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Transportation Impact Study – Addendum

PROPOSED RESIDENTIAL DEVELOPMENT

2512, 2522, 2532 Argyle Road
City of Mississauga, Ontario

Second Submission: May 9, 2019
First Submission: October 23, 2018
Project No: NT-17-254

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nexTrans CONSULTING ENGINEERS

NextEng Consulting Group Inc.

May 9, 2019

Plazacorp Investments Ltd.
10 Wanless Avenue, Suite 201
Toronto, ON M4N 1V6

Re: Transportation Impact Study Addendum
Proposed Residential Development
2512, 2522, 2532 Argyle Road, City of Mississauga
Our Project No. NT-17-254

On behalf of our client, Plazacorp Investments Ltd., we acknowledge City of Mississauga transportation comments dated January 15, 2019 provided in **Appendix A** with respect to our Transportation Impact Study, dated October 23, 2018.

The subject site is currently occupied by three (3) one-storey single detached dwelling units and is located at the west of Argyle Road and south of Dundas Street West in the City of Mississauga. In the first submission the development plan consisted of 112 stacked back-to-bock townhouse units with vehicular access via Argyle Road and 154 total parking spaces, 151 in an underground parking garage and three (3) surface spaces. However, based on the revised site plan provided in **Appendix C**, the development proposal consists of 101 stacked back-to-back townhouse units with 153 parking spaces provided in an underground parking garage.

Based on the comments received from the City of Mississauga, our responses are addressed in the accompanying revised TIS as follows:

PLANNING AND BUILDING COMMENTS

1. *Please confirm if the application is for rental or condominium units, as there are different requirements such as parking rates and condominium road standards accordingly. Provide Parking Utilization Study if you cannot meet the required number parking spaces (appears to be 22 spaces deficient), in order to determine if the proposed reduction can be justified.*

Response

The application is for condominium units. Based on the revised site plan, the parking reduction is less than 10% of the by-law requirement however NexTrans has undertaken a Parking Utilization Study which is provided as a supplementary report, see **Appendix I**, as well as, summarized in the revised transportation impact study and **Table 1** below.

The proxy site selected for the surveys is located at 5005-5055 Oscar Peterson Boulevard, and consists of 157 stacked back-to-back residential units. The surveys were conducted over the course of two consecutive weeks and the results are summarized in **Table 1**.

Table 1 – Parking Utilization Survey Results Summary

Day of Survey	Number of Units	Peak Parking Demand		Parking Rates	
		Resident	Visitor	Resident	Visitor
Friday March 1, 2019	157	172	11	1.10	0.07
Saturday March 2, 2019		176	18	1.12	0.11
Sunday March 3, 2019		173	10	1.10	0.06
Friday March 8, 2019		167	12	1.06	0.08
Saturday March 9, 2019		171	21	1.09	0.13
Maximum Parking Rate per Unit				**1.12**	**0.13**
Combined Parking Rate per Unit				**1.25**	

The above survey results conclude that the maximum parking utilization for residents is 1.12 spaces per unit and for visitors is 0.13 spaces per unit, with a combined rate of 1.25 spaces per unit. The proposed developments provide a total of 153 parking spaces with a combined rate of 1.51 spaces per unit. On this basis, the proposed parking provision meet future parking demands.

TRANSPORTATION AND WORKS COMMENTS

This department is in receipt of the Traffic Impact Study dated October 23, 2018 prepared by NexTrans Consulting Engineers and has the following comments:

1. *2.1 Argyle Road: Unposted speed limits along local roads are default 50 km/h.*

Response
Acknowledged, Section 2.1 of the transportation impact study has been revised.

2. 8.0 Transportation Demand Management: "Consider providing transit incentives for residents, if appropriate." It should be noted that the City of Mississauga does not provide transit incentives such as pre-loaded PRESTO cards. All TDM measures and associated costs are to be borne by the applicant.

Response
Acknowledged in Section 8.0 of the revised TIS report.

3. Provide turning template for parallel parking spaces located in the underground parking. Turning template required for parallel parking located furthest east and west.

Response
The revised site plan eliminated the parallel parking spaces however, turning templates for the underground parking spaces are provided, see **Figure 7-2**.

4. Front End collection will be provided by the Region of Peel. At site plan stage, the applicant will need to demonstrate compliance with Sections 1.1, 2 and 4 of the Waste Collection Design Standards Manual.

Response

An AutoTURN analysis demonstrating the maneuvering of the Front-End Region of Peel collection vehicle as outlined in the Waste Collection Design Standard Manual, is provided in **Figure 7-1**.

With the revisions noted, the study concludes that the proposed development can adequately be accommodated by the existing transportation network with minimal traffic impact to the adjacent public roadways. The proposed site access will operate at excellent levels of services.

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

Yours truly,

NEXTRANS ENGINEERING

Prepared by:

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Transportation Analyst

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Richard Pernicky, CET, MITE
Principal

EXECUTIVE SUMMARY

NexTrans Consulting Engineers was retained by Plazacorp Investments Limited (the 'Client') to undertake a Transportation Impact Study for an Official Plan Amendment and Zoning By-law Amendment applications in support of a proposed residential redevelopment, in the City of Mississauga, Ontario. The subject property is located west of Argyle Road and south of Dundas Street West.

Development Proposal

The development proposal is to redevelop the existing 6,483.5 m^2 site to include 101 residential units divided among four (4) blocks of stacked townhouses and provide an underground parking garage. Vehicular access to the site is proposed via a full movement driveway located on Argyle Road.

Traffic Analysis

The proposed development is anticipated to generate 27 two-way trips (7 inbound and 20 outbound) during the AM peak hours and 34 two-way trips (20 inbound and 14 outbound) during the PM peak hours.

The intersection capacity analysis results (based on the methodology and procedures outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board) indicate that the study area intersections and proposed vehicular access are expected to operate at acceptable levels of service with minimal impact to existing conditions.

Access/Parking Review

To ensure safe traffic operation in the area, it is recommended that a STOP sign (Ra-1) and STOP bar be installed on the Argyle Road egress driveway and for cars exiting the underground garage.

Based on the City of Mississauga Zoning By-law 0225-2007, a total of 165 parking spaces will be required for the proposed residential development. The proposed site plan provides for a total of 153 parking spaces, which results in a shortfall of 12 parking spaces (7% reduction). It is our opinion that the parking spaces provided by the proposed development is reasonable and justified for the following reasons:

- Based on the Parking Utilization Study report, provided in **Appendix I**, the maximum combined parking rate at a proxy site with similar land use characteristics in the City of Mississauga is 1.25 spaces per unit. The proposed development proposes a combined rate of 1.51 spaces per unit, which results in a surplus of 27 spaces and meets future parking demands.
- Reviewing the household demographic information retrieved from the Toronto Tomorrow Survey (TTS) for the City of Mississauga Ward 7, more than half (14% + 51% = 65%) of households contain no car or only one car. The site plan also provides 42 long-term and 20 short-term bike spaces encouraging cycling as another mode of transit.

On this basis, the future parking demand with the proposed development is satisfied with the proposed parking provision.

Vehicle Maneuverability Review

AutoTURN software was used to generate a vehicular turning template to confirm and demonstrate the accessibility of a Region of Peel Front-End Waste Collection Vehicle through the proposed loading space and passenger vehicles through the underground parking spaces, with no conflicts.

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1.0 INTRODUCTION

NexTrans Consulting Engineers was retained by Plazacorp Investments Limited (the 'Client') to undertake a Transportation Impact Study for an Official Plan Amendment and Zoning By-law Amendment applications in support of a proposed residential redevelopment, in the City of Mississauga, Ontario. The subject property is located west of Argyle Road and south of Dundas Street West. This transportation impact study conforms to the City of Mississauga guidelines, see **Appendix B** for the established terms of reference.

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

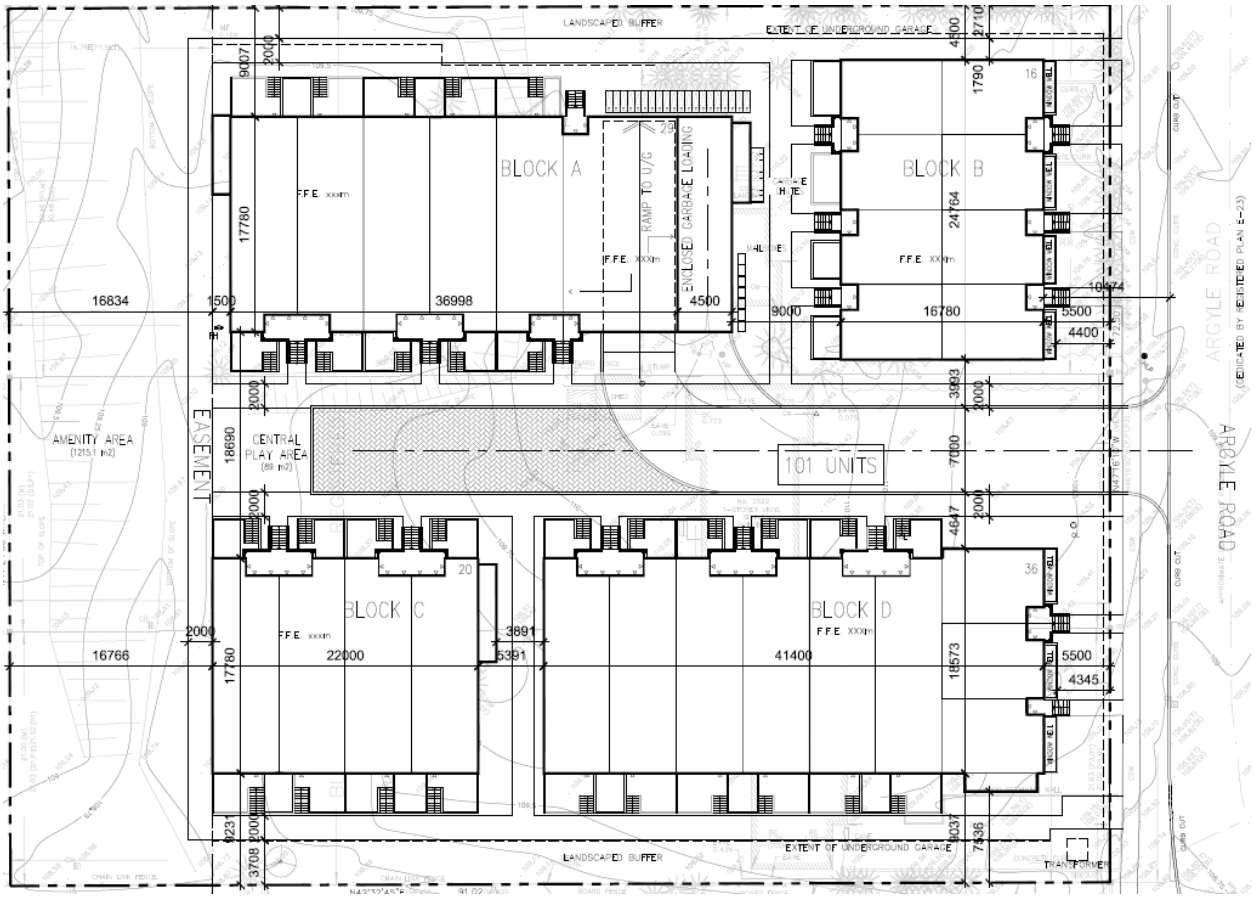
Figure 1-1 – Site Location

The subject property is currently occupied by three (3) one-storey single detached dwelling units. Based on the preliminary site plan prepared by Architecture Unfolded, dated May 6th, 2018, the development proposal is to redevelop the existing 6,483.5 m^2 site to include 101 residential units divided among four (4) blocks of stacked townhouses and provide an underground parking garage. Vehicular access to the site is proposed via a full movement driveway located on Argyle Road. The preliminary site plan is provided in **Figure 1-2**; **Appendix C** also provides a larger scale version of the proposed site plan.

The preliminary site plan provides for a total of 153 parking spaces and 62 bicycle parking spaces.

Given the residential nature of the development proposal, the analysis will include the weekday morning and afternoon peak periods for traffic assessment purposes.

Figure 1-2 – Proposed Site Plan



2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

The existing subject lands are located west of Argyle Road and south of Dundas Street West in the City of Mississauga. The existing road network is described as follows:

Argyle Road: is classified as a north-south local road under the jurisdiction of the City of Mississauga. In the study area, it has an existing two-lane cross section and an unposted speed limit of 50 km/h. Argyle Road is unsignalized at Dundas Street West and provides a shared left-right turn lane. Argyle road ends at the crescent part of the road where it becomes Dunbar Road.

Dundas Street West: is classified as an east-west arterial under the jurisdiction of the City of Mississauga. In the study area, it has an existing four-lane cross section with an additional two-way-left-turn lane in the center and posted speed limit of 50 km/h. Dundas Street West is free-flow at Argyle Road.

Confederation Parkway South: is classified as a north-south arterial road under the jurisdiction of the City of Mississauga. In the study area, it has an existing two-lane cross section with exclusive northbound and southbound left turn lanes and posted speed limit of 50 km/h. Confederation Parkway South is free-flow at Dunbar Road.

2.2. Existing Active Transportation Network

Sidewalks

The area surrounding the proposed development is serviced with dedicated sidewalks. Currently, sidewalks are available on both sides of Dundas Street West and Confederation Parkway South. Argyle Road provides a sidewalk only on the west side of the roadway.

Bicycle Lanes

Dedicated bicycle lanes are provided on both sides of the roadway of Confederation Parkway South. There is a high density of amenities indicating many necessities are within walking distance in the study area.

2.3. Active Transportation Mode and Assessment

Existing Amenities

The review of the area surrounding the proposed development indicates numerous recreational facilities, houses of worship, and schools, many of which can be easily reached by pedestrian traffic and non-auto options. Existing amenities which include Floradale Public School, Cooksville United Church, Brickyard Park etc.

Existing Commercial Establishments

The review of the area surrounding the proposed development indicates numerous retail, food, and service establishments, many of which can be easily reached by pedestrian traffic and non-auto options. Existing retail, food and service establishments from the proposed development include a FreshCo, TD Canada Trust, Shopper's Drug Mart, Sally's Health Centre etc.

2.4. Existing Traffic Volumes

Existing traffic volumes at the study area intersections of Dundas Street West and Argyle Road, and Confederation Parkway and Dunbar Road were undertaken by Spectrum Traffic on behalf of NexTrans Consulting Engineers on Thursday February 15, 2018, 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. Detailed traffic data sheets are provided in **Appendix D**.

2.5. Existing Traffic Assessment

The existing volumes are illustrated in **Figure 2-1** and were analyzed using Synchro 10 software and SimTraffic simulations for queue analysis. 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 E** and summarized in **Table 2.1**.

Figure 2-1 – Existing Traffic Volumes

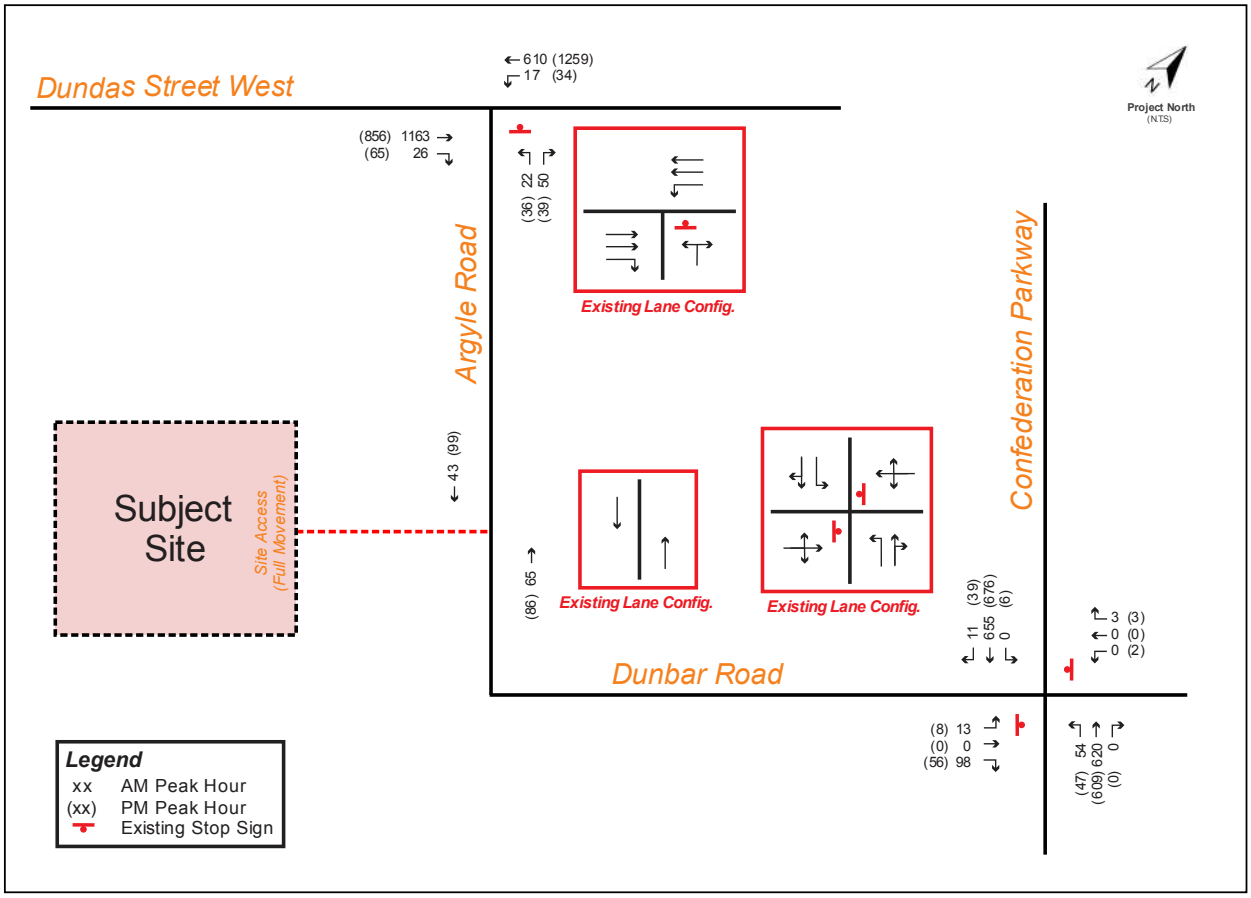


Table 2.1 – Level of Service – Existing Traffic Assessments

Intersection	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)
Argyle Road and Dundas Street West *(Unsignalized)*	WBT NBLR	B (0.05) C (0.37)	12.9 24.5	4.2 20.6	B (0.06) C (0.27)	10.7 19.9	5.5 28.5
Confederation Parkway and Dunbar Road *(Unsignalized)*	EBLTR WBLTR NBL SBL	**F (0.71)** B (0.02) A (0.09) –	50.3 13.8 9.9 –	24.9 4.6 13.4 –	D (0.42) D (0.08) A (0.09) A (0.01)	33.8 30.4 9.8 8.9	16.4 6.2 12.9 5.5

As summarized in **Table 2.1**, under existing conditions the study area intersections are operating at acceptable levels of service. However, the eastbound left-through-right turning movement at the Confederation Parkway and Dunbar Road intersection is experiencing a failing level of service during the AM peak hour period but maintains acceptable volume-to-capacity (v/c) ratios. This shows that there are enough gaps between traffic on Confederation Parkway to allow eastbound movement vehicles to turn thus also resulting in a longer delay.

3.0 FUTURE BACKGROUND CONDITIONS

For the purposes of this assessment a five-year horizon from the start of this study (2023) is selected to analyze the future background traffic volumes.

3.1. Background Development

A review of the active developments within the study area was conducted based on the information extracted from the City of Mississauga Development Applications Map. The following applications are proposed:

- 90-110 Dundas Street West *(approved)*: 140 townhouse units and 1,500 m^2 of commercial gross floor area.
- 250 Dundas Street West *(draft approved)*: 33 condominium units.

The future background growth rate was based on the City of Mississauga's Travel Demand Model and supporting traffic count data. The growth rates, shown in **Table 3.1**, were obtained from the City of Mississauga Transportation Planning Section and applied to the major roads in the study area.

Table 3.1 – Projected Growth Rates

Time	Compound Annual Growth from Existing to 2023			
	Dundas Street		Confederation Parkway	
	Eastbound	Westbound	Northbound	Southbound
AM Peak Hour	0.5%	1.5%	0.5%	0.5%
PM Peak Hour	2.0%	0.5%	1.0%	1.0%

The future (2023) background traffic volumes are provided in **Figure 3-1. Table 3.2** summarizes the level of service at the given intersections under future background traffic conditions. Detailed output analysis can be found in **Appendix E**.

Figure 3-1 – Future (2023) Background Traffic Volumes

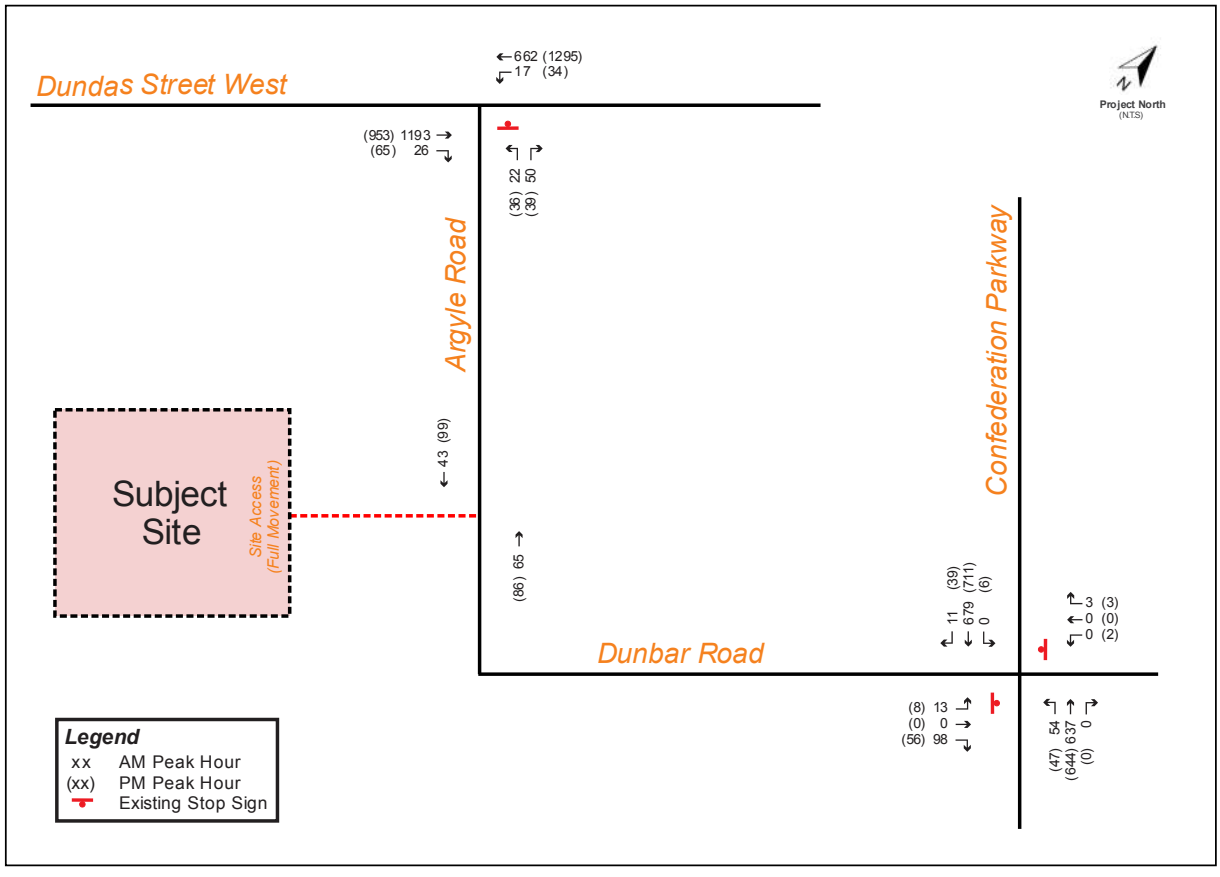


Table 3.2 – Future (2023) Background Traffic Assessments

Intersection	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)
Argyle Road and Dundas Street West *(Unsignalized)*	WBT NBLR	B (0.05) D (0.38)	13.2 25.6	4.6 21.7	B (0.07) C (0.29)	11.2 21.9	6.2 50.3
Confederation Parkway and Dunbar Road *(Unsignalized)*	EBLTR WBLTR NBL SBL	F (0.75) B (0.02) B (0.09) –	57.4 14.1 10.0 –	21.8 4.3 14.1 –	E (0.46) D (0.09) B (0.09) A (0.01)	38.6 33.6 10.0 9.1	17.7 6.2 13.0 4.9

As summarized in **Table 3.2**, it is shown that during future background traffic conditions the subject study area intersections continue to operate at acceptable levels of service with no changes to expected operations. The eastbound left-through-right turning movement at the Confederation Parkway and Dunbar Road intersection is continuing to operate at a failing level of service during the AM peak hour period.

4.0 SITE TRAFFIC

The development proposal is to construct four (4) stacked townhouse blocks totalling 101 units. Trip rates and site generated trips were derived from the information contained in the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE) for "Multifamily Housing (Mid-Rise)" (LUC 221). The trip generation summary is shown in **Table 4.1**.

Table 4.1 – Site Traffic Trip Generation (Based on ITE)

ITE Land Use	Parameter	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise) 101 units (LUC 221)	Gross New Trips	9	27	36	20	18	45
	Trip Rate	0.09	0.27	0.36	0.27	0.18	0.45
	Non-Auto (25%)	2	7	9	7	4	11
Total	**New Trips**	**7**	**20**	**27**	**20**	**14**	**34**
	New Rate	**0.07**	**0.20**	**0.27**	**0.20**	**0.14**	**0.34**

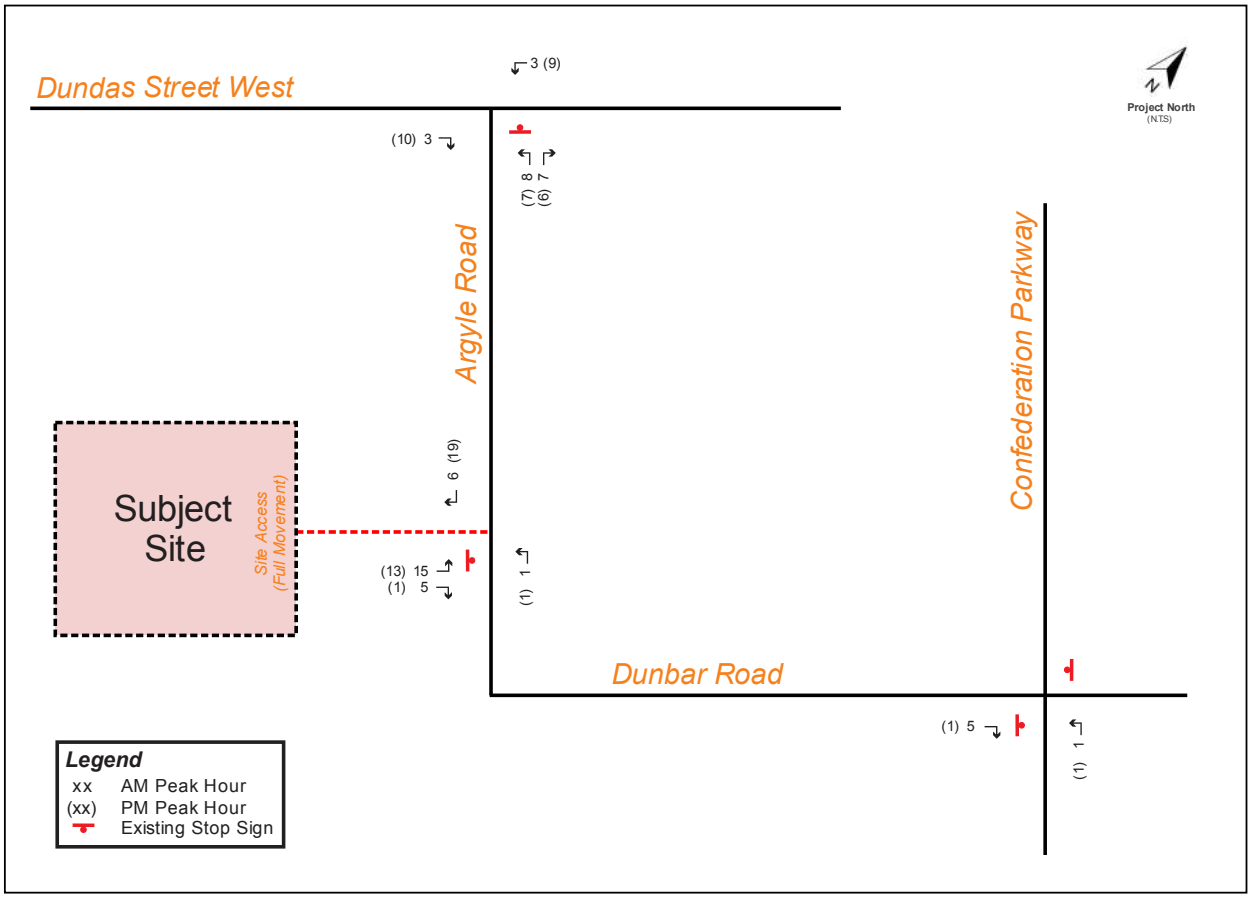
Based on the information contained in the 2016 Transportation Tomorrow Survey (TTS), a non-auto modal split for the subject area is approximately 25%. The 25% considers transit, cycling, and walking. The proposed development is anticipated to generate 27 two-way trips (7 inbound and 20 outbound) during the AM peak hours and 34 two-way trips (20 inbound and 14 outbound) during the PM peak hours.

The assumptions for the trip distribution rates are based on the information extracted from the 2016 Transportation Tomorrow Survey (TTS), see **Appendix G**, existing traffic patterns and routes that drivers would likely take to access the subject site, and engineering judgement based on ease of site access. As a result, site trip distribution is summarized for the inbound and outbound site traffic movements during the morning and afternoon peak hours in **Table 4.2** with the trip assignment illustrated in **Figure 4-1**.

Table 4.2 – Site Traffic Trip Distribution

Direction	Via	AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
South	Confederation Parkway	24%	24%	4%	4%
East	Dundas Street West	37%	37%	47%	47%
West	Dundas Street West	39%	39%	49%	49%
Total		**100%**	**100%**	**100%**	**100%**

Figure 4-1 – Site Generated Traffic Volumes



5.0 FUTURE TOTAL TRAFFIC CONDITIONS

The forecasted 2023 future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 5-1** and were analyzed using Synchro 10 software SimTraffic simulations for queue analysis. The detailed calculations are provided in **Appendix H** and summarized in **Table 5.1**.

Figure 5-1 – Future Total Traffic Volumes

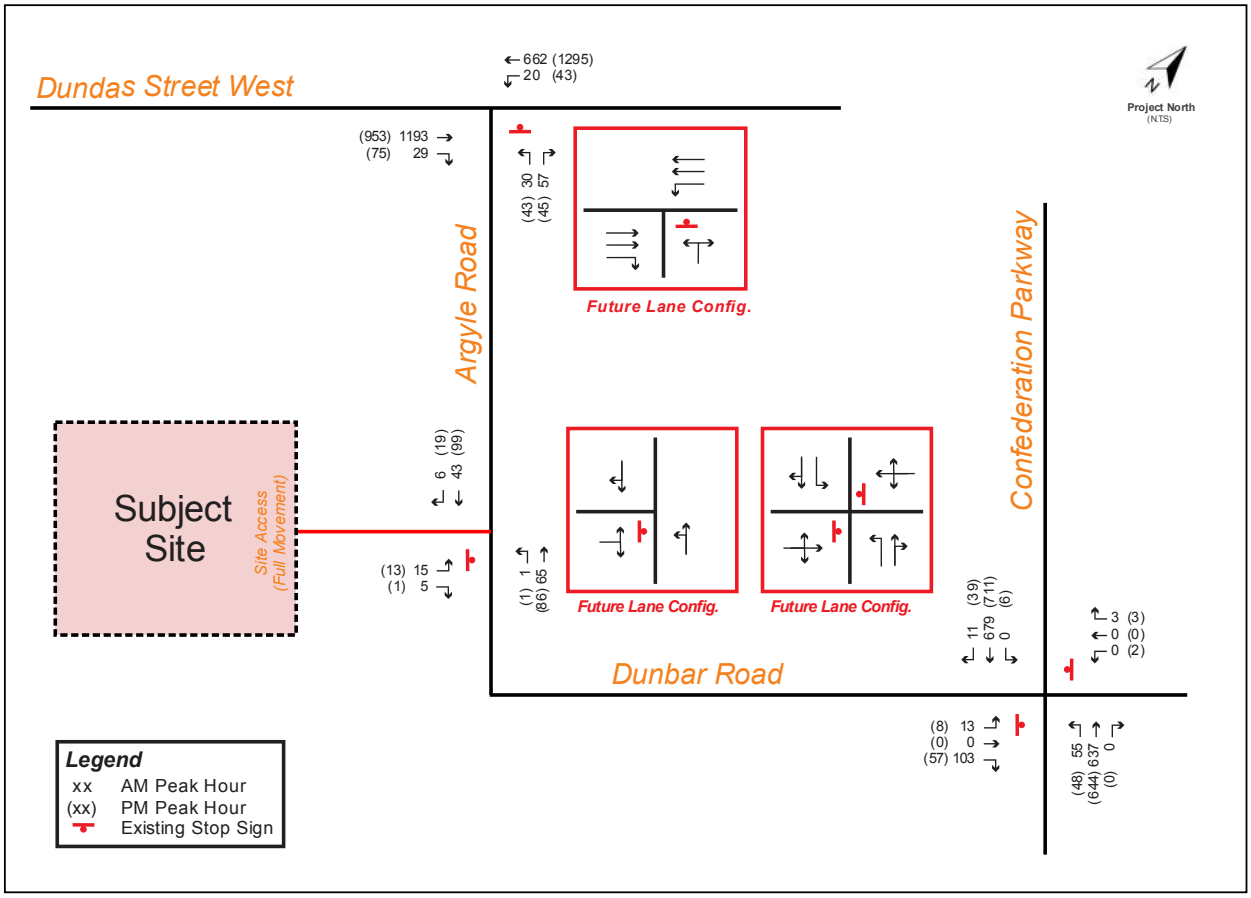


Table 5.1 – Level of Service – Future Total Traffic Assessments

Intersection	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)
Argyle Road and Dundas Street West *(Unsignalized)*	WBT NBLR	B (0.06) D (0.49)	13.3 30.2	3.1 26.7	B (0.09) C (0.35)	11.4 23.9	3.3 41.0
Confederation Parkway and Dunbar Road *(Unsignalized)*	EBLTR WBLTR NBL SBL	F (0.77) B (0.02) B (0.09) –	59.4 14.1 10.0 –	24.3 5.7 14.8 –	E (0.47) D (0.09) B (0.09) A (0.01)	38.9 34.1 10.0 9.1	18.4 7.3 16.1 5.1
Argyle Road and Site Access *(Unsignalized)*	EBLR NBLT	A (0.02) A (<0.01)	9.1 0.1	11.6 0.0	A (0.02) A (<0.01)	9.7 0.1	9.7 1.3

Under future total traffic conditions, the study area intersections and proposed new site access via Argyle Road are expected to operate with acceptable levels of service during both peak study time periods. The eastbound left-through-right turning movement at the Confederation Parkway and Dunbar Road intersection is continuing to operate at a failing level of service during the AM peak hour period but maintains a v/c ratio of less than one (1).

6.0 PARKING ASSESSMENT

The City-wide Zoning By-law No. 0225-2007 has been adopted by the City of Mississauga and it was enacted on June 20th, 2007. The Zoning By-law is a comprehensive By-law covering the entire amalgamated City of Mississauga. The technical parking requirement for the proposed development is detailed in **Table 6.1**.

Table 6.1 – Vehicle Parking Requirements (ZBL 0225-2007)

Use	Units	Rate	Parking Requirement	Parking Provided	Difference
Condominium Horizontal Multiple Dwelling (*without exclusive use garage and driveway*)	32 1-bedroom 67 2-bedroom 2 3-bedroom	1.10 spaces per 1-bedroom unit 1.50 spaces per 2-bedroom unit 1.75 spaces per 3-bedroom unit	35 101 4	153	-12
Condominium Horizontal Multiple Dwelling – Visitor	101	0.25 spaces per unit	25		
Total			**165**	**153**	**-12**

Based on the City of Mississauga Zoning By-law 0225-2007, a total of 165 parking spaces will be required for the proposed residential development. The proposed site plan provides for a total of 153 parking spaces, which results in a shortfall of 12 parking spaces (7% reduction).

The parking reduction results in a 7% shortfall from the by-law requirement. According to the City of Mississauga Parking Studies Terms of Reference it states the following:

> *"The City requires the submission of a Parking Utilization Study to justify parking reductions of generally more than 10% from current Zoning By-law standards. When the parking reduction is relatively minor (generally less than 10% of the By-law standards) a Letter of Justification based on the nature of the operation and its land use circumstances may be acceptable."*

Instead of providing a Letter of Justification to support the 7% reduction, we have surveyed a proxy site of similar land use and size summarized below, as well as, provided a full parking utilization study, see **Appendix I**.

6.1. Parking Utilization Surveys at a Proxy Site

NexTrans has undertaken a parking survey for an existing site with similar land use to the proposed site with the main difference is that residential parking is on the surface as opposed to an underground garage. The proxy site municipally known as, 5005-5055 Oscar Peterson Boulevard, is located at the northeast corner of the Eglinton Avenue West and Oscar Peterson Boulevard, in the City of Mississauga. The details of the proxy survey are the following:

- The proxy site is an existing stacked back-to-back townhouse complex with 157 residential units;
- The development includes 93 individual parking garages and 100 tenant and 32 visitor surface parking;
- The existing 93 individual garages are assumed to be occupied; and
- The surveys were undertaken for two consecutive weeks from 6:00PM to 1:00AM at 30-minute intervals on Friday March 1st, Saturday March 2nd, Sunday March 3rd, Friday March 8th, and Saturday March 9th. The surveys in the second week were based on the two days that experienced the highest peak parking demand in the first week.

The parking utilization survey results are summarized in **Table 6.2** and the full Parking Utilization Study report is provided in **Appendix I** of this study.

Table 6.2 – Parking Utilization Survey Results Summary

Day of Survey	Number of Units	Peak Parking Demand		Parking Rates	
		Resident	Visitor	Resident	Visitor
Friday March 1, 2019	157	172	11	1.10	0.07
Saturday March 2, 2019		176	18	1.12	0.11
Sunday March 3, 2019		173	10	1.10	0.06
Friday March 8, 2019		167	12	1.06	0.08
Saturday March 9, 2019		171	21	1.09	0.13
Maximum Parking Rate per Unit				**1.12**	**0.13**
Combined Parking Rate per Unit				**1.25**	

The above results conclude that the maximum parking utilization for residents is 1.12 spaces per unit and for visitors is 0.13 spaces per unit, with a combined rate of 1.25 spaces per unit. The proposed developments provide a total of 153 parking spaces with a combined rate of 1.51 spaces per unit. **Table 6.3** below, summarizes the recommended parking requirement for the proposed development based on the parking justification provided in **Appendix I**.

Table 6.3 – Recommended Parking Rates for 2512, 2522, 2532 Argyle Road Residential Development

Use	Units	Parking Rate	Parking Requirement	Parking Provided	Difference
Condominium Horizontal Multiple Dwelling (*without exclusive use garage and driveway*)	101	1.12 spaces per unit	113	153	+27
Condominium Horizontal Multiple Dwelling – Visitor		0.13 spaces per unit	13		
Total			**126**	**153**	**+27**

As summarized in **Table 6.3**, the adjusted parking requirement is 126 parking spaces (113 resident and 13 visitor), the proposed site provides for 153 parking spaces which results in a surplus of 27 parking spaces. NexTrans recommends the surplus of parking spaces be allocated to visitor use to prevent on-street visitor parking during potential busy periods that might occur at the site and an extra space to the 3-bedroom units. On this basis, the future parking demand is completely satisfied with the parking provision.

6.2. Existing Household Demographic and Car Ownership

To further justify that the provided parking is sufficient, NexTrans reviewed the 2016 Transportation Tomorrow Survey data for the demographic information in the City of Mississauga Ward 7. **Table 6.4** summarizes the demographic information based on the 2016 Transportation Tomorrow Survey data, while the detailed 2016 TTS data summary is included in **Appendix G**.

Table 6.4 – Demographic Information for the City of Mississauga Ward 7 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%	6%	69%	27%	29%	18%	15%	10%	14%	51%	28%	5%	2%

As indicated in **Table 6.2**, there is a large percentage of single person households in Ward 7 (27%), and more half of the households have no car or just one car (14% + 51% = **65**%).

Based on this finding, it is our opinion that the proposed parking rate reduction is reasonable given that more than half (51%) of the households in Ward 7 have only one car. Also, 14% of households have no car, this further justifies a total reduction of 12 parking spaces from the By-law requirement.

6.3. Bicycle Parking

The subject site is proposing bike parking spaces to provide cyclists with an appropriate space for their bicycles and encourage residents to cycle. Since, the City of Mississauga does not currently have a bike parking requirement, the City of Mississauga Cycling Master Plan states that "*it is recommended that the City of Mississauga incorporate provisions for bicycle parking within the Zoning Bylaw*." The bike parking space provided are summarized below in **Table 6.3**.

Table 6.5 – Proposed Bicycle Parking

Land Use	Number of Units	Parking Rate	Spaces Provided
Rental Townhouse Dwelling (*without exclusive use garage and driveway*)	101	0.37 long-term spaces per unit	37
		0.09 short-term spaces per unit	9

Based on the site plan, the proposed residential development will provide 42 long-term and 20 short-term bicycle parking spaces exceeding the minimum bicycle parking requirements.

7.0 SITE PLAN REVIEW

7.1. Site Access

According to the site plan provided, access to the site is provided through a full movement driveway located on the east side of the site via Argyle Road. The driveway provides access to the loading area, visitor parking spaces, and the underground garage. In accordance with Ontario Traffic Manual (OTM) Book 5, we recommend appropriate signage consisting of a STOP sign (Ra-1) and STOP bar be provided on the Argyle Road egress driveway and for cars exiting the underground garage.

7.2. Sightline Assessment

For the purpose of verifying that minimum sightline requirements are met, a design speed of 60 km/hr (posted speed limit plus 20 km/hr) will be utilized for vehicles maneuvering turns from the stop bar onto the major road. Sight distance requirements will be considered for passenger vehicles departing the stopped position at the proposed site accesses on Argyle Road.

Under the stopping sight distance assessment, the target height applied is 0.38m for vehicle tail lights, and for intersection movements a top of car height of 1.30m is applied. A driver eye height of 1.08m is applied for all scenarios. Lastly, a deceleration rate of 3.4m/s^2 is applied; which is a comfortable deceleration rate for most drivers.

The intersection sight distance (ISD) along Argyle Road is determined by the formula below:

$ISD = 0.278\ (V_{major})(t_g)$ Where:

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

t_g = time gap for minor road (egress driveway) vehicle to enter major road (s)

Minimum ISD for left turn onto major road from stop = 0.278 (60) (7.5)
= 125.1 m
= 130 m, rounded for design

Minimum ISD for right turn onto major road from stop = 0.278 (70) (6.5)
= 108.42 m
= 110 m, rounded for design

The required stopping distance, adjusted for effect of grade, is determined using the following formula:

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

Where:

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

$$\text{Minimum SSD from stop} = 0.278\ (60)\ (2.5) + 0.039\left(\frac{60^2}{3.4}\right)$$
$$= 82.99 \text{ m}$$
$$= 85 \text{ m, rounded for design}$$

Based on the TAC Manual (2017) Figure 9.10.1, see **Appendix J**, the corresponding minimum decision sight distance is 165 meters. The sightline distances at the proposed site access on Argyle Road are summarized in **Table 7.1**.

Table 7.1 – Sightline Assessment at Site Access

Approach @ Argyle Road and Site Access	Decision Sight Distance			Departure Sight Distance		
	Required	Achieved	Difference	Required	Achieved	Difference
Southbound Approