	0	6	10	188	646
17:00:00	11	75	0	1	86	58	16	0	0	74	11	3	0	6	14	174	668
17:15:00	13	97	0	0	110	65	13	0	0	78	5	6	0	4	11	199	710
17:30:00	10	84	0	0	94	74	11	0	1	85	6	2	0	0	8	187	748
17:45:00	13	97	0	2	110	78	16	0	2	94	9	6	0	7	15	219	779
18:00:00	12	59	0	1	71	45	20	0	2	65	6	4	0	7	10	146	751
18:15:00	15	65	0	0	80	72	13	0	0	85	7	3	0	10	10	175	727
18:30:00	21	57	0	0	78	54	16	0	1	70	10	4	0	3	14	162	702

18:45:00	11	53	0	1	64	41	9	0	0	50	11	4	0	2	15	129	612
Grand Total	180	1292	0	20	1472	1111	192	0	14	1303	196	122	0	90	318	**3093**	-
Approach%	12.2%	87.8%	0%		-	85.3%	14.7%	0%		-	61.6%	38.4%	0%		-	**-**	-
Totals %	5.8%	41.8%	0%		47.6%	35.9%	6.2%	0%		42.1%	6.3%	3.9%	0%		10.3%	**-**	-
Heavy	1	54	0		-	45	1	0		-	2	2	0		-	**-**	-
Heavy %	0.6%	4.2%	0%		-	4.1%	0.5%	0%		-	1%	1.6%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

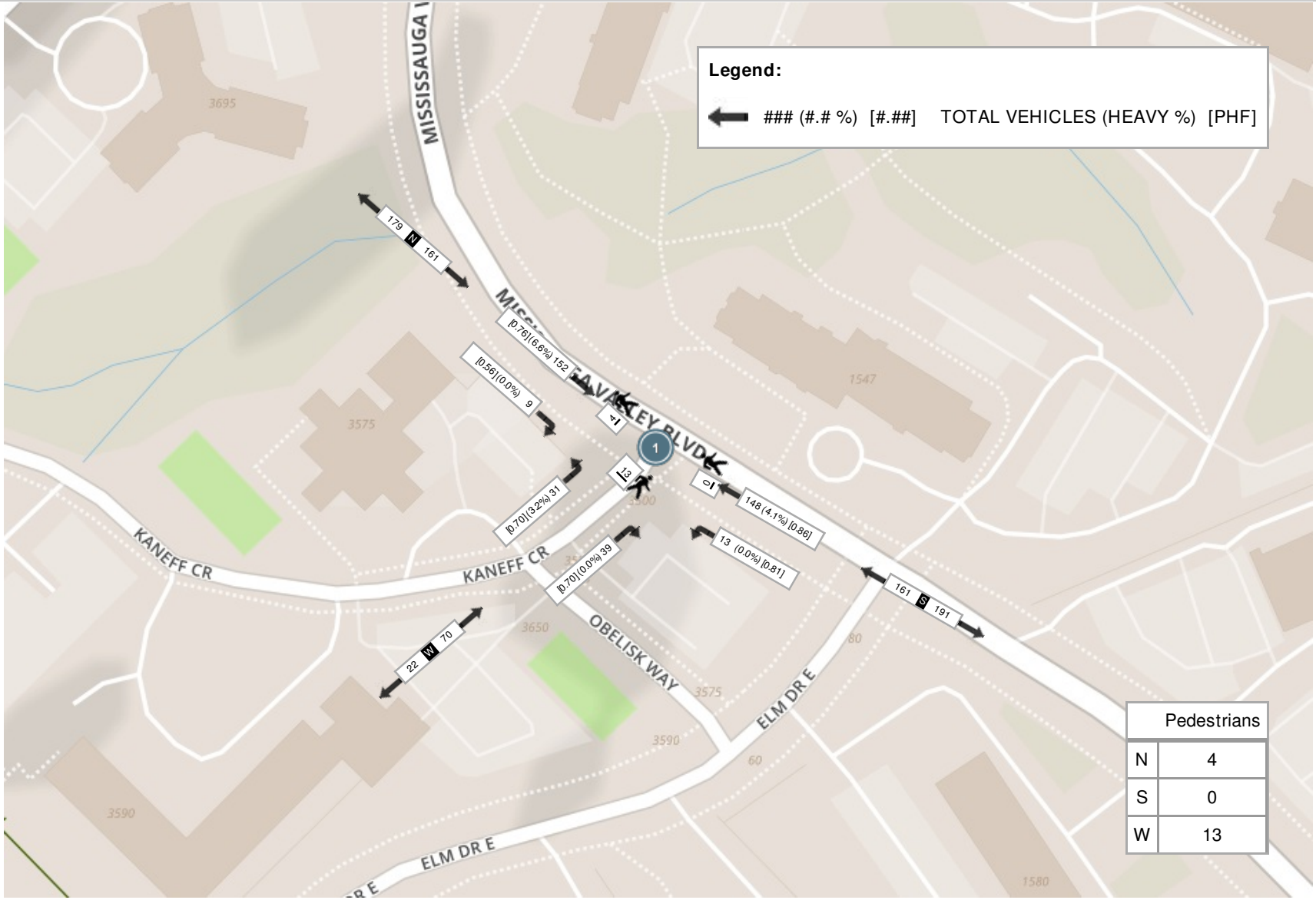
Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (1 °C)

Start Time	N Approach					S Approach					W Approach					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
08:00:00	1	50	0	1	51	32	3	0	0	35	5	8	0	4	13	99
08:15:00	1	45	0	0	46	31	4	0	0	35	7	11	0	1	18	99
08:30:00	4	23	0	2	27	43	3	0	0	46	14	7	0	3	21	94
08:45:00	3	34	0	1	37	42	3	0	0	45	13	5	0	5	18	100
Grand Total	9	152	0	4	161	148	13	0	0	161	39	31	0	13	70	**392**
Approach%	5.6%	94.4%	0%		-	91.9%	8.1%	0%		-	55.7%	44.3%	0%		-	-
Totals %	2.3%	38.8%	0%		41.1%	37.8%	3.3%	0%		41.1%	9.9%	7.9%	0%		17.9%	-
PHF	0.56	0.76	0		0.79	0.86	0.81	0		0.88	0.7	0.7	0		0.83	-
Heavy	0	10	0		10	6	0	0		6	0	1	0		1	-
Heavy %	0%	6.6%	0%		6.2%	4.1%	0%	0%		3.7%	0%	3.2%	0%		1.4%	-
Lights	9	142	0		151	142	13	0		155	39	30	0		69	-
Lights %	100%	93.4%	0%		93.8%	95.9%	100%	0%		96.3%	100%	96.8%	0%		98.6%	-
Single-Unit Trucks	0	2	0		2	0	0	0		0	0	0	0		0	-
Single-Unit Trucks %	0%	1.3%	0%		1.2%	0%	0%	0%		0%	0%	0%	0%		0%	-
Buses	0	8	0		8	6	0	0		6	0	1	0		1	-
Buses %	0%	5.3%	0%		5%	4.1%	0%	0%		3.7%	0%	3.2%	0%		1.4%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	4	-	-	-	-	0	-	-	-	-	13	-	-
Pedestrians%	-	-	-	23.5%		-	-	-	0%		-	-	-	76.5%		-

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (1.65 °C)

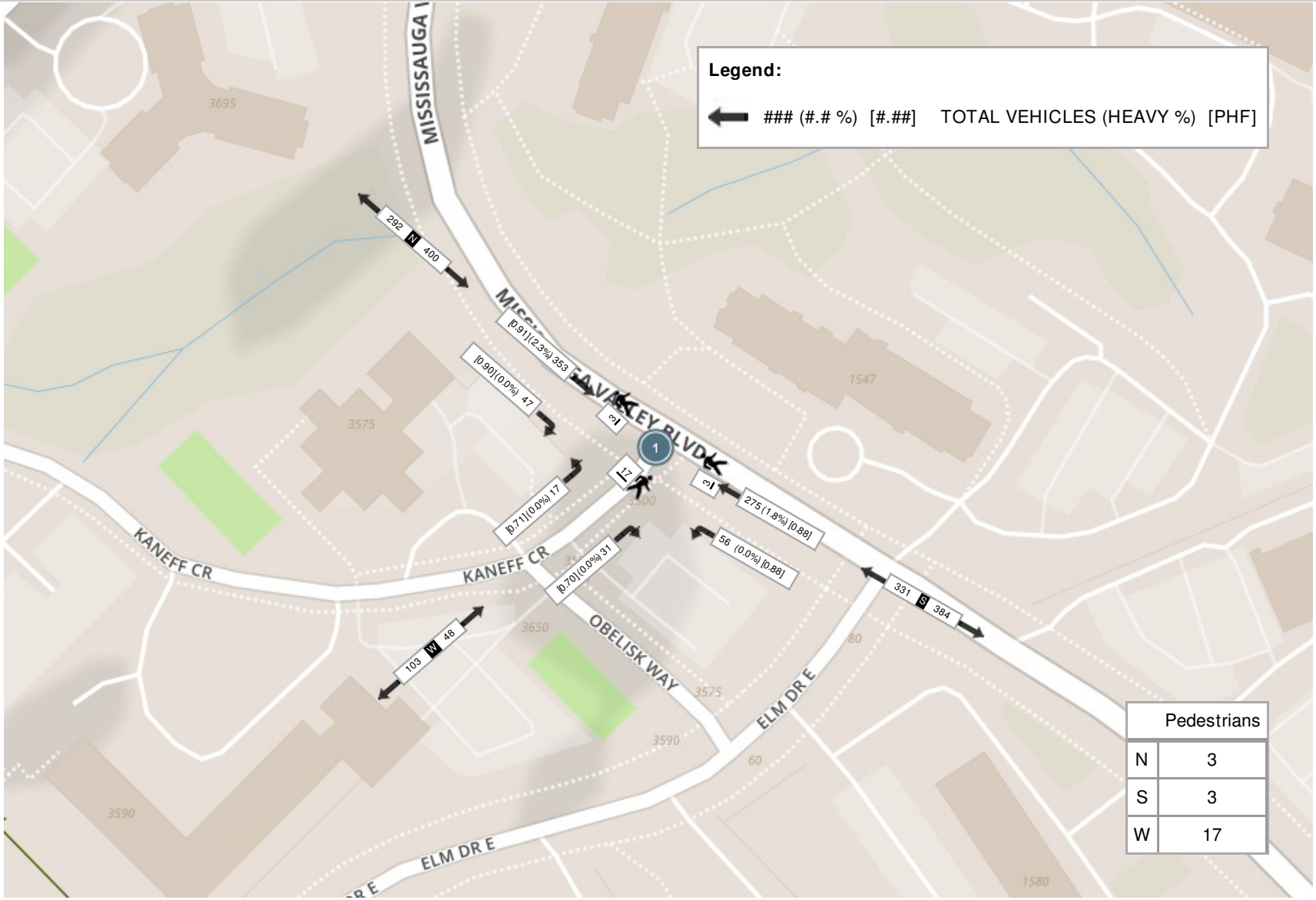
Start Time	N Approach					S Approach					W Approach					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
17:00:00	11	75	0	1	86	58	16	0	0	74	11	3	0	6	14	174
17:15:00	13	97	0	0	110	65	13	0	0	78	5	6	0	4	11	199
17:30:00	10	84	0	0	94	74	11	0	1	85	6	2	0	0	8	187
17:45:00	13	97	0	2	110	78	16	0	2	94	9	6	0	7	15	219
Grand Total	47	353	0	3	400	275	56	0	3	331	31	17	0	17	48	**779**
Approach%	11.8%	88.3%	0%		-	83.1%	16.9%	0%		-	64.6%	35.4%	0%		-	-
Totals %	6%	45.3%	0%		51.3%	35.3%	7.2%	0%		42.5%	4%	2.2%	0%		6.2%	-
PHF	0.9	0.91	0		0.91	0.88	0.88	0		0.88	0.7	0.71	0		0.8	-
Heavy	0	8	0		8	5	0	0		5	0	0	0		0	-
Heavy %	0%	2.3%	0%		2%	1.8%	0%	0%		1.5%	0%	0%	0%		0%	-
Lights	47	344	0		391	269	56	0		325	31	17	0		48	-
Lights %	100%	97.5%	0%		97.8%	97.8%	100%	0%		98.2%	100%	100%	0%		100%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Buses	0	8	0		8	5	0	0		5	0	0	0		0	-
Buses %	0%	2.3%	0%		2%	1.8%	0%	0%		1.5%	0%	0%	0%		0%	-
Bicycles on Road	0	1	0		1	1	0	0		1	0	0	0		0	-
Bicycles on Road %	0%	0.3%	0%		0.3%	0.4%	0%	0%		0.3%	0%	0%	0%		0%	-
Pedestrians	-	-	-	3	-	-	-	-	3	-	-	-	-	17	-	-
Pedestrians%	-	-	-	13%		-	-	-	13%		-	-	-	73.9%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (1 °C)



	Pedestrians
N	4
S	0
W	13

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (1.65 °C)



Turning Movement Count (2 . KANEFF CRES & OBELISK WAY)

Start Time	N Approach						E Approach						S Approach						W Approach						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	0	0	0	0	0	2	6	3	0	0	11	5	0	2	1	0	8	5	6	0	0	0	11	30	
07:15:00	0	0	0	0	1	0	1	3	0	0	1	4	2	2	1	0	1	5	12	7	0	0	3	19	28	
07:30:00	0	0	0	0	4	0	2	4	2	0	1	8	4	1	2	0	0	7	9	10	1	0	3	20	35	
07:45:00	0	1	1	0	2	2	3	2	4	0	1	9	3	1	7	0	4	11	6	11	0	0	8	17	39	132
08:00:00	0	1	0	0	9	1	1	2	9	0	6	12	1	0	5	0	0	6	11	8	0	0	0	19	38	140
08:15:00	0	0	0	0	2	0	0	8	5	0	1	13	4	2	7	0	0	13	7	3	1	0	2	11	37	149
08:30:00	0	0	0	0	2	0	1	4	5	0	2	10	2	1	4	1	0	8	8	12	0	0	0	20	38	152
08:45:00	0	0	0	0	2	0	0	4	7	0	1	11	5	1	3	0	1	9	3	8	0	0	2	11	31	144
09:00:00	0	1	0	0	0	1	2	3	3	0	0	8	2	0	1	0	2	3	3	5	0	0	0	8	20	126
09:15:00	0	0	0	0	2	0	2	3	1	0	0	6	3	1	4	0	0	8	5	7	0	0	0	12	26	115
09:30:00	0	2	0	0	0	2	0	3	2	0	0	5	1	0	3	0	1	4	4	5	0	0	1	9	20	97
09:45:00	0	0	0	0	4	0	0	7	3	0	1	10	3	0	2	0	3	5	2	7	0	0	0	9	24	90
BREAK																										
16:00:00	0	0	0	0	3	0	1	7	4	1	1	13	3	0	4	0	1	7	5	3	0	0	1	8	28	
16:15:00	0	0	0	0	8	0	1	5	8	0	5	14	3	1	8	0	2	12	10	8	0	0	2	18	44	
16:30:00	0	0	1	0	2	1	1	7	4	0	2	12	0	0	6	0	1	6	9	10	0	0	0	19	38	
16:45:00	0	0	2	0	3	2	1	11	9	0	3	21	5	0	9	0	0	14	10	6	0	0	0	16	53	163
17:00:00	0	1	0	0	4	1	2	14	7	0	2	23	3	1	2	0	1	6	5	9	0	0	5	14	44	179
17:15:00	0	0	0	0	5	0	1	11	12	0	5	24	5	1	4	0	3	10	8	10	0	0	1	18	52	187
17:30:00	0	0	0	0	3	0	1	9	7	0	1	17	3	0	7	0	3	10	6	6	2	0	3	14	41	190
17:45:00	0	0	0	0	7	0	4	14	3	0	5	21	4	2	4	0	2	10	7	9	0	0	5	16	47	184
18:00:00	0	0	0	0	2	0	3	17	10	0	1	30	7	1	8	0	5	16	6	6	1	0	3	13	59	199
18:15:00	0	0	1	0	6	1	3	12	12	0	2	27	7	0	6	0	1	13	14	4	0	0	5	18	59	206
18:30:00	0	0	2	0	4	2	2	17	7	0	2	26	3	0	7	0	3	10	9	13	1	0	2	23	61	226
18:45:00	0	0	2	0	3	2	2	7	7	0	1	16	5	1	3	0	1	9	8	8	0	0	1	16	43	222
Grand Total	0	6	9	0	78	15	36	180	134	1	44	351	83	16	109	2	35	210	172	181	6	0	47	359	**935**	-
Approach%	0%	40%	60%	0%		-	10.3%	51.3%	38.2%	0.3%		-	39.5%	7.6%	51.9%	1%		-	47.9%	50.4%	1.7%	0%		-	**-**	-
Totals %	0%	0.6%	1%	0%		1.6%	3.9%	19.3%	14.3%	0.1%		37.5%	8.9%	1.7%	11.7%	0.2%		22.5%	18.4%	19.4%	0.6%	0%		38.4%	**-**	-
Heavy	0	1	0	0		-	0	0	0	0		-	0	1	0	0		-	1	4	0	0		-	**-**	-
Heavy %	0%	16.7%	0%	0%		-	0%	0%	0%	0%		-	0%	6.3%	0%	0%		-	0.6%	2.2%	0%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

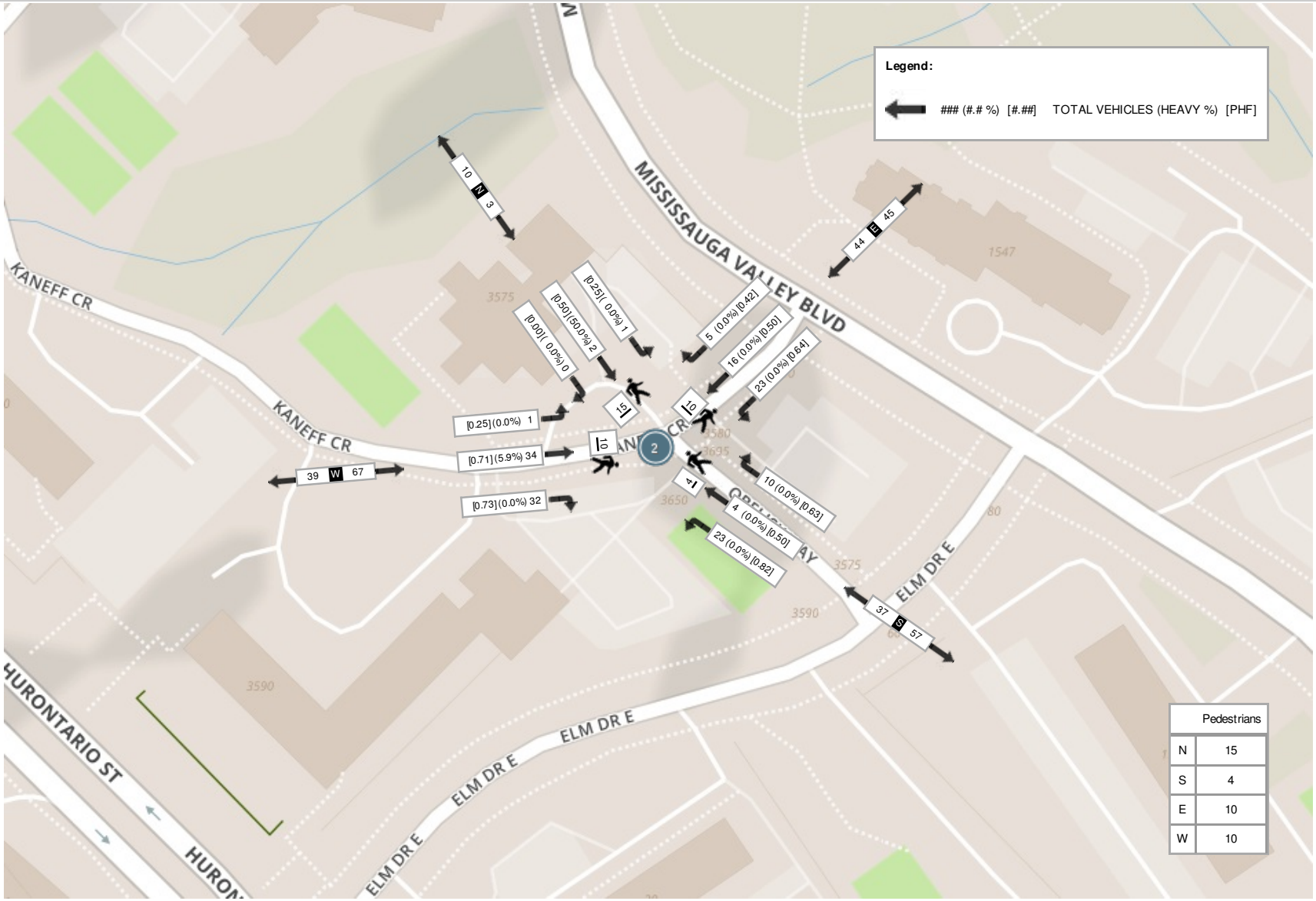
Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (1 °C)

Start Time	N Approach						E Approach						S Approach						W Approach						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	0	1	1	0	2	2	3	2	4	0	1	9	3	1	7	0	4	11	6	11	0	0	8	17	39
08:00:00	0	1	0	0	9	1	1	2	9	0	6	12	1	0	5	0	0	6	11	8	0	0	0	19	38
08:15:00	0	0	0	0	2	0	0	8	5	0	1	13	4	2	7	0	0	13	7	3	1	0	2	11	37
08:30:00	0	0	0	0	2	0	1	4	5	0	2	10	2	1	4	1	0	8	8	12	0	0	0	20	38
Grand Total	0	2	1	0	15	3	5	16	23	0	10	44	10	4	23	1	4	38	32	34	1	0	10	67	**152**
Approach%	0%	66.7%	33.3%	0%		-	11.4%	36.4%	52.3%	0%		-	26.3%	10.5%	60.5%	2.6%		-	47.8%	50.7%	1.5%	0%		-	**-**
Totals %	0%	1.3%	0.7%	0%		2%	3.3%	10.5%	15.1%	0%		28.9%	6.6%	2.6%	15.1%	0.7%		25%	21.1%	22.4%	0.7%	0%		44.1%	**-**
PHF	0	0.5	0.25	0		0.38	0.42	0.5	0.64	0		0.85	0.63	0.5	0.82	0.25		0.73	0.73	0.71	0.25	0		0.84	**-**
Heavy	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	**-**
Heavy %	0%	50%	0%	0%		33.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	5.9%	0%	0%		3%	**-**
Lights	0	1	1	0		2	5	16	23	0		44	10	4	23	1		38	32	32	1	0		65	**-**
Lights %	0%	50%	100%	0%		66.7%	100%	100%	100%	0%		100%	100%	100%	100%	100%		100%	100%	94.1%	100%	0%		97%	**-**
Single-Unit Trucks	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	50%	0%	0%		33.3%	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	2	0	0		2	**-**
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	5.9%	0%	0%		3%	**-**
Pedestrians	-	-	-	-	15	-	-	-	-	-	10	-	-	-	-	-	4	-	-	-	-	-	10	-	**-**
Pedestrians%	-	-	-	-	38.5%		-	-	-	-	25.6%		-	-	-	-	10.3%		-	-	-	-	25.6%		**-**

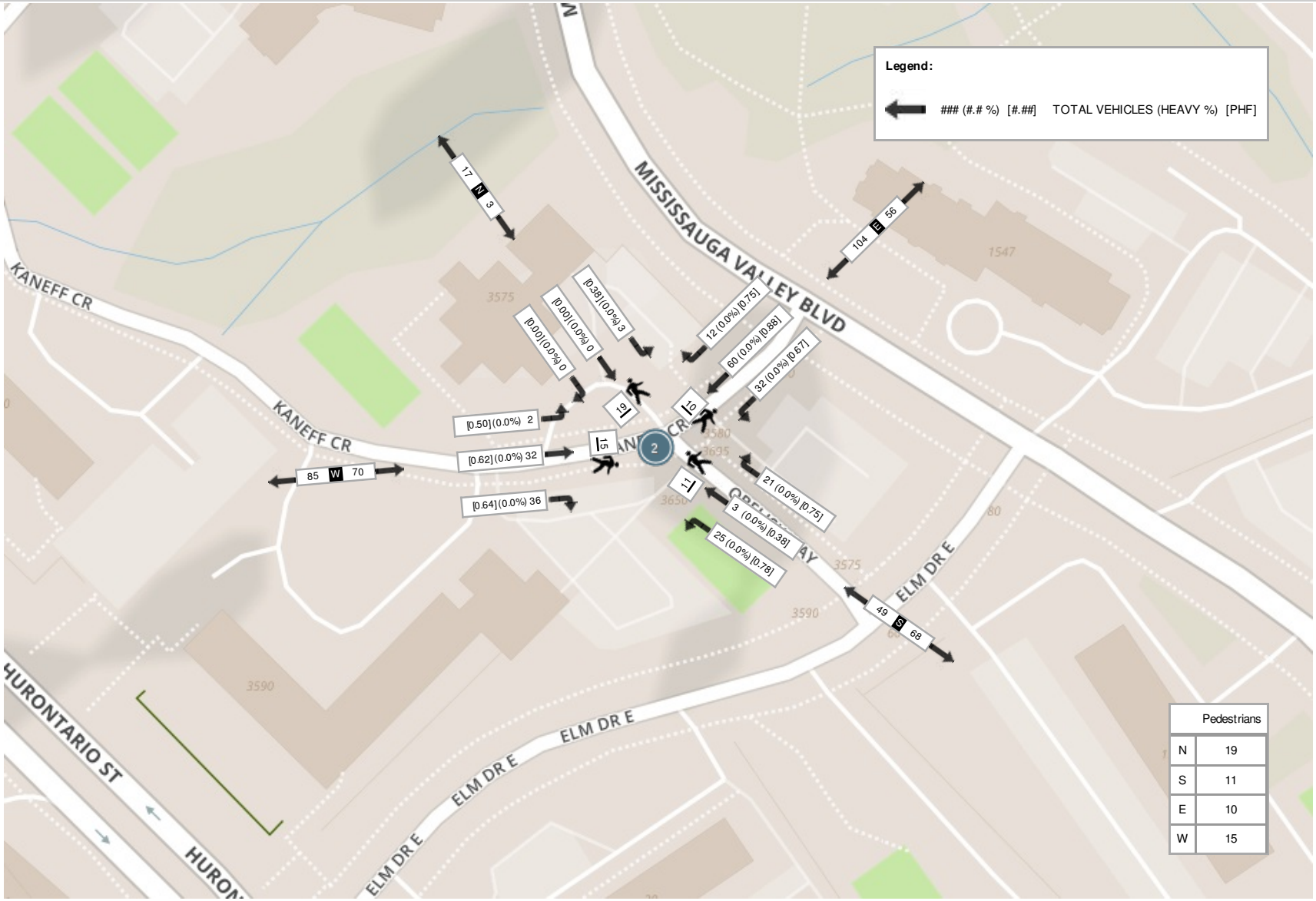
Peak Hour: 05:45 PM - 06:45 PM Weather: Overcast Clouds (1.65 °C)

Start Time	N Approach						E Approach						S Approach						W Approach						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:45:00	0	0	0	0	7	0	4	14	3	0	5	21	4	2	4	0	2	10	7	9	0	0	5	16	47
18:00:00	0	0	0	0	2	0	3	17	10	0	1	30	7	1	8	0	5	16	6	6	1	0	3	13	59
18:15:00	0	0	1	0	6	1	3	12	12	0	2	27	7	0	6	0	1	13	14	4	0	0	5	18	59
18:30:00	0	0	2	0	4	2	2	17	7	0	2	26	3	0	7	0	3	10	9	13	1	0	2	23	61
Grand Total	0	0	3	0	19	3	12	60	32	0	10	104	21	3	25	0	11	49	36	32	2	0	15	70	**226**
Approach%	0%	0%	100%	0%		-	11.5%	57.7%	30.8%	0%		-	42.9%	6.1%	51%	0%		-	51.4%	45.7%	2.9%	0%		-	-
Totals %	0%	0%	1.3%	0%		1.3%	5.3%	26.5%	14.2%	0%		46%	9.3%	1.3%	11.1%	0%		21.7%	15.9%	14.2%	0.9%	0%		31%	-
PHF	0	0	0.38	0		0.38	0.75	0.88	0.67	0		0.87	0.75	0.38	0.78	0		0.77	0.64	0.62	0.5	0		0.76	-
Heavy	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Lights	0	0	3	0		3	12	60	32	0		104	21	3	25	0		49	36	32	2	0		70	-
Lights %	0%	0%	100%	0%		100%	100%	100%	100%	0%		100%	100%	100%	100%	0%		100%	100%	100%	100%	0%		100%	-
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	19	-	-	-	-	-	10	-	-	-	-	-	11	-	-	-	-	-	15	-	-
Pedestrians%	-	-	-	-	34.5%		-	-	-	-	18.2%		-	-	-	-	20%		-	-	-	-	27.3%		-

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (1 °C)



Peak Hour: 05:45 PM - 06:45 PM Weather: Overcast Clouds (1.65 °C)



Turning Movement Count (3 . OBELISK WAY & ELM DR E)

Start Time	N Approach					E Approach					W Approach					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	15	4	0	4	19	1	15	0	0	16	18	4	0	3	22	57	
07:15:00	15	4	0	4	19	0	15	0	0	15	17	5	0	3	22	56	
07:30:00	18	3	0	5	21	1	18	0	0	19	32	4	0	3	36	76	
07:45:00	21	4	0	13	25	4	17	0	0	21	27	6	0	4	33	79	268
08:00:00	20	4	0	10	24	1	29	0	1	30	30	6	0	2	36	90	301
08:15:00	17	3	0	2	20	1	28	0	1	29	21	11	0	0	32	81	326
08:30:00	11	7	0	7	18	1	26	0	1	27	29	7	0	0	36	81	331
08:45:00	13	5	0	9	18	2	29	0	0	31	30	5	0	1	35	84	336
09:00:00	11	2	0	2	13	1	26	0	0	27	30	2	0	0	32	72	318
09:15:00	9	3	0	7	12	0	23	0	0	23	27	7	0	0	34	69	306
09:30:00	8	0	0	4	8	1	27	0	1	28	25	1	0	1	26	62	287
09:45:00	8	0	0	7	8	2	18	0	1	20	23	4	0	1	27	55	258
BREAK																	
16:00:00	6	1	0	8	7	2	39	0	0	41	39	9	0	3	48	96	
16:15:00	14	1	0	1	15	1	43	0	0	44	38	13	0	0	51	110	
16:30:00	14	4	0	5	18	3	49	0	0	52	36	11	1	0	48	118	
16:45:00	11	4	0	4	15	0	35	0	1	35	41	15	0	0	56	106	430
17:00:00	12	0	0	5	12	1	45	0	0	46	42	8	0	0	50	108	442
17:15:00	16	1	0	6	17	2	47	0	1	49	41	13	0	0	54	120	452
17:30:00	9	4	0	1	13	2	48	0	0	50	45	13	0	0	58	121	455
17:45:00	14	1	0	15	15	2	69	0	3	71	47	10	0	3	57	143	492
18:00:00	13	3	0	10	16	1	42	0	1	43	26	18	0	3	44	103	487
18:15:00	20	1	0	6	21	2	35	0	0	37	42	11	0	2	53	111	478
18:30:00	12	2	0	6	14	3	48	0	0	51	29	11	0	3	40	105	462

18:45:00	9	1	0	7	10	1	42	0	1	43	39	9	0	0	48	101	420
Grand Total	316	62	0	148	378	35	813	0	12	848	774	203	1	32	978	**2204**	-
Approach%	83.6%	16.4%	0%		-	4.1%	95.9%	0%		-	79.1%	20.8%	0.1%		-	**-**	-
Totals %	14.3%	2.8%	0%		17.2%	1.6%	36.9%	0%		38.5%	35.1%	9.2%	0%		44.4%	**-**	-
Heavy	2	1	0		-	0	66	0		-	69	1	0		-	**-**	-
Heavy %	0.6%	1.6%	0%		-	0%	8.1%	0%		-	8.9%	0.5%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

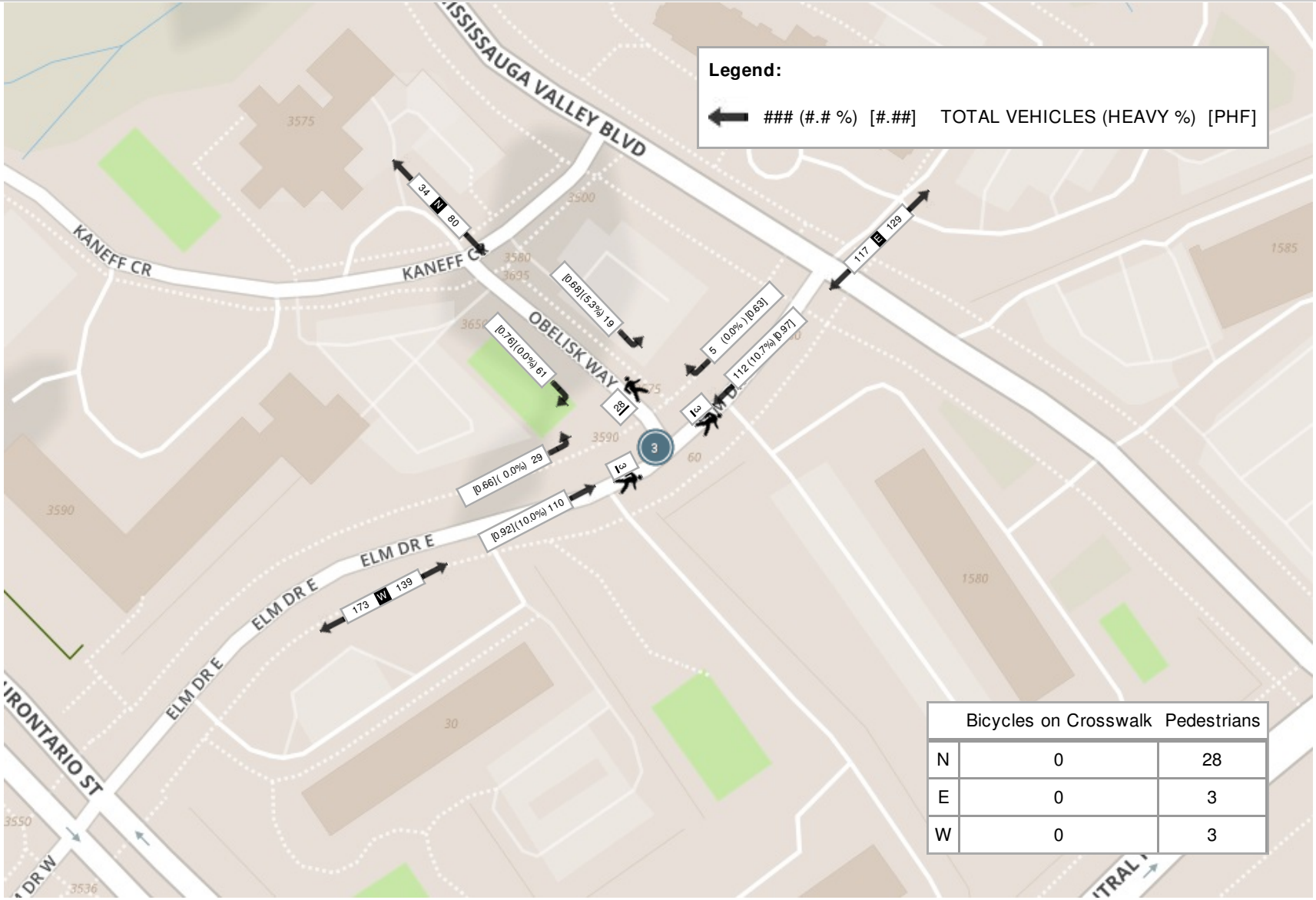
Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (1 °C)

Start Time	N Approach					E Approach					W Approach					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	20	4	0	10	24	1	29	0	1	30	30	6	0	2	36	90
08:15:00	17	3	0	2	20	1	28	0	1	29	21	11	0	0	32	81
08:30:00	11	7	0	7	18	1	26	0	1	27	29	7	0	0	36	81
08:45:00	13	5	0	9	18	2	29	0	0	31	30	5	0	1	35	84
Grand Total	61	19	0	28	80	5	112	0	3	117	110	29	0	3	139	**336**
Approach%	76.3%	23.8%	0%		-	4.3%	95.7%	0%		-	79.1%	20.9%	0%		-	-
Totals %	18.2%	5.7%	0%		23.8%	1.5%	33.3%	0%		34.8%	32.7%	8.6%	0%		41.4%	-
PHF	0.76	0.68	0		0.83	0.63	0.97	0		0.94	0.92	0.66	0		0.97	-
Heavy	0	1	0		1	0	12	0		12	11	0	0		11	-
Heavy %	0%	5.3%	0%		1.3%	0%	10.7%	0%		10.3%	10%	0%	0%		7.9%	-
Lights	61	18	0		79	5	100	0		105	99	29	0		128	-
Lights %	100%	94.7%	0%		98.8%	100%	89.3%	0%		89.7%	90%	100%	0%		92.1%	-
Single-Unit Trucks	0	1	0		1	0	2	0		2	1	0	0		1	-
Single-Unit Trucks %	0%	5.3%	0%		1.3%	0%	1.8%	0%		1.7%	0.9%	0%	0%		0.7%	-
Buses	0	0	0		0	0	10	0		10	10	0	0		10	-
Buses %	0%	0%	0%		0%	0%	8.9%	0%		8.5%	9.1%	0%	0%		7.2%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	28	-	-	-	-	3	-	-	-	-	3	-	-
Pedestrians%	-	-	-	82.4%		-	-	-	8.8%		-	-	-	8.8%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (1.65 °C)

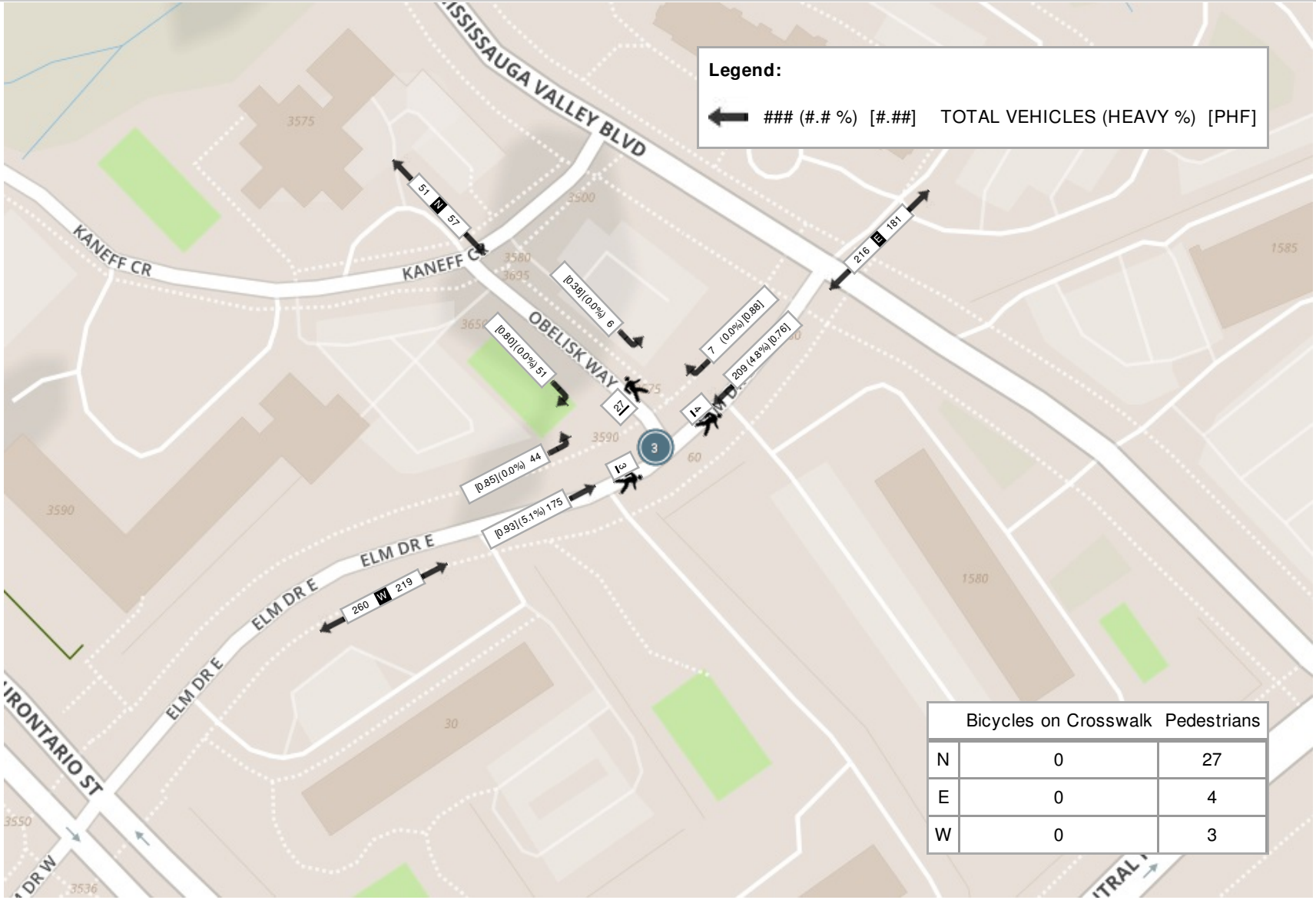
Start Time	N Approach					E Approach					W Approach					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	12	0	0	5	12	1	45	0	0	46	42	8	0	0	50	108
17:15:00	16	1	0	6	17	2	47	0	1	49	41	13	0	0	54	120
17:30:00	9	4	0	1	13	2	48	0	0	50	45	13	0	0	58	121
17:45:00	14	1	0	15	15	2	69	0	3	71	47	10	0	3	57	143
Grand Total	51	6	0	27	57	7	209	0	4	216	175	44	0	3	219	**492**
Approach%	89.5%	10.5%	0%		-	3.2%	96.8%	0%		-	79.9%	20.1%	0%		-	**-**
Totals %	10.4%	1.2%	0%		11.6%	1.4%	42.5%	0%		43.9%	35.6%	8.9%	0%		44.5%	**-**
PHF	0.8	0.38	0		0.84	0.88	0.76	0		0.76	0.93	0.85	0		0.94	**-**
Heavy	0	0	0		0	0	10	0		10	9	0	0		9	**-**
Heavy %	0%	0%	0%		0%	0%	4.8%	0%		4.6%	5.1%	0%	0%		4.1%	**-**
Lights	51	6	0		57	7	199	0		206	165	44	0		209	**-**
Lights %	100%	100%	0%		100%	100%	95.2%	0%		95.4%	94.3%	100%	0%		95.4%	**-**
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Buses	0	0	0		0	0	10	0		10	9	0	0		9	**-**
Buses %	0%	0%	0%		0%	0%	4.8%	0%		4.6%	5.1%	0%	0%		4.1%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	1	0	0		1	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0.6%	0%	0%		0.5%	**-**
Pedestrians	-	-	-	27	-	-	-	-	4	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	79.4%		-	-	-	11.8%		-	-	-	8.8%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (1 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	28
E	0	3
W	0	3

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (1.65 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	27
E	0	4
W	0	3

Signal Timing Report

Runtime: 2020-03-04 13:16:40

Device: 2108

Region: Mississauga **Signal ID:** 2108 **Location:** HURONTARIO STREET E at Elm Street

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	9	0	15	0	9	0	15
Ped Clear	Sec	0	13	0	22	0	13	0	22
Min Green	Sec	5	8	0	8	5	8	0	8
Passage	Sec	2.0	3.0	0.0	3.0	2.0	3.0	0.0	3.0
Maximum 1	Sec	10	33	0	35	10	33	0	35
Maximum 2	Sec	10	33	0	35	10	33	0	35
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.0	0.0	4.0	0.0	3.0	0.0	4.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	phaseNotOn	redClear	other	phaseNotOn
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	0	Enabled Non Lock Det Dual Entry	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	0	Enabled Non Lock Det Dual Entry
[P2] Ring	Ring	1	1	0	1	2	2	0	2
[P2] Concurrency	Phase (,)	(5,6)	(5,6)	()	(8)	(1,2)	(1,2)	()	(4)

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	10	26	123	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5	6	7	8
Split 1 - Mode	Enum	phaseOmitted	none	none	none	phaseOmitted	none	none	none
Split 1 - Time	Sec	0	102	0	58	0	102	0	58
Split 1 - Coord	Enum	false	true	false	false	false	true	false	false
Split 2 - Mode	Enum	phaseOmitted	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	101	0	59	13	88	0	59
Split 2 - Coord	Enum	false	true	false	false	false	true	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	13	89	0	58	27	75	0	58
Split 3 - Coord	Enum	false	true	false	false	false	true	false	false

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A--------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	12345678901234567890123456789001	12345678901234567890123456789001	12345678901234567890123456789001	1----------	----------7------	---------0----------	----------8------	1----------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	--3----------	------7----------	----------2----------	----------	----------	----------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5	6	7	8
Plan 1 Hour	Hour	0	3	6	9	15	19	0	0
Plan 1 Minute	Min	0	0	0	30	0	30	0	0
Plan 1 Action	Number	8	7	1	2	3	2	0	0
Plan 2 Hour	Hour	0	7	3	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	7	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	3	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	7	0	0	0	0

TB Action	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	Special Func 1 Special Func 3

Signal Timing Report

Runtime: 2020-02-06 15:08:21

Device: 2116

Region: Mississauga **Signal ID:** 2116 **Location:** MISSISSAUGA VALLEY BOULEVARD N at Elm Drive

Phase	Units	1- NBL	2-NB/SB	3	4-EB-WB	5	6	7	8
Walk	Sec	0	9	0	9	0	0	0	0
Ped Clear	Sec	0	16	0	17	0	0	0	0
Min Green	Sec	5	8	0	8	0	0	0	0
Passage	Sec	2.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	10	15	0	30	0	0	0	0
Maximum 2	Sec	10	15	0	30	0	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.0	0.0	2.5	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	1	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	0	0	0	0	0	0	0	0
Offset	Sec	0	0	0	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5	6	7	8
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	0	0	0	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	0	0	0	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	0	0	0	0	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false	false

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A-------	----M------	-----J-----
Day of Week	Bit	-MTWTF-	S------	-----S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	12345678901234567890123456789012345678901	12345678901234567890123456789012345678901	12345678901234567890123456789012345678901	1-------	--------7-------	--------0-------	---------8-------	1------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Dayplan	Units	1	2	3	4	5	6	7	8
Plan 1 Hour	Hour	0	3	0	0	0	0	0	0
Plan 1 Minute	Min	0	0	0	0	0	0	0	0
Plan 1 Action	Number	8	7	0	0	0	0	0	0
Plan 2 Hour	Hour	0	3	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	7	0	0	0	0	0	0
Plan 3 Hour	Hour	0	3	0	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	7	0	0	0	0	0	0

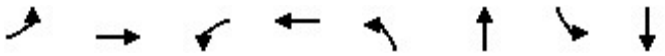
TB Action	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

APPENDIX B

Existing Traffic Level of Service Calculations

APPENDIX C

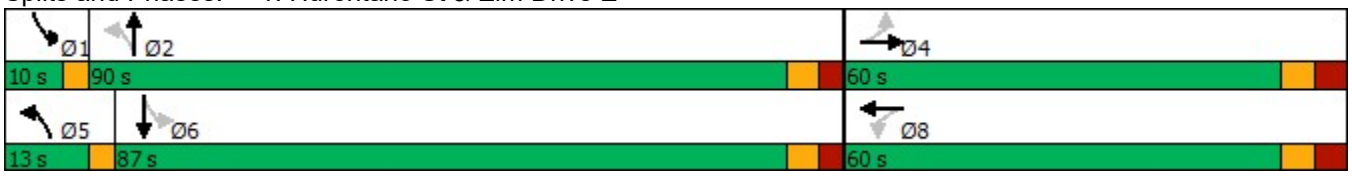
Historical Traffic Count Analysis

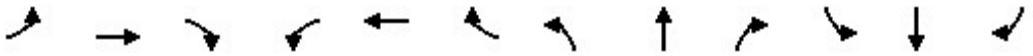


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	131	49	76	63	66	1437	40	1230
Future Volume (vph)	131	49	76	63	66	1437	40	1230
Lane Group Flow (vph)	142	140	83	204	72	1612	43	1376
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	45.0	45.0	45.0	45.0	10.0	33.0	10.0	33.0
Total Split (s)	60.0	60.0	60.0	60.0	13.0	90.0	10.0	87.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	8.1%	56.3%	6.3%	54.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	4.0	4.0	4.0	4.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	3.0	7.0	3.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	18.8	18.8	18.8	18.8	50.1	41.5	47.3	38.1
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.61	0.51	0.58	0.47
v/c Ratio	0.53	0.33	0.29	0.47	0.24	0.63	0.18	0.59
Control Delay	39.0	21.3	32.6	24.3	8.7	16.8	8.5	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	21.3	32.6	24.3	8.7	16.8	8.5	17.8
LOS	D	C	C	C	A	B	A	B
Approach Delay		30.2		26.7		16.4		17.5
Approach LOS		C		C		B		B
Queue Length 50th (m)	20.1	11.1	11.0	18.5	3.7	67.5	2.2	55.6
Queue Length 95th (m)	45.9	31.1	27.8	45.6	11.1	106.1	7.5	90.2
Internal Link Dist (m)		217.5		214.8		169.2		328.4
Turn Bay Length (m)	22.5		41.0		28.0		69.0	
Base Capacity (vph)	789	1155	837	1150	350	4610	260	4520
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.12	0.10	0.18	0.21	0.35	0.17	0.30

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 81.5			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Hurontario St & Elm Drive E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	49	80	76	63	125	66	1437	46	40	1230	36
Future Volume (vph)	131	49	80	76	63	125	66	1437	46	40	1230	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	0.91		1.00	0.90		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1670		1750	1658		1750	5005		1750	5007	
Flt Permitted	0.63	1.00		0.67	1.00		0.13	1.00		0.11	1.00	
Satd. Flow (perm)	1158	1670		1230	1658		240	5005		197	5007	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	53	87	83	68	136	72	1562	50	43	1337	39
RTOR Reduction (vph)	0	42	0	0	52	0	0	2	0	0	2	0
Lane Group Flow (vph)	142	98	0	83	152	0	72	1610	0	43	1374	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.8	18.8		18.8	18.8		47.5	41.5		42.3	38.9	
Effective Green, g (s)	18.8	18.8		18.8	18.8		47.5	41.5		42.3	38.9	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.58	0.51		0.52	0.48	
Clearance Time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	266	384		283	381		250	2542		166	2383	
v/s Ratio Prot		0.06			0.09		c0.02	c0.32		0.01	0.27	
v/s Ratio Perm	c0.12			0.07			0.15			0.12		
v/c Ratio	0.53	0.25		0.29	0.40		0.29	0.63		0.26	0.58	
Uniform Delay, d1	27.6	25.7		26.0	26.7		8.6	14.6		10.5	15.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.4		0.6	0.7		0.6	0.5		0.8	0.3	
Delay (s)	29.7	26.1		26.5	27.4		9.3	15.1		11.3	15.8	
Level of Service	C	C		C	C		A	B		B	B	
Approach Delay (s)		27.9			27.1			14.9			15.7	
Approach LOS		C			C			B			B	

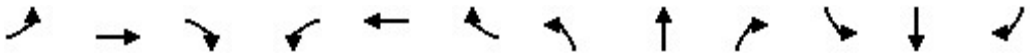
Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	39	13	148	152	9
Future Volume (Veh/h)	31	39	13	148	152	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	42	14	161	165	10
Pedestrians	4			13	13	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			1	1	
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				77		
pX, platoon unblocked						
vC, conflicting volume	376	187	179			
vC1, stage 1 conf vol	174					
vC2, stage 2 conf vol	202					
vCu, unblocked vol	376	187	179			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	95	99			
cM capacity (veh/h)	737	847	1404			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	76	14	161	175
Volume Left	34	14	0	0
Volume Right	42	0	0	10
cSH	794	1404	1700	1700
Volume to Capacity	0.10	0.01	0.09	0.10
Queue Length 95th (m)	2.4	0.2	0.0	0.0
Control Delay (s)	10.0	7.6	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	10.0	0.6		0.0
Approach LOS	B			

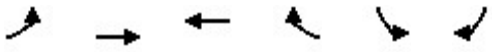
Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	25.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	34	32	23	16	5	23	4	10	1	2	0
Future Volume (Veh/h)	1	34	32	23	16	5	23	4	10	1	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	37	35	25	17	5	25	4	11	1	2	0
Pedestrians		15			15			10			10	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	32			82			152	148	80	164	164	44
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	32			82			152	148	80	164	164	44
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	99	99	100	100	100
cM capacity (veh/h)	1579			1515			779	721	965	755	707	1009

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	73	47	40	3
Volume Left	1	25	25	1
Volume Right	35	5	11	0
cSH	1579	1515	816	723
Volume to Capacity	0.00	0.02	0.05	0.00
Queue Length 95th (m)	0.0	0.4	1.2	0.1
Control Delay (s)	0.1	4.0	9.6	10.0
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	4.0	9.6	10.0
Approach LOS			A	B

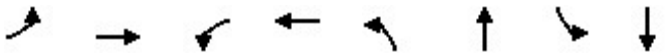
Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	24.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	110	112	5	19	61
Future Volume (Veh/h)	29	110	112	5	19	61
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	120	122	5	21	66
Pedestrians		28	28		3	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		2	2		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		239	69			
pX, platoon unblocked						
vC, conflicting volume	130				340	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	130				340	156
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	92
cM capacity (veh/h)	1464				619	871

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	32	120	127	87
Volume Left	32	0	0	21
Volume Right	0	0	5	66
cSH	1464	1700	1700	793
Volume to Capacity	0.02	0.07	0.07	0.11
Queue Length 95th (m)	0.5	0.0	0.0	2.8
Control Delay (s)	7.5	0.0	0.0	10.1
Lane LOS	A			B
Approach Delay (s)	1.6		0.0	10.1
Approach LOS				B

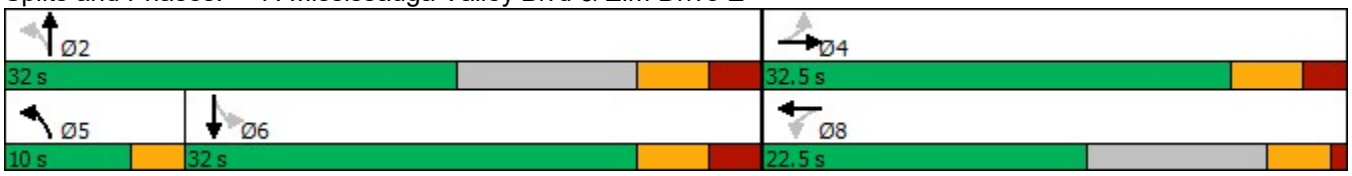
Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	31	12	47	29	52	106	7	162
Future Volume (vph)	31	12	47	29	52	106	7	162
Lane Group Flow (vph)	34	101	0	108	57	137	8	201
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	5.0	5.0	5.0	8.0	8.0	8.0
Minimum Split (s)	32.5	32.5	22.5	22.5	10.0	32.0	32.0	32.0
Total Split (s)	32.5	32.5	22.5	22.5	10.0	32.0	32.0	32.0
Total Split (%)	43.6%	43.6%	30.2%	30.2%	13.4%	43.0%	43.0%	43.0%
Yellow Time (s)	4.0	4.0	3.5	3.5	3.0	4.0	4.0	4.0
All-Red Time (s)	2.5	2.5	1.0	1.0	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		4.5	3.0	7.0	7.0	7.0
Lead/Lag					Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes
Recall Mode	None	None	None	None	Min	Min	Min	Min
Act Effct Green (s)	8.7	8.7		9.3	24.5	22.5	10.4	10.4
Actuated g/C Ratio	0.23	0.23		0.24	0.64	0.58	0.27	0.27
v/c Ratio	0.14	0.27		0.31	0.09	0.13	0.02	0.42
Control Delay	16.5	7.9		14.0	4.2	5.8	12.0	15.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	7.9		14.0	4.2	5.8	12.0	15.6
LOS	B	A		B	A	A	B	B
Approach Delay		10.0		14.0		5.4		15.5
Approach LOS		B		B		A		B
Queue Length 50th (m)	2.0	0.7		4.7	1.4	4.2	0.4	11.4
Queue Length 95th (m)	7.8	9.8		15.3	4.4	10.7	2.6	25.2
Internal Link Dist (m)		44.7		15.4		104.6		53.4
Turn Bay Length (m)	17.0				16.0		21.0	
Base Capacity (vph)	770	987		1024	685	1538	813	1179
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.04	0.10		0.11	0.08	0.09	0.01	0.17

Intersection Summary			
Cycle Length: 74.5			
Actuated Cycle Length: 38.5			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 56.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: Mississauga Valley Blvd & Elm Drive E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	12	81	47	29	23	52	106	20	7	162	23
Future Volume (vph)	31	12	81	47	29	23	52	106	20	7	162	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.96			0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.97	1.00			0.99		1.00	1.00		0.98	1.00	
Frt	1.00	0.87			0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1573	1409			1717		1623	1777		1745	1746	
Flt Permitted	0.69	1.00			0.80		0.49	1.00		0.67	1.00	
Satd. Flow (perm)	1138	1409			1405		839	1777		1230	1746	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	13	88	51	32	25	57	115	22	8	176	25
RTOR Reduction (vph)	0	75	0	0	18	0	0	8	0	0	7	0
Lane Group Flow (vph)	34	26	0	0	90	0	57	129	0	8	194	0
Confl. Peds. (#/hr)	32		32	22		22			27	34		34
Heavy Vehicles (%)	10%	8%	12%	2%	3%	0%	10%	3%	0%	0%	2%	26%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	6.1	6.1			8.1		20.2	20.2		10.5	10.5	
Effective Green, g (s)	6.1	6.1			8.1		20.2	20.2		10.5	10.5	
Actuated g/C Ratio	0.15	0.15			0.20		0.51	0.51		0.26	0.26	
Clearance Time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	215			285		557	901		324	460	
v/s Ratio Prot		0.02					0.02	c0.07			c0.11	
v/s Ratio Perm	0.03				c0.06		0.03			0.01		
v/c Ratio	0.20	0.12			0.31		0.10	0.14		0.02	0.42	
Uniform Delay, d1	14.7	14.5			13.5		5.1	5.2		10.9	12.1	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.3			0.6		0.1	0.1		0.0	0.6	
Delay (s)	15.3	14.8			14.1		5.2	5.3		10.9	12.8	
Level of Service	B	B			B		A	A		B	B	
Approach Delay (s)		14.9			14.1			5.3			12.7	
Approach LOS		B			B			A			B	

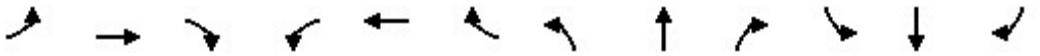
Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	39.8	Sum of lost time (s)	16.5
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	31	56	275	353	47
Future Volume (Veh/h)	17	31	56	275	353	47
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	34	61	299	384	51
Pedestrians	3			17	17	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			2	2	
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				77		
pX, platoon unblocked	0.98					
vC, conflicting volume	850	430	438			
vC1, stage 1 conf vol	412					
vC2, stage 2 conf vol	438					
vCu, unblocked vol	835	430	438			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	95	95			
cM capacity (veh/h)	510	619	1130			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	52	61	299	435
Volume Left	18	61	0	0
Volume Right	34	0	0	51
cSH	576	1130	1700	1700
Volume to Capacity	0.09	0.05	0.18	0.26
Queue Length 95th (m)	2.3	1.3	0.0	0.0
Control Delay (s)	11.9	8.4	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	11.9	1.4		0.0
Approach LOS	B			

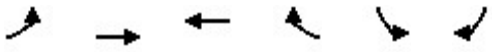
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	32	36	32	60	12	25	3	21	3	0	0
Future Volume (Veh/h)	2	32	36	32	60	12	25	3	21	3	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	35	39	35	65	13	27	3	23	3	0	0
Pedestrians		19			19			15			15	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			2			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	93			89			234	236	88	258	250	106
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	93			89			234	236	88	258	250	106
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	100	98	100	100	100
cM capacity (veh/h)	1494			1499			676	634	946	634	624	926

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	76	113	53	3
Volume Left	2	35	27	3
Volume Right	39	13	23	0
cSH	1494	1499	768	634
Volume to Capacity	0.00	0.02	0.07	0.00
Queue Length 95th (m)	0.0	0.5	1.7	0.1
Control Delay (s)	0.2	2.4	10.0	10.7
Lane LOS	A	A	B	B
Approach Delay (s)	0.2	2.4	10.0	10.7
Approach LOS			B	B

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	27.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	44	175	209	7	6	51
Future Volume (Veh/h)	44	175	209	7	6	51
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	48	190	227	8	7	55
Pedestrians		28	28		3	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		2	2		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		167	69			
pX, platoon unblocked						
vC, conflicting volume	238				548	262
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238				548	262
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				98	93
cM capacity (veh/h)	1337				462	760

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	48	190	235	62
Volume Left	48	0	0	7
Volume Right	0	0	8	55
cSH	1337	1700	1700	708
Volume to Capacity	0.04	0.11	0.14	0.09
Queue Length 95th (m)	0.8	0.0	0.0	2.2
Control Delay (s)	7.8	0.0	0.0	10.6
Lane LOS	A			B
Approach Delay (s)	1.6		0.0	10.6
Approach LOS				B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

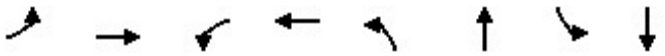
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	140	74	121	354	34	382
Act Effct Green (s)	9.5	9.5	10.0	30.7	28.9	15.7	15.7
Actuated g/C Ratio	0.21	0.21	0.22	0.68	0.64	0.35	0.35
v/c Ratio	0.20	0.35	0.23	0.18	0.31	0.10	0.65
Control Delay	21.5	10.3	16.8	4.4	6.5	11.5	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	10.3	16.8	4.4	6.5	11.5	18.2
LOS	C	B	B	A	A	B	B
Approach Delay		13.2	16.8		6.0		17.7
Approach LOS		B	B		A		B
Queue Length 50th (m)	3.5	2.1	4.0	3.2	13.6	1.9	24.9
Queue Length 95th (m)	12.6	15.2	14.5	8.4	28.7	6.6	49.8
Internal Link Dist (m)		44.7	15.4		104.6		53.4
Turn Bay Length (m)	17.0			16.0		21.0	
Base Capacity (vph)	710	959	913	673	1368	598	1007
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.15	0.08	0.18	0.26	0.06	0.38

Intersection Summary	
Cycle Length: 74.5	
Actuated Cycle Length: 45.1	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 12.1	Intersection LOS: B
Intersection Capacity Utilization 73.3%	ICU Level of Service D
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	28	101	31	23	14	111	271	54	31	272	79
Future Volume (vph)	45	28	101	31	23	14	111	271	54	31	272	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.96			0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.95	1.00			0.99		1.00	1.00		0.98	1.00	
Frt	1.00	0.88			0.97		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1589	1514			1723		1700	1798		1746	1669	
Flt Permitted	0.71	1.00			0.80		0.42	1.00		0.55	1.00	
Satd. Flow (perm)	1186	1514			1408		751	1798		1009	1669	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	49	30	110	34	25	15	121	295	59	34	296	86
RTOR Reduction (vph)	0	95	0	0	12	0	0	8	0	0	14	0
Lane Group Flow (vph)	49	45	0	0	62	0	121	346	0	34	368	0
Confl. Peds. (#/hr)	41		41	22		22			46	39		39
Heavy Vehicles (%)	7%	0%	6%	2%	3%	0%	5%	1%	0%	0%	2%	26%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	6.4	6.4			8.4		26.2	26.2		16.0	16.0	
Effective Green, g (s)	6.4	6.4			8.4		26.2	26.2		16.0	16.0	
Actuated g/C Ratio	0.14	0.14			0.18		0.57	0.57		0.35	0.35	
Clearance Time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	164	210			256		575	1021		350	579	
v/s Ratio Prot		0.03					0.03	c0.19			c0.22	
v/s Ratio Perm	0.04				c0.04		0.09			0.03		
v/c Ratio	0.30	0.22			0.24		0.21	0.34		0.10	0.64	
Uniform Delay, d1	17.8	17.6			16.1		4.8	5.3		10.2	12.6	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.5			0.5		0.2	0.2		0.1	2.3	
Delay (s)	18.9	18.1			16.6		5.0	5.5		10.3	14.9	
Level of Service	B	B			B		A	A		B	B	
Approach Delay (s)		18.3			16.6			5.4			14.5	
Approach LOS		B			B			A			B	

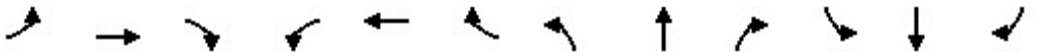
Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	16.5
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	193	63	192	75	1627	87	1793
Act Effct Green (s)	16.3	16.3	16.3	16.3	69.0	56.6	67.4	58.0
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.70	0.57	0.68	0.59
v/c Ratio	0.26	0.61	0.37	0.62	0.31	0.57	0.36	0.61
Control Delay	45.6	41.4	48.6	44.1	7.8	13.8	8.9	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	41.4	48.6	44.1	7.8	13.8	8.9	14.7
LOS	D	D	D	D	A	B	A	B
Approach Delay		42.2		45.2		13.5		14.5
Approach LOS		D		D		B		B
Queue Length 50th (m)	7.5	26.3	10.8	28.1	3.6	65.6	4.1	78.6
Queue Length 95th (m)	22.0	60.6	28.7	62.9	9.0	91.6	10.1	112.8
Internal Link Dist (m)		124.5		143.4		120.1		174.5
Turn Bay Length (m)	22.5		41.0		28.0		69.0	
Base Capacity (vph)	580	959	577	964	284	4166	252	4067
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.20	0.11	0.20	0.26	0.39	0.35	0.44

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 98.8			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 17.6		Intersection LOS: B	
Intersection Capacity Utilization 75.5%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	76	101	58	87	89	69	1418	79	80	1604	46
Future Volume (vph)	41	76	101	58	87	89	69	1418	79	80	1604	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	0.91		1.00	0.92		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1685		1750	1702		1750	4989		1750	5008	
Flt Permitted	0.56	1.00		0.56	1.00		0.09	1.00		0.11	1.00	
Satd. Flow (perm)	1041	1685		1036	1702		158	4989		198	5008	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	83	110	63	95	97	75	1541	86	87	1743	50
RTOR Reduction (vph)	0	37	0	0	28	0	0	3	0	0	2	0
Lane Group Flow (vph)	45	156	0	63	164	0	75	1624	0	87	1791	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.3	16.3		16.3	16.3		63.9	57.5		64.9	58.0	
Effective Green, g (s)	16.3	16.3		16.3	16.3		63.9	57.5		64.9	58.0	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.65	0.58		0.66	0.59	
Clearance Time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	171	278		171	281		205	2906		238	2942	
v/s Ratio Prot		0.09			c0.10		0.02	0.33		c0.03	c0.36	
v/s Ratio Perm	0.04			0.06			0.21			0.21		
v/c Ratio	0.26	0.56		0.37	0.58		0.37	0.56		0.37	0.61	
Uniform Delay, d1	36.0	37.9		36.6	38.1		8.4	12.7		7.6	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	2.6		1.3	3.1		1.1	0.2		1.0	0.4	
Delay (s)	36.8	40.5		38.0	41.1		9.5	13.0		8.5	13.4	
Level of Service	D	D		D	D		A	B		A	B	
Approach Delay (s)		39.8			40.3			12.8			13.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	98.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

From: Tyler Xuereb
To: Sam Nguyen
Subject: RE: Growth Rate
Date: Tuesday, March 3, 2020 9:08:34 AM

Good Morning Sam,

Using the City's Travel Demand Model and supporting traffic count data, the City's Transportation Planning section has determined the projected growth on Hurontario Street to be used as part of your study. The recommended projected growth is shown below:

Hurontario Street

	Existing to 2023	
	NB	SB
Time		
AM Peak Hour	-30.0%	-31.0%
PM Peak Hour	-28.0%	-30.0%

Note:
-The above analysis assumes the lane reduction on Hurontario Street from 3 through lanes in each direction to 2 through lanes in each direction, therefore your analysis should also reflect these changes.
-Rates for Hurontario Street represent a one-time total change, this represents the changes in travel patterns as a result of LRT implementation.

If you have any questions regarding the information provided please let me know.

Regards,

Tyler

From: Sam Nguyen [mailto:sam@nextrans.ca]
Sent: 2020/03/02 9:38 AM
To: Tyler Xuereb
Subject: RE: Growth Rate

Hi Tyler,

I have submitted the TOR of 3575 kaneff cres to the City, please see the attached.
The transportation analysis for 3575 kaneff cres doesn't consider any background development, the

horizon year is 5 year after full build out on 2023.
Please provide the information for 3575 Kaneff Cres due to urgent work.

Thanks,

Sam (Trang) Nguyen
Transportation Analyst

o: 905-503-2563 ext. 207
c: 416-904-1461
e: sam@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Monday, March 2, 2020 8:15 AM
To: Sam Nguyen <sam@nextrans.ca>
Subject: RE: Growth Rate

Good Morning Sam,

Thanks for your email.

Unfortunately we only provide growth rates for major collectors and arterials and as such will not be able to provide rates for Campus Road and Bresler Drive, I will however provide rates for Hurontario Street. I just had a few questions in regards to your analysis:

-Has a TOR been submitted to the City for the TIS scope and has it been approved?
-Does your transportation analysis consider any background developments?
-Could you provide me with your horizon year?
-Could I ask that you prepare a quick map showing the locations of both your subject site and also the locations of the background developments if any that you are including in your analysis?

Regards,

Tyler

From: Sam Nguyen [mailto:sam@nextrans.ca]
Sent: 2020/02/28 4:38 PM
To: Tyler Xuereb
Subject: Growth Rate

Hi Tyler,

NexTrans is undertaking the transportation impact study for 3575 Kaneff Crescent and 5830 Campus Road.
Can you provide me the growth rate for Hurontario Street, Campus Road and Bresler Drive?

Thanks,

Sam (Trang) Nguyen
Transportation Analyst

o: 905-503-2563 ext. 207
c: 416-904-1461
e: sam@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
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Aurora ON L4G 6W8

APPENDIX D

Background Developments

Trip Generation Rates (ITE 9th Edition)									
				Weekday			Weekday		
				AM Peak Hour			PM Peak Hour		
Land use	Building	Units	ITE Code	In	Out	Total	In	Out	Total
Condominium		units	230	0.07	0.37	0.44	0.35	0.17	0.52
Retail Commercial		1000 sq.ft	820	0.60	0.36	0.96	1.78	1.93	3.71
Daycare		1000 sq.ft	565	6.46	5.72	12.18	5.80	6.54	12.34

Trip Generation Rate Reductions	
Transit reduction (assuming No LRT) applied to Residential Trips	12%
Transit reduction (assuming LRT) applied to Residential Trips	19%
'Synergy' Trip Reduction applied to Retail Trips	20%
'Synergy' Trip Reduction applied to Daycare Trips	20%

Values used in Original Report

Estimated Vehicle Trips (with Reductions)								
Condominium (no LRT)	1347		89	433	522	413	203	616
Condominium (yes LRT)	1347		82	398	480	380	187	567
Daycare	6.18		32	28	60	29	32	61
Retail Commercial	6.86		3	2	5	10	11	20
Vehicle Trips Grand Total (no LRT)			124	463	587	451	246	698
Vehicle Trips Grand Total (yes LRT)			117	429	546	419	230	649

Using updated statistics

Estimated Vehicle Trips (with Reductions)								
Condominium (no LRT)	1365		90	439	529	418	206	625
Condominium (yes LRT)	1365		83	404	486	385	190	575
Daycare	5.30		27	24	52	25	28	52
Retail Commercial	4.87		2	1	4	7	8	14
Vehicle Trips Grand Total (no LRT)			120	464	584	450	241	691
Vehicle Trips Grand Total (yes LRT)			112	429	542	417	225	642

Difference (in total trips generated)								
Vehicle Trips Grand Total (no LRT)			-4	1	-3	-1	-5	-6
Vehicle Trips Grand Total (yes LRT)			-4	1	-4	-2	-5	-7

Note: Negative values indicate that the updated statistics generate fewer trips than the original statistics.

Poulos & Chung

Comparison of Trip Generation (Original vs Updated Statistics)
Figure 1

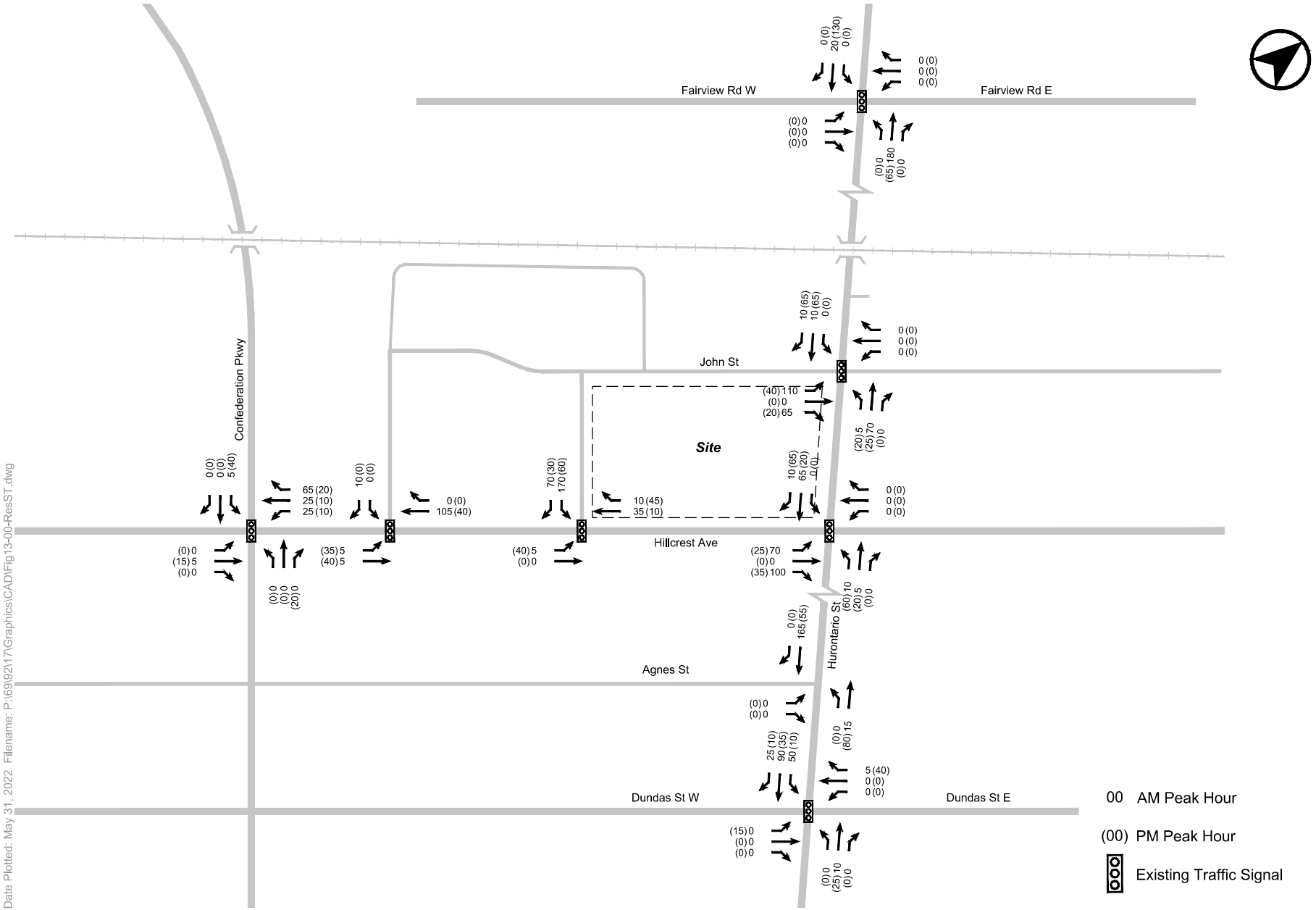
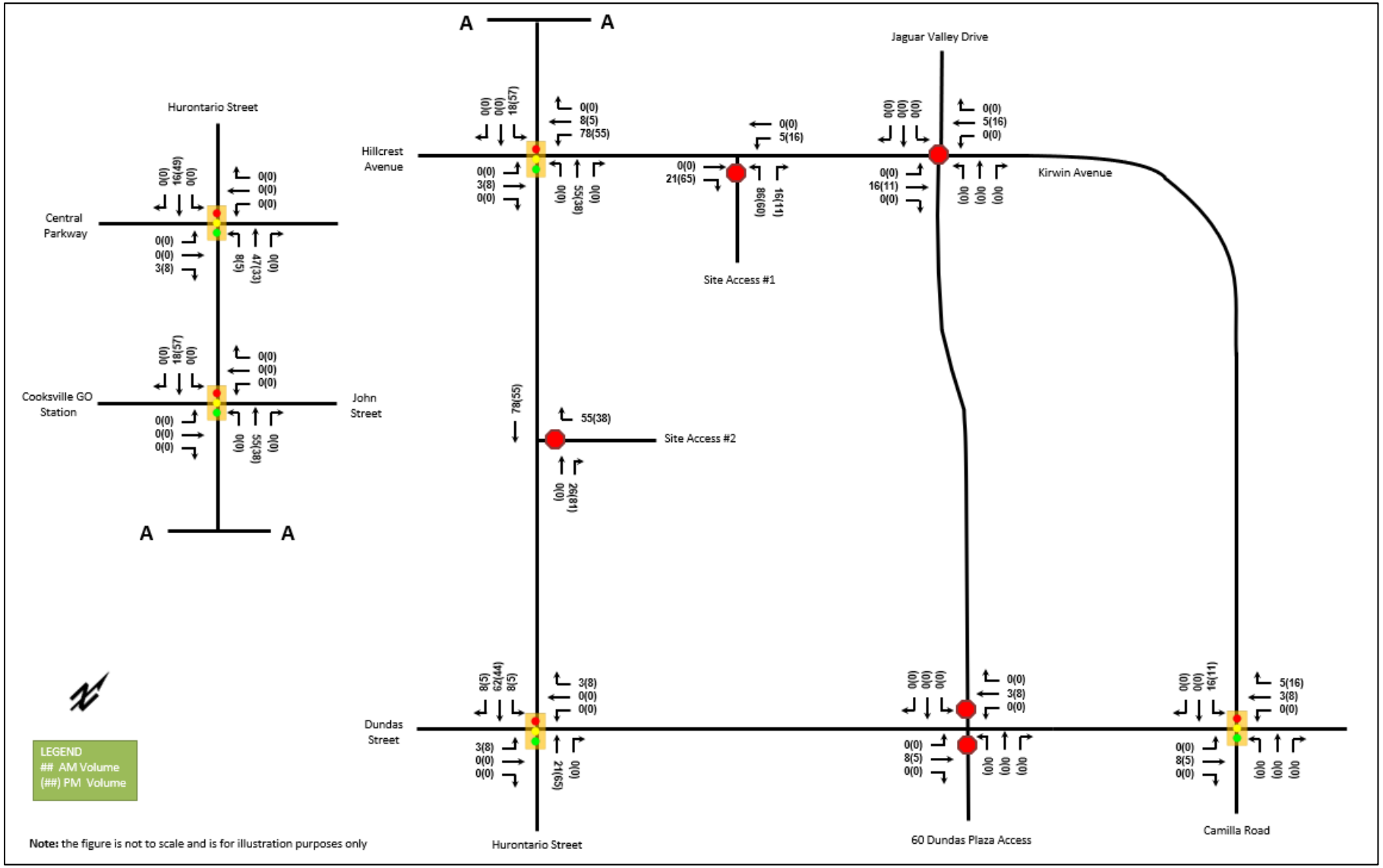


FIGURE 13 RESIDENTIAL SITE TRAFFIC VOLUMES - EXTERNAL

Figure 12: New Site Generated Auto Volumes



5.1 Site Generated Traffic

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

The trip generation of the proposed development was forecasted using the rates provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition.

2016 Transportation Tomorrow Survey (TTS) data was used to determine the existing modal split. Based on the Transportation Tomorrow Survey, there are 23% and 26% modal split during a.m. and p.m. peak hours. We have considered a 20% modal split during the weekday a.m. peak period and 25% modal split during the weekday p.m. peak period. Modal split calculations are attached. Land use Category 222 "Multifamily Housing (High-Rise)" and Land use Category 820 "Shopping Centre" was used to forecast the trips generated by the development. The forecasted primary trips are tabulated in Table 6.

The pass-by trips were estimated using the information in Chapter 5 of the ITE's Trip Generation handbook. The ITE handbook defines primary trips as "trips made for the specific purpose of visiting the generator". When applying pass-by trips to the commercial part of the proposed development, the trips were applied the weekday p.m. and not the weekday a.m. peak hour. The percentage of pass-by trips applied to the trip generation calculations was found in Chapter 5 of the ITE's Trip Generation Handbook. A pass-by rate of 34% was applied to the p.m. Pass-by assignment, and gross trips assignments are shown in Appendix H.

Given that the proposed development has multiple land uses, the ITE Multi-Use Trip Generation calculation was used. The worksheets to estimate the internal capture trips for the proposed development in weekday p.m. peak hours are presented in Appendix H.

Table 6: Trip Generation

	Land Use Code	A.M. Peak Hour			P.M. Peak Hour		
		Inbound	Outbound	Total	Inbound	Outbound	Total
Multifamily Housing (High-Rise)							
Total Gross Trips	222 - Multifamily Housing (High-Rise)	49	154	203	146	94	240
Pass-by Trips		0	0	0	0	0	0
Modal Split		10	32	42	37	24	61
Internal Capture Trips		1	2	3	10	4	14
New Primary Trips		38	120	158	99	66	165
Shopping Center							
Total Gross Trips	820 - Shopping Center	12	7	19	36	40	76
Pass-by Trips		0	0	0	12	14	26
Modal Split		0	0	0	0	0	0
Internal Capture Trips		2	1	3	4	10	14
New Primary Trips		10	6	16	20	16	36
TOTAL GROSS TRIPS		61	161	222	182	134	316
TOTAL PASS-BY TRIPS		0	0	0	12	14	26
TOTAL MODAL SPLIT		10	32	42	37	24	61
TOTAL INTERNAL CAPTURE TRIPS		3	3	6	14	14	28
TOTAL PRIMARY TRIPS		48	126	174	119	82	201

5.1 Site Generated Traffic

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

The trip generation of the proposed development was forecasted using the rates provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition.

2016 Transportation Tomorrow Survey (TTS) data was used to determine the existing modal split. Based on the Transportation Tomorrow Survey, there are 23% and 26% modal split during a.m. and p.m. peak hours. We have considered a 20% modal split during the weekday a.m. peak period and 25% modal split during the weekday p.m. peak period. Modal split calculations are attached. Land use Category 222 "Multifamily Housing (High-Rise)" and Land use Category 820 "Shopping Centre" was used to forecast the trips generated by the development. The forecasted primary trips are tabulated in Table 6.

The pass-by trips were estimated using the information in Chapter 5 of the ITE's Trip Generation handbook. The ITE handbook defines primary trips as "trips made for the specific purpose of visiting the generator". When applying pass-by trips to the commercial part of the proposed development, the trips were applied the weekday p.m. and not the weekday a.m. peak hour. The percentage of pass-by trips applied to the trip generation calculations was found in Chapter 5 of the ITE's Trip Generation Handbook. A pass-by rate of 34% was applied to the p.m. Pass-by assignment, and gross trips assignments are shown in Appendix H.

Given that the proposed development has multiple land uses, the ITE Multi-Use Trip Generation calculation was used. The worksheets to estimate the internal capture trips for the proposed development in weekday p.m. peak hours are presented in Appendix H.

Table 6: Trip Generation

	Land Use Code	A.M. Peak Hour			P.M. Peak Hour		
		Inbound	Outbound	Total	Inbound	Outbound	Total
Multifamily Housing (High-Rise)							
Total Gross Trips	222 - Multifamily Housing (High-Rise)	49	154	203	146	94	240
Pass-by Trips		0	0	0	0	0	0
Modal Split		10	32	42	37	24	61
Internal Capture Trips		1	2	3	10	4	14
New Primary Trips		38	120	158	99	66	165
Shopping Center							
Total Gross Trips	820 - Shopping Center	12	7	19	36	40	76
Pass-by Trips		0	0	0	12	14	26
Modal Split		0	0	0	0	0	0
Internal Capture Trips		2	1	3	4	10	14
New Primary Trips		10	6	16	20	16	36
TOTAL GROSS TRIPS		61	161	222	182	134	316
TOTAL PASS-BY TRIPS		0	0	0	12	14	26
TOTAL MODAL SPLIT		10	32	42	37	24	61
TOTAL INTERNAL CAPTURE TRIPS		3	3	6	14	14	28
TOTAL PRIMARY TRIPS		48	126	174	119	82	201

Figure 3-6: Site Traffic Volumes – Future Trips to Remove

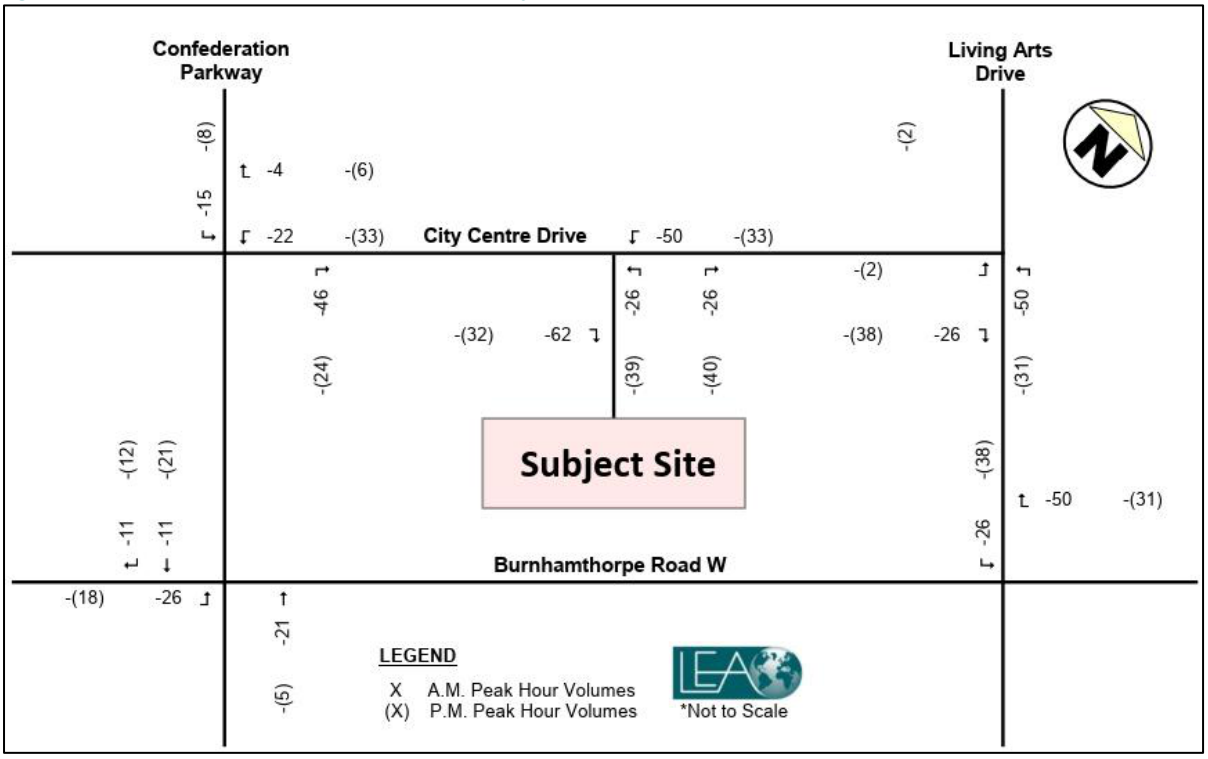
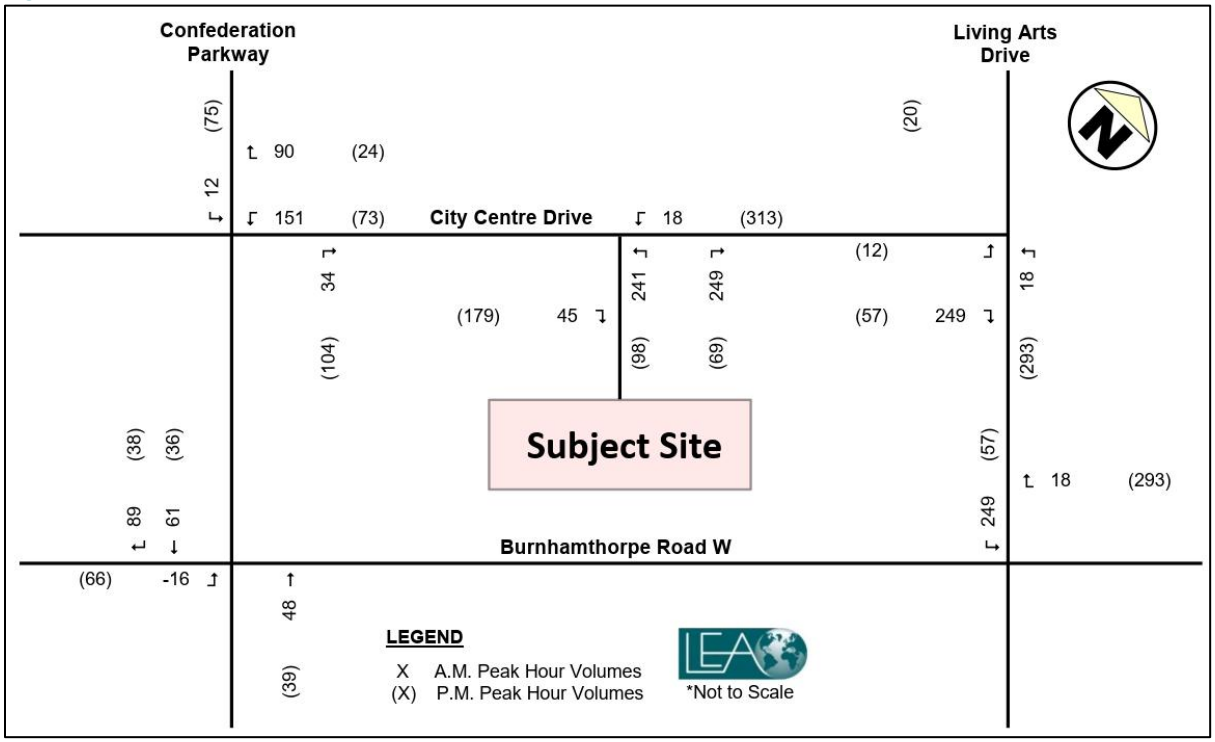
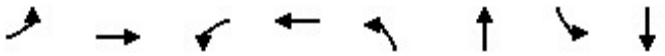


Figure 3-7: Net Site Traffic Volumes



APPENDIX E

Future Background Traffic Level of Service Calculations

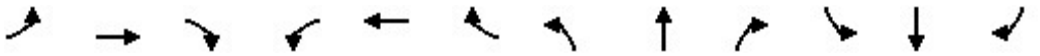


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	357	356	83	214	118	1922	43	1495
Act Effct Green (s)	52.0	52.0	52.0	52.0	11.9	83.1	6.8	76.0
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.08	0.53	0.04	0.48
v/c Ratio	1.08	0.59	0.39	0.36	0.89	1.05	0.58	0.90
Control Delay	120.7	35.9	48.1	31.4	124.6	71.6	103.8	45.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	120.7	35.9	48.1	31.4	124.6	71.6	103.8	45.2
LOS	F	D	D	C	F	E	F	D
Approach Delay		78.4		36.0		74.7		46.8
Approach LOS		E		D		E		D
Queue Length 50th (m)	~127.2	68.9	20.5	37.7	38.3	~353.1	13.7	217.6
Queue Length 95th (m)	#191.1	103.4	38.0	61.1	#84.6	#393.8	#30.8	248.4
Internal Link Dist (m)		217.5		214.8		169.2		328.4
Turn Bay Length (m)	22.5		41.0		28.0		69.0	
Base Capacity (vph)	331	605	215	587	132	1833	77	1758
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.08	0.59	0.39	0.36	0.89	1.05	0.56	0.85

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 158			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 63.4		Intersection LOS: E	
Intersection Capacity Utilization 105.4%		ICU Level of Service G	
Analysis Period (min) 15			

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	328	82	246	76	72	125	109	1722	46	40	1288	87
Future Volume (vph)	328	82	246	76	72	125	109	1722	46	40	1288	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.90		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1635		1750	1666		1750	3486		1750	3467	
Flt Permitted	0.55	1.00		0.36	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1009	1635		655	1666		1750	3486		1750	3467	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	357	89	267	83	78	136	118	1872	50	43	1400	95
RTOR Reduction (vph)	0	67	0	0	39	0	0	1	0	0	3	0
Lane Group Flow (vph)	357	289	0	83	175	0	118	1921	0	43	1492	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	52.0	52.0		52.0	52.0		12.6	83.1		5.5	76.0	
Effective Green, g (s)	52.0	52.0		52.0	52.0		12.6	83.1		5.5	76.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.08	0.52		0.03	0.48	
Clearance Time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	330	536		214	546		139	1826		60	1661	
v/s Ratio Prot		0.18			0.11		0.07	c0.55		0.02	c0.43	
v/s Ratio Perm	c0.35			0.13								
v/c Ratio	1.08	0.54		0.39	0.32		0.85	1.05		0.72	0.90	
Uniform Delay, d1	53.3	43.5		41.0	40.0		72.1	37.8		75.8	37.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	73.1	1.0		1.2	0.3		35.5	36.3		33.3	6.9	
Delay (s)	126.4	44.6		42.2	40.4		107.6	74.0		109.1	44.6	
Level of Service	F	D		D	D		F	E		F	D	
Approach Delay (s)		85.6			40.9			76.0			46.4	
Approach LOS		F			D			E			D	

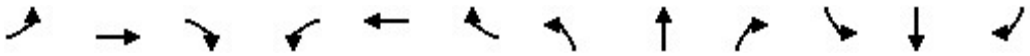
Intersection Summary			
HCM 2000 Control Delay	65.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	158.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	105.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	39	14	184	198	10
Future Volume (Veh/h)	31	39	14	184	198	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	42	15	200	215	11
Pedestrians	4			13	13	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			1	1	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				77		
pX, platoon unblocked						
vC, conflicting volume	468	238	230			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	468	238	230			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	95	99			
cM capacity (veh/h)	538	794	1345			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	76	15	200	226
Volume Left	34	15	0	0
Volume Right	42	0	0	11
cSH	655	1345	1700	1700
Volume to Capacity	0.12	0.01	0.12	0.13
Queue Length 95th (m)	3.0	0.3	0.0	0.0
Control Delay (s)	11.2	7.7	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	11.2	0.5		0.0
Approach LOS	B			

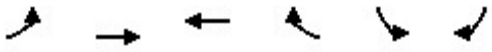
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	34	32	23	16	5	23	4	10	1	2	0
Future Volume (Veh/h)	1	34	32	23	16	5	23	4	10	1	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	37	35	25	17	5	25	4	11	1	2	0
Pedestrians		15			15			10			10	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	32			82			152	148	80	164	164	44
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	32			82			152	148	80	164	164	44
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	99	99	100	100	100
cM capacity (veh/h)	1579			1515			779	721	965	755	707	1009

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	73	47	40	3
Volume Left	1	25	25	1
Volume Right	35	5	11	0
cSH	1579	1515	816	723
Volume to Capacity	0.00	0.02	0.05	0.00
Queue Length 95th (m)	0.0	0.4	1.2	0.1
Control Delay (s)	0.1	4.0	9.6	10.0
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	4.0	9.6	10.0
Approach LOS			A	B

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	24.3%	ICU Level of Service	A	
Analysis Period (min)	15			



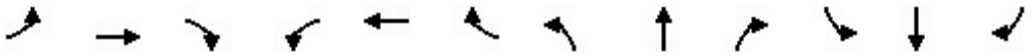
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	36	170	148	6	19	61
Future Volume (Veh/h)	36	170	148	6	19	61
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	185	161	7	21	66
Pedestrians		28	28		3	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		2	2		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		239	69			
pX, platoon unblocked						
vC, conflicting volume	171				458	196
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	171				458	196
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				96	92
cM capacity (veh/h)	1415				525	828

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	39	185	168	87
Volume Left	39	0	0	21
Volume Right	0	0	7	66
cSH	1415	1700	1700	727
Volume to Capacity	0.03	0.11	0.10	0.12
Queue Length 95th (m)	0.6	0.0	0.0	3.1
Control Delay (s)	7.6	0.0	0.0	10.6
Lane LOS	A			B
Approach Delay (s)	1.3		0.0	10.6
Approach LOS				B

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	162	108	80	170	10	259
Act Effct Green (s)	9.1	9.1	9.7	26.4	24.5	12.0	12.0
Actuated g/C Ratio	0.22	0.22	0.24	0.65	0.60	0.29	0.29
v/c Ratio	0.13	0.39	0.32	0.12	0.16	0.03	0.50
Control Delay	17.1	8.1	15.3	4.4	6.0	11.9	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	8.1	15.3	4.4	6.0	11.9	16.5
LOS	B	A	B	A	A	B	B
Approach Delay		9.9	15.3		5.5		16.3
Approach LOS		A	B		A		B
Queue Length 50th (m)	2.6	1.0	5.1	2.1	5.5	0.6	15.5
Queue Length 95th (m)	9.5	13.1	16.7	6.3	14.0	3.0	33.4
Internal Link Dist (m)		44.7	15.4		104.6		53.4
Turn Bay Length (m)	17.0			16.0		21.0	
Base Capacity (vph)	979	962	947	681	1469	759	1116
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.17	0.11	0.12	0.12	0.01	0.23

Intersection Summary	
Cycle Length: 74.5	
Actuated Cycle Length: 40.7	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 11.4	Intersection LOS: B
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	15	134	47	29	23	74	132	25	9	201	38
Future Volume (vph)	39	15	134	47	29	23	74	132	25	9	201	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.96			0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.97	1.00			0.99		1.00	1.00		0.98	1.00	
Frt	1.00	0.86			0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1571	1397			1716		1623	1777		1745	1721	
Flt Permitted	0.91	1.00			0.77		0.48	1.00		0.65	1.00	
Satd. Flow (perm)	1506	1397			1353		821	1777		1193	1721	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	16	146	51	32	25	80	143	27	10	218	41
RTOR Reduction (vph)	0	124	0	0	18	0	0	8	0	0	10	0
Lane Group Flow (vph)	42	38	0	0	90	0	80	162	0	10	249	0
Confl. Peds. (#/hr)	32		32	22		22			27	34		34
Heavy Vehicles (%)	10%	8%	12%	2%	3%	0%	10%	3%	0%	0%	2%	26%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	6.3	6.3			8.3		22.1	22.1		12.2	12.2	
Effective Green, g (s)	6.3	6.3			8.3		22.1	22.1		12.2	12.2	
Actuated g/C Ratio	0.15	0.15			0.20		0.53	0.53		0.29	0.29	
Clearance Time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	226	210			268		565	937		347	501	
v/s Ratio Prot		0.03					0.02	c0.09			c0.14	
v/s Ratio Perm	0.03				c0.07		0.05			0.01		
v/c Ratio	0.19	0.18			0.33		0.14	0.17		0.03	0.50	
Uniform Delay, d1	15.6	15.5			14.4		5.0	5.1		10.6	12.3	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.4			0.7		0.1	0.1		0.0	0.8	
Delay (s)	16.0	16.0			15.2		5.2	5.2		10.6	13.1	
Level of Service	B	B			B		A	A		B	B	
Approach Delay (s)		16.0			15.2			5.2			13.0	
Approach LOS		B			B			A			B	

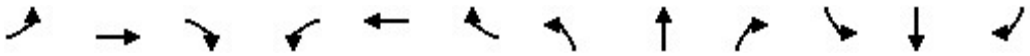
Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	41.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	31	70	342	468	58
Future Volume (Veh/h)	17	31	70	342	468	58
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	34	76	372	509	63
Pedestrians	3			17	17	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			2	2	
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (m)				77		
pX, platoon unblocked	0.93					
vC, conflicting volume	1084	560	575			
vC1, stage 1 conf vol	544					
vC2, stage 2 conf vol	541					
vCu, unblocked vol	1052	560	575			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	93	92			
cM capacity (veh/h)	428	522	1006			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	52	76	372	572
Volume Left	18	76	0	0
Volume Right	34	0	0	63
cSH	485	1006	1700	1700
Volume to Capacity	0.11	0.08	0.22	0.34
Queue Length 95th (m)	2.7	1.9	0.0	0.0
Control Delay (s)	13.3	8.9	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	13.3	1.5		0.0
Approach LOS	B			

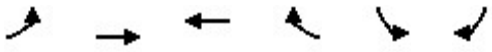
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	32	36	32	60	12	25	3	21	3	0	0
Future Volume (Veh/h)	2	32	36	32	60	12	25	3	21	3	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	35	39	35	65	13	27	3	23	3	0	0
Pedestrians		19			19			15			15	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			2			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	93			89			234	236	88	258	250	106
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	93			89			234	236	88	258	250	106
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	100	98	100	100	100
cM capacity (veh/h)	1494			1499			676	634	946	634	624	926

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	76	113	53	3
Volume Left	2	35	27	3
Volume Right	39	13	23	0
cSH	1494	1499	768	634
Volume to Capacity	0.00	0.02	0.07	0.00
Queue Length 95th (m)	0.0	0.5	1.7	0.1
Control Delay (s)	0.2	2.4	10.0	10.7
Lane LOS	A	A	B	B
Approach Delay (s)	0.2	2.4	10.0	10.7
Approach LOS			B	B

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	27.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	247	289	8	6	51
Future Volume (Veh/h)	55	247	289	8	6	51
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	268	314	9	7	55
Pedestrians		28	28		3	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		2	2		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		167	69			
pX, platoon unblocked	0.98				0.98	0.98
vC, conflicting volume	326				738	350
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	307				725	331
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				98	92
cM capacity (veh/h)	1242				353	685

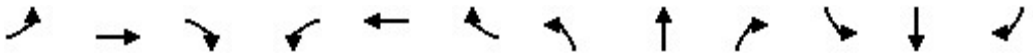
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	60	268	323	62
Volume Left	60	0	0	7
Volume Right	0	0	9	55
cSH	1242	1700	1700	619
Volume to Capacity	0.05	0.16	0.19	0.10
Queue Length 95th (m)	1.2	0.0	0.0	2.5
Control Delay (s)	8.0	0.0	0.0	11.5
Lane LOS	A			B
Approach Delay (s)	1.5		0.0	11.5
Approach LOS				B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	206	74	182	439	42	505
Act Effct Green (s)	9.5	9.5	11.5	36.3	32.3	22.2	22.2
Actuated g/C Ratio	0.17	0.17	0.21	0.66	0.58	0.40	0.40
v/c Ratio	0.31	0.53	0.25	0.36	0.42	0.11	0.76
Control Delay	25.5	11.7	18.3	6.0	7.8	11.7	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	11.7	18.3	6.0	7.8	11.7	22.9
LOS	C	B	B	A	A	B	C
Approach Delay		14.9	18.3		7.3		22.0
Approach LOS		B	B		A		C
Queue Length 50th (m)	5.8	3.5	5.3	5.1	18.4	2.4	37.3
Queue Length 95th (m)	14.7	18.3	14.1	14.3	42.5	8.4	#90.4
Internal Link Dist (m)		44.7	15.4		104.6		53.4
Turn Bay Length (m)	17.0			16.0		21.0	
Base Capacity (vph)	544	786	718	509	1147	421	754
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.26	0.10	0.36	0.38	0.10	0.67

Intersection Summary	
Cycle Length: 74.5	
Actuated Cycle Length: 55.4	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 14.5	Intersection LOS: B
Intersection Capacity Utilization 79.6%	ICU Level of Service D
Analysis Period (min) 15	

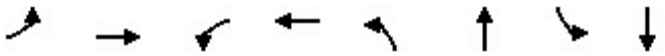
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	35	155	31	23	14	167	337	67	39	338	127
Future Volume (vph)	56	35	155	31	23	14	167	337	67	39	338	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.95			0.99		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.94	1.00			0.99		1.00	1.00		0.98	1.00	
Frt	1.00	0.88			0.97		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1573	1492			1720		1700	1796		1743	1632	
Flt Permitted	0.71	1.00			0.80		0.31	1.00		0.51	1.00	
Satd. Flow (perm)	1174	1492			1402		555	1796		932	1632	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	38	168	34	25	15	182	366	73	42	367	138
RTOR Reduction (vph)	0	139	0	0	12	0	0	7	0	0	16	0
Lane Group Flow (vph)	61	67	0	0	62	0	182	432	0	42	489	0
Confl. Peds. (#/hr)	41		41	22		22			46	39		39
Heavy Vehicles (%)	7%	0%	6%	2%	3%	0%	5%	1%	0%	0%	2%	26%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.5	9.5			11.5		32.3	32.3		22.3	22.3	
Effective Green, g (s)	9.5	9.5			11.5		32.3	32.3		22.3	22.3	
Actuated g/C Ratio	0.17	0.17			0.21		0.58	0.58		0.40	0.40	
Clearance Time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	201	256			291		469	1049		375	658	
v/s Ratio Prot		0.04					0.05	c0.24			c0.30	
v/s Ratio Perm	c0.05				0.04		0.18			0.05		
v/c Ratio	0.30	0.26			0.21		0.39	0.41		0.11	0.74	
Uniform Delay, d1	20.0	19.9			18.2		6.3	6.3		10.3	14.1	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.5			0.4		0.5	0.3		0.1	4.5	
Delay (s)	20.9	20.4			18.5		6.8	6.6		10.4	18.6	
Level of Service	C	C			B		A	A		B	B	
Approach Delay (s)		20.5			18.5			6.6			18.0	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

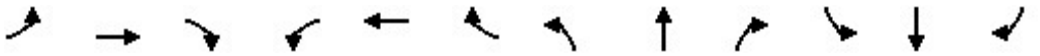


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	147	337	63	223	284	1771	87	2177
Act Effct Green (s)	29.0	29.0	29.0	29.0	10.0	80.6	9.7	80.3
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.07	0.59	0.07	0.58
v/c Ratio	0.82	0.84	0.70	0.58	2.24	0.87	0.71	1.08
Control Delay	84.0	59.9	88.2	48.5	605.3	31.0	92.8	73.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.0	59.9	88.2	48.5	605.3	31.0	92.8	73.9
LOS	F	E	F	D	F	C	F	E
Approach Delay		67.3		57.2		110.4		74.6
Approach LOS		E		E		F		E
Queue Length 50th (m)	38.2	72.5	15.9	48.3	~123.9	204.8	23.4	~346.5
Queue Length 95th (m)	64.2	107.7	33.5	73.9	#197.9	#317.1	#54.4	#450.1
Internal Link Dist (m)		124.5		143.4		120.1		174.5
Turn Bay Length (m)	22.5		41.0		28.0		69.0	
Base Capacity (vph)	323	670	162	670	127	2040	127	2017
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.50	0.39	0.33	2.24	0.87	0.69	1.08

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 137.4			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.24			
Intersection Signal Delay: 87.4		Intersection LOS: F	
Intersection Capacity Utilization 118.0%		ICU Level of Service H	
Analysis Period (min) 15			

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	105	205	58	116	89	261	1550	79	80	1783	220
Future Volume (vph)	135	105	205	58	116	89	261	1550	79	80	1783	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1659		1750	1722		1750	3474		1750	3442	
Flt Permitted	0.46	1.00		0.23	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	853	1659		427	1722		1750	3474		1750	3442	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	114	223	63	126	97	284	1685	86	87	1938	239
RTOR Reduction (vph)	0	51	0	0	21	0	0	2	0	0	5	0
Lane Group Flow (vph)	147	286	0	63	202	0	284	1769	0	87	2172	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	29.0	29.0		29.0	29.0		10.0	80.6		9.7	80.3	
Effective Green, g (s)	29.0	29.0		29.0	29.0		10.0	80.6		9.7	80.3	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.07	0.59		0.07	0.58	
Clearance Time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	180	350		90	363		127	2039		123	2013	
v/s Ratio Prot		0.17			0.12		c0.16	0.51		0.05	c0.63	
v/s Ratio Perm	c0.17			0.15								
v/c Ratio	0.82	0.82		0.70	0.56		2.24	0.87		0.71	1.08	
Uniform Delay, d1	51.6	51.6		50.1	48.4		63.7	23.9		62.4	28.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.0	13.7		21.1	1.9		580.9	4.2		16.9	45.2	
Delay (s)	75.6	65.3		71.3	50.3		644.5	28.1		79.3	73.7	
Level of Service	E	E		E	D		F	C		E	E	
Approach Delay (s)		68.4			54.9			113.2			73.9	
Approach LOS		E			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	88.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	137.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	118.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX F

2016 TTS Data Extraction

Mon Oct 17 2022 13:26:40 GMT-0400 (Eastern Daylight Time) - Run Time: 2763ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
2006 GTA z 3863 3864
and
Primary trav c d g j m p t u w
and
Start time of trip - start_time In 600-900
and
Type of dwe

Trip 2016
Table:

	Transit exc	Auto drive	GO rail onl	Joint GO rz	Auto passe	Paid rideshi	Walk	
3852	154	849	14	0	13	0	109	
3863	1524	2331	54	41	603	119	332	
3864	417.00	1882.00	139.00	73.00	369.00	0.00	562.00	
	2095	5062	207	114	985	119	1003	9585
	21.9%	52.8%	2.2%	1.2%	10.3%	1.2%	10.5%	

Mon Oct 17 2022 13:25:28 GMT-0400 (Eastern Daylight Time) - Run Time: 2571ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
2006 GTA z 3863 3864
and
Primary trav c d g j m p t u w
and
Start time of trip - start_time In 1500-1800
and
Type of dwe

Trip 2016
Table:

	Transit exc	Cycle	Auto drive	Auto passe	Paid rideshi	Walk	
3852	0	0	173	0	0	118	
3863	195	0	1005	453	0	348	
3864	114.00	58.00	711.00	191.00	41.00	133.00	
	309	58	1889	644	41	599	3540
	9%	2%	53%	18%	1%	17%	

					0.7127			0.59
			AM			PM		
			IN	OUT	TOTAL	IN	OUT	TOTAL
			25	81	106	72	46	118
PARAMETER	AM	PM	24%	76%	100%	61%	39%	100%
transit	26%	9%	6.6	21	28	6	4	11
walk	10%	17%	2.5	8	11	12	8	20
cycling	0%	2%	0.0	0	0	1	1	2
auto passenger	11%	19%	2.8	9	12	14	9	22
Auto trip	53%	53%	13.5	43	56	38	24	63

T= 0.28 (X) +12.86
T= 0.34 (X) +8.56

General Direction of Travel (To/From)	AM		PM	
	IN	OUT	IN	OUT
North (Hurontario St/403)	42%	35%	41%	39%
South (Hurontario St/ QEW)	30%	31%	25%	29%
East (Burnhamthorpe Rd/Centre Parkway)	14%	17%	17%	16%
West (Burnhamthorpe Rd/Centre Parkway)	14%	17%	17%	16%
Total	*100%*	*100%*	*100%*	*100%*

AM		PM	
IN	OUT	IN	OUT
15	52	52	33
6	18	21	13
5	16	13	10
2	9	9	5
2	9	9	5

Mon Oct 17 2022 12:52:41 GMT-0400 (Eastern Daylight Time) - Run Time: 2785ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
2006 GTA zı 3863 3864
and
Primary trav m p t u
and
Start time of trip - start_time In 600-900

Trip 2016
Table:

	PD 1 of Tor	PD 2 of Toı	PD 4 of Toı	PD 7 of Toı	PD 8 of Toı	PD 9 of Toı	PD 10 of Tc	PD 11 of Tc	PD 13 of Tc	PD 16 of Tc	Ajax	Whitby	Markham	Vaughan	Brampton	Mississaug	Halton Hill:	Milton	Oakville	Burlington	St. Catharir	Orangeville	Adjala-Tosorontio	
3852	0	0	0	33	0	0	0	0	18	0	0	0	0	0	13	53	0	0	0	0	0	0	0	
3863	0	0	18	23	45	29	0	0	0	0	28	0	19	42	12	1049	0	0	35	21	0	54	55	
3864	64	15	36	89	43	23	20	33	0	40	0	39	9	32	138	800	67	113	92	123	27	0	0	
	64	15	54	145	88	52	20	33	18	40	28	39	28	74	163	1902	67	113	127	144	27	54	55	3350
	2%	0%	2%	4%	3%	2%	1%	1%	1%	1%	1%	1%	1%	2%	5%	57%	2%	3%	4%	4%	1%	2%	2%	

PM	IN
north	42%
south	30%
east	14%
west	14%
	100%

Mon Oct 17 2022 12:53:39 GMT-0400 (Eastern Daylight Time) - Run Time: 2989ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
2006 GTA zı 3863 3864
and
Primary trav m p t u
and
Start time of trip - start_time In 1500-1800

Trip 2016
Table:

	PD 1 of Tor	PD 2 of Toı	PD 3 of Toı	PD 5 of Toı	PD 7 of Toı	PD 8 of Toı	PD 9 of Toı	PD 10 of Tc	PD 11 of Tc	Ajax	Oshawa	Newmarke	Richmond	Markham	Vaughan	Caledon	Brampton	Mississaug	Oakville	Burlington	Flamborou	Hamilton	Niagara Fal	Waterloo	Haliburton	External	
3852	12	24	13	0	17	37	24	0	13	0	0	29	0	0	0	0	75	550	44	0	0	0	0	0	0	0	
3863	47	0	56	38	23	166	46	81	22	0	27	0	0	0	133	22	169	2332	71	0	0	33	11	18	0	37	
3864	83	22	18	0	0	109	88	26	37	13	0	0	35	13	69	0	109	1412	28	71	18	0	20	0	27	19	
	142	46	87	38	40	312	158	107	72	13	27	29	35	13	202	22	353	4294	143	71	18	33	31	18	27	56	6387
	2%	1%	1%	1%	1%	5%	2%	2%	1%	0%	0%	0%	1%	0%	3%	0%	6%	67%	2%	1%	0%	1%	0%	0%	0%	1%	

PM	IN
north	41%
south	25%
east	17%
west	17%
	100%

Mon Oct 17 2022 12:44:53 GMT-0400 (Eastern Daylight Time) - Run Time: 2605ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
2006 GTA z 3863 3864
and
Primary trav m p t u
and
Start time of trip - start_time In 600-900

Trip 2016
Table:

	PD 1 of To	PD 2 of To	PD 3 of To	PD 5 of To	PD 6 of To	PD 7 of To	PD 8 of To	PD 9 of To	PD 10 of T	PD 11 of T	PD 15 of T	Newmarke	Richmond	Markham	Vaughan	Brampton	Mississaug	Oakville	Burlington	Flamborou	Hamilton	Waterloo	External	
3852	31	0	0	26	0	0	9	24	0	0	0	29	0	0	0	100	596	55	0	0	0	19	0	
3863	73	0	0	38	22	45	170	46	81	22	51	0	0	0	85	199	2192	106	0	0	33	18	0	
3864	69	22	13	0	0	0	158	80	26	19	0	21	35	13	34	214	1519	40	17	18	0	0	19	
	173	22	13	64	22	45	337	150	107	41	51	50	35	13	119	513	4307	201	17	18	33	37	19	6387
	3%	0%	0%	1%	0%	1%	5%	2%	2%	1%	1%	1%	1%	0%	2%	8%	67%	3%	0%	0%	1%	1%	0%	

AM	OUT
north	35%
south	31%
east	17%
west	17%
	100%

Mon Oct 17 2022 12:46:33 GMT-0400 (Eastern Daylight Time) - Run Time: 2529ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
2006 GTA z 3863 3864
and
Primary trav m p t u
and
Start time of trip - start_time In 1500-1800

Trip 2016
Table:

	PD 1 of To	PD 2 of To	PD 4 of To	PD 7 of To	PD 8 of To	PD 9 of To	PD 10 of T	PD 11 of T	PD 13 of T	PD 16 of T	Ajax	Richmond	Markham	Vaughan	Brampton	Mississaug	Halton Hill	Milton	Oakville	Burlington	St. Cathari	Niagara Fa	Barrie	Adjala-Tosorontio	
3852	46	0	0	33	68	0	0	0	18	0	0	0	0	0	13	63	0	0	0	0	0	0	0	0	
3863	17	13	18	0	38	0	0	0	0	0	28	0	49	45	12	1491	62	0	35	51	0	0	22	55	
3864	15	15	12	22	84	68	40	33	0	40	0	9	0	32	92	1089	7	76	127	75	27	51	0	0	
	78	28	30	55	190	68	40	33	18	40	28	9	49	77	117	2643	69	76	162	126	27	51	22	55	4091
	2%	1%	1%	1%	5%	2%	1%	1%	0%	1%	1%	0%	1%	2%	3%	65%	2%	2%	4%	3%	1%	1%	1%	1%	

PM	out
north	39%
south	29%
east	16%
west	16%
	100%

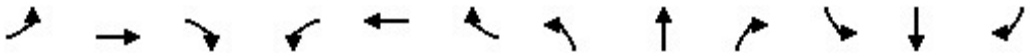
APPENDIX E

Future Total Traffic Level of Service Calculations

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	39	16	184	198	14
Future Volume (Veh/h)	43	39	16	184	198	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	42	17	200	215	15
Pedestrians	4			13	13	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			1	1	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				77		
pX, platoon unblocked						
vC, conflicting volume	474	240	234			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	474	240	234			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	95	99			
cM capacity (veh/h)	533	792	1341			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	89	17	200	230
Volume Left	47	17	0	0
Volume Right	42	0	0	15
cSH	630	1341	1700	1700
Volume to Capacity	0.14	0.01	0.12	0.14
Queue Length 95th (m)	3.7	0.3	0.0	0.0
Control Delay (s)	11.7	7.7	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	11.7	0.6		0.0
Approach LOS	B			

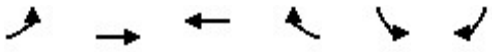
Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	34	32	36	16	5	23	4	22	1	2	0
Future Volume (Veh/h)	1	34	32	36	16	5	23	4	22	1	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	37	35	39	17	5	25	4	24	1	2	0
Pedestrians		15			15			10			10	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	32			82			180	176	80	205	192	44
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	32			82			180	176	80	205	192	44
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			97	99	98	100	100	100
cM capacity (veh/h)	1579			1515			742	689	965	695	676	1009

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	73	61	53	3
Volume Left	1	39	25	1
Volume Right	35	5	24	0
cSH	1579	1515	823	682
Volume to Capacity	0.00	0.03	0.06	0.00
Queue Length 95th (m)	0.0	0.6	1.6	0.1
Control Delay (s)	0.1	4.8	9.7	10.3
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	4.8	9.7	10.3
Approach LOS			A	B

Intersection Summary				
Average Delay	4.5			
Intersection Capacity Utilization	24.8%	ICU Level of Service	A	
Analysis Period (min)	15			



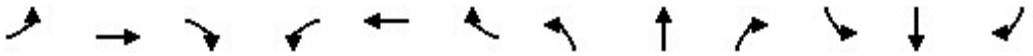
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	170	148	9	32	106
Future Volume (Veh/h)	52	170	148	9	32	106
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	57	185	161	10	35	115
Pedestrians		28	28		3	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		2	2		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		177	69			
pX, platoon unblocked						
vC, conflicting volume	174				496	197
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174				496	197
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				93	86
cM capacity (veh/h)	1411				493	826

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	57	185	171	150
Volume Left	57	0	0	35
Volume Right	0	0	10	115
cSH	1411	1700	1700	713
Volume to Capacity	0.04	0.11	0.10	0.21
Queue Length 95th (m)	1.0	0.0	0.0	6.0
Control Delay (s)	7.7	0.0	0.0	11.4
Lane LOS	A			B
Approach Delay (s)	1.8		0.0	11.4
Approach LOS				B

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	176	108	84	170	10	259
Act Effct Green (s)	9.1	9.1	9.7	26.5	24.6	12.0	12.0
Actuated g/C Ratio	0.22	0.22	0.24	0.65	0.60	0.29	0.29
v/c Ratio	0.13	0.41	0.32	0.13	0.16	0.03	0.50
Control Delay	17.0	8.0	15.3	4.5	6.1	11.9	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	8.0	15.3	4.5	6.1	11.9	16.6
LOS	B	A	B	A	A	B	B
Approach Delay		9.7	15.3		5.6		16.4
Approach LOS		A	B		A		B
Queue Length 50th (m)	2.6	1.0	5.1	2.2	5.5	0.6	15.5
Queue Length 95th (m)	9.5	13.6	16.6	6.7	14.2	3.1	33.7
Internal Link Dist (m)		44.7	15.4		104.6		53.4
Turn Bay Length (m)	17.0			16.0		21.0	
Base Capacity (vph)	975	963	939	680	1467	758	1114
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.18	0.12	0.12	0.12	0.01	0.23

Intersection Summary	
Cycle Length: 74.5	
Actuated Cycle Length: 40.8	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 11.3	Intersection LOS: B
Intersection Capacity Utilization 72.6%	ICU Level of Service C
Analysis Period (min) 15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	15	147	47	29	23	77	132	25	9	201	38
Future Volume (vph)	39	15	147	47	29	23	77	132	25	9	201	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.96			0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.97	1.00			0.99		1.00	1.00		0.98	1.00	
Frt	1.00	0.86			0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1571	1394			1717		1623	1777		1745	1721	
Flt Permitted	0.91	1.00			0.76		0.48	1.00		0.65	1.00	
Satd. Flow (perm)	1501	1394			1342		821	1777		1193	1721	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	16	160	51	32	25	84	143	27	10	218	41
RTOR Reduction (vph)	0	136	0	0	18	0	0	8	0	0	10	0
Lane Group Flow (vph)	42	40	0	0	90	0	84	162	0	10	249	0
Confl. Peds. (#/hr)	32		32	22		22			27	34		34
Heavy Vehicles (%)	10%	8%	12%	2%	3%	0%	10%	3%	0%	0%	2%	26%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	6.4	6.4			8.4		22.1	22.1		12.2	12.2	
Effective Green, g (s)	6.4	6.4			8.4		22.1	22.1		12.2	12.2	
Actuated g/C Ratio	0.15	0.15			0.20		0.53	0.53		0.29	0.29	
Clearance Time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	228	212			268		563	935		346	499	
v/s Ratio Prot		0.03					0.02	c0.09			c0.14	
v/s Ratio Perm	0.03				c0.07		0.05			0.01		
v/c Ratio	0.18	0.19			0.33		0.15	0.17		0.03	0.50	
Uniform Delay, d1	15.5	15.5			14.4		5.1	5.2		10.7	12.4	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.4			0.7		0.1	0.1		0.0	0.8	
Delay (s)	15.9	16.0			15.1		5.2	5.3		10.7	13.2	
Level of Service	B	B			B		A	A		B	B	
Approach Delay (s)		16.0			15.1			5.3			13.1	
Approach LOS		B			B			A			B	

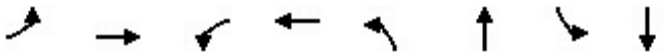
Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	58	12	49	19	3	123
Future Volume (Veh/h)	58	12	49	19	3	123
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	63	13	53	21	3	134
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	204	64			74	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	204	64			74	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	99			100	
cM capacity (veh/h)	783	1001			1526	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	76	74	137
Volume Left	63	0	3
Volume Right	13	21	0
cSH	814	1700	1526
Volume to Capacity	0.09	0.04	0.00
Queue Length 95th (m)	2.3	0.0	0.0
Control Delay (s)	9.9	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	0.2
Approach LOS	A		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		

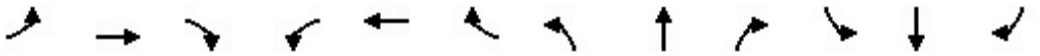


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	357	356	105	240	118	1931	52	1495
Act Effct Green (s)	52.1	52.1	52.1	52.1	10.0	80.1	8.9	77.0
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.06	0.51	0.06	0.49
v/c Ratio	1.14	0.59	0.48	0.40	1.06	1.09	0.53	0.88
Control Delay	141.1	35.7	51.8	31.2	169.5	86.1	92.1	42.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	141.1	35.7	51.8	31.2	169.5	86.1	92.1	42.8
LOS	F	D	D	C	F	F	F	D
Approach Delay		88.5		37.5		90.9		44.5
Approach LOS		F		D		F		D
Queue Length 50th (m)	~134.1	68.9	26.9	42.1	~41.7	~368.0	16.3	215.3
Queue Length 95th (m)	#198.0	103.4	48.2	67.5	#84.6	#408.7	31.3	248.4
Internal Link Dist (m)		175.7		152.8		182.3		254.4
Turn Bay Length (m)	22.5		41.0		28.0		69.0	
Base Capacity (vph)	313	608	218	594	111	1776	111	1769
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.59	0.48	0.40	1.06	1.09	0.47	0.85

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 157.1			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 71.1		Intersection LOS: E	
Intersection Capacity Utilization 107.1%		ICU Level of Service G	
Analysis Period (min) 15			

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	328	82	246	97	72	149	109	1722	54	48	1288	87
Future Volume (vph)	328	82	246	97	72	149	109	1722	54	48	1288	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.90		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1635		1750	1656		1750	3484		1750	3467	
Flt Permitted	0.51	1.00		0.36	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	945	1635		660	1656		1750	3484		1750	3467	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	357	89	267	105	78	162	118	1872	59	52	1400	95
RTOR Reduction (vph)	0	67	0	0	46	0	0	1	0	0	3	0
Lane Group Flow (vph)	357	289	0	105	194	0	118	1930	0	52	1492	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	52.1	52.1		52.1	52.1		10.0	80.1		7.6	77.7	
Effective Green, g (s)	52.1	52.1		52.1	52.1		10.0	80.1		7.6	77.7	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.06	0.51		0.05	0.49	
Clearance Time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	312	539		217	546		110	1768		84	1707	
v/s Ratio Prot		0.18			0.12		c0.07	c0.55		0.03	0.43	
v/s Ratio Perm	c0.38			0.16								
v/c Ratio	1.14	0.54		0.48	0.35		1.07	1.09		0.62	0.87	
Uniform Delay, d1	52.9	43.0		42.1	40.1		73.9	38.9		73.7	35.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	95.9	1.0		1.7	0.4		106.7	50.9		12.8	5.3	
Delay (s)	148.7	44.0		43.8	40.5		180.6	89.8		86.5	41.0	
Level of Service	F	D		D	D		F	F		F	D	
Approach Delay (s)		96.5			41.5			95.0			42.5	
Approach LOS		F			D			F			D	

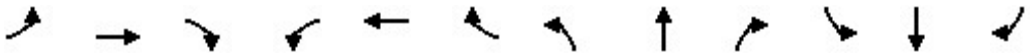
Intersection Summary			
HCM 2000 Control Delay	73.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	157.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	107.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	31	70	342	468	71
Future Volume (Veh/h)	24	31	70	342	468	71
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	34	76	372	509	77
Pedestrians	3			17	17	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			2	2	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				77		
pX, platoon unblocked	0.93					
vC, conflicting volume	1092	568	589			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1060	568	589			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	93	92			
cM capacity (veh/h)	208	517	994			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	60	76	372	586
Volume Left	26	76	0	0
Volume Right	34	0	0	77
cSH	315	994	1700	1700
Volume to Capacity	0.19	0.08	0.22	0.34
Queue Length 95th (m)	5.3	1.9	0.0	0.0
Control Delay (s)	19.1	8.9	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	19.1	1.5		0.0
Approach LOS	C			

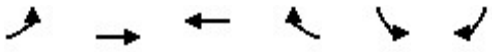
Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	32	36	35	60	12	25	3	28	3	0	0
Future Volume (Veh/h)	2	32	36	35	60	12	25	3	28	3	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	35	39	38	65	13	27	3	30	3	0	0
Pedestrians		19			19			15			15	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			2			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	93			89			240	242	88	272	256	106
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	93			89			240	242	88	272	256	106
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			96	100	97	100	100	100
cM capacity (veh/h)	1494			1499			669	628	946	616	618	926

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	76	116	60	3
Volume Left	2	38	27	3
Volume Right	39	13	30	0
cSH	1494	1499	781	616
Volume to Capacity	0.00	0.03	0.08	0.00
Queue Length 95th (m)	0.0	0.6	1.9	0.1
Control Delay (s)	0.2	2.6	10.0	10.9
Lane LOS	A	A	A	B
Approach Delay (s)	0.2	2.6	10.0	10.9
Approach LOS			A	B

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	27.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	102	247	289	22	13	84
Future Volume (Veh/h)	102	247	289	22	13	84
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	111	268	314	24	14	91
Pedestrians		28	28		3	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		2	2		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		224	69			
pX, platoon unblocked	0.98				0.98	0.98
vC, conflicting volume	341				847	357
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	314				832	331
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				95	87
cM capacity (veh/h)	1226				290	680

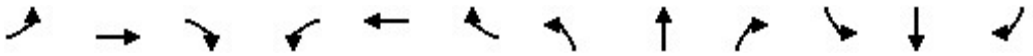
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	111	268	338	105
Volume Left	111	0	0	14
Volume Right	0	0	24	91
cSH	1226	1700	1700	577
Volume to Capacity	0.09	0.16	0.20	0.18
Queue Length 95th (m)	2.3	0.0	0.0	5.0
Control Delay (s)	8.2	0.0	0.0	12.6
Lane LOS	A			B
Approach Delay (s)	2.4		0.0	12.6
Approach LOS				B

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	212	74	191	439	42	505
Act Effct Green (s)	9.5	9.5	11.5	36.3	32.3	22.2	22.2
Actuated g/C Ratio	0.17	0.17	0.21	0.66	0.58	0.40	0.40
v/c Ratio	0.31	0.53	0.25	0.38	0.42	0.11	0.76
Control Delay	25.5	11.7	18.3	6.2	7.8	11.8	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	11.7	18.3	6.2	7.8	11.8	22.9
LOS	C	B	B	A	A	B	C
Approach Delay		14.8	18.3		7.3		22.1
Approach LOS		B	B		A		C
Queue Length 50th (m)	5.8	3.5	5.3	5.4	18.4	2.4	37.3
Queue Length 95th (m)	14.7	18.5	14.1	15.1	42.7	8.4	#90.6
Internal Link Dist (m)		44.7	15.4		104.6		53.4
Turn Bay Length (m)	17.0			16.0		21.0	
Base Capacity (vph)	544	787	716	507	1146	420	754
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.27	0.10	0.38	0.38	0.10	0.67

Intersection Summary	
Cycle Length: 74.5	
Actuated Cycle Length: 55.4	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 14.5	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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	35	160	31	23	14	176	337	67	39	338	127
Future Volume (vph)	56	35	160	31	23	14	176	337	67	39	338	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.95			0.99		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.94	1.00			0.99		1.00	1.00		0.98	1.00	
Frt	1.00	0.88			0.97		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1573	1489			1720		1700	1796		1743	1632	
Flt Permitted	0.71	1.00			0.80		0.31	1.00		0.51	1.00	
Satd. Flow (perm)	1174	1489			1399		552	1796		932	1632	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	38	174	34	25	15	191	366	73	42	367	138
RTOR Reduction (vph)	0	144	0	0	12	0	0	8	0	0	16	0
Lane Group Flow (vph)	61	68	0	0	62	0	191	431	0	42	489	0
Confl. Peds. (#/hr)	41		41	22		22			46	39		39
Heavy Vehicles (%)	7%	0%	6%	2%	3%	0%	5%	1%	0%	0%	2%	26%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.6	9.6			11.6		32.3	32.3		22.2	22.2	
Effective Green, g (s)	9.6	9.6			11.6		32.3	32.3		22.2	22.2	
Actuated g/C Ratio	0.17	0.17			0.21		0.58	0.58		0.40	0.40	
Clearance Time (s)	6.5	6.5			4.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	258			292		468	1047		373	653	
v/s Ratio Prot		0.05					0.05	c0.24			c0.30	
v/s Ratio Perm	c0.05				0.04		0.19			0.05		
v/c Ratio	0.30	0.26			0.21		0.41	0.41		0.11	0.75	
Uniform Delay, d1	20.0	19.8			18.1		6.4	6.3		10.4	14.2	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.6			0.4		0.6	0.3		0.1	4.7	
Delay (s)	20.8	20.4			18.5		6.9	6.6		10.6	18.9	
Level of Service	C	C			B		A	A		B	B	
Approach Delay (s)		20.5			18.5			6.7			18.3	
Approach LOS		C			B			A			B	

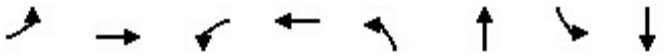
Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	55.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	40	7	56	60	13	85
Future Volume (Veh/h)	40	7	56	60	13	85
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	8	61	65	14	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	214	94			126	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	214	94			126	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	99			99	
cM capacity (veh/h)	767	963			1460	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	126	106
Volume Left	43	0	14
Volume Right	8	65	0
cSH	793	1700	1460
Volume to Capacity	0.06	0.07	0.01
Queue Length 95th (m)	1.6	0.0	0.2
Control Delay (s)	9.9	0.0	1.1
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	1.1
Approach LOS	A		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		

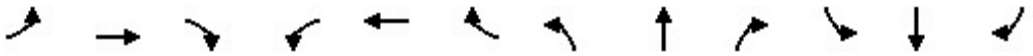


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	147	337	78	243	284	1790	118	2177
Act Effct Green (s)	29.0	29.0	29.0	29.0	10.0	80.3	10.0	80.3
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.07	0.58	0.07	0.58
v/c Ratio	0.90	0.84	0.87	0.63	2.24	0.88	0.93	1.08
Control Delay	100.8	59.9	117.2	49.8	605.3	32.0	125.3	73.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.8	59.9	117.2	49.8	605.3	32.0	125.3	73.9
LOS	F	E	F	D	F	C	F	E
Approach Delay		72.4		66.2		110.5		76.5
Approach LOS		E		E		F		E
Queue Length 50th (m)	39.1	72.5	20.6	52.8	~123.9	209.9	32.4	~346.5
Queue Length 95th (m)	#67.4	107.7	#45.6	79.7	#197.9	#323.5	#78.5	#450.1
Internal Link Dist (m)		72.3		200.1		471.9		278.6
Turn Bay Length (m)	22.5		41.0		28.0		69.0	
Base Capacity (vph)	294	670	162	668	127	2028	127	2017
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.50	0.48	0.36	2.24	0.88	0.93	1.08

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 137.4			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.24			
Intersection Signal Delay: 89.1		Intersection LOS: F	
Intersection Capacity Utilization 118.0%		ICU Level of Service H	
Analysis Period (min) 15			

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	105	205	72	116	108	261	1550	97	109	1783	220
Future Volume (vph)	135	105	205	72	116	108	261	1550	97	109	1783	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1659		1750	1709		1750	3469		1750	3442	
Flt Permitted	0.42	1.00		0.23	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	776	1659		427	1709		1750	3469		1750	3442	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	114	223	78	126	117	284	1685	105	118	1938	239
RTOR Reduction (vph)	0	51	0	0	24	0	0	2	0	0	5	0
Lane Group Flow (vph)	147	286	0	78	219	0	284	1788	0	118	2172	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	29.0	29.0		29.0	29.0		10.0	80.3		10.0	80.3	
Effective Green, g (s)	29.0	29.0		29.0	29.0		10.0	80.3		10.0	80.3	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.07	0.58		0.07	0.58	
Clearance Time (s)	8.0	8.0		8.0	8.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	163	350		90	360		127	2028		127	2013	
v/s Ratio Prot		0.17			0.13		c0.16	0.52		0.07	c0.63	
v/s Ratio Perm	c0.19			0.18								
v/c Ratio	0.90	0.82		0.87	0.61		2.24	0.88		0.93	1.08	
Uniform Delay, d1	52.8	51.6		52.3	49.0		63.7	24.4		63.3	28.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	43.1	13.7		53.4	2.9		580.9	4.9		57.7	45.2	
Delay (s)	95.9	65.3		105.7	51.9		644.5	29.3		121.0	73.7	
Level of Service	F	E		F	D		F	C		F	E	
Approach Delay (s)		74.6			65.0			113.5			76.1	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	90.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	137.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	118.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group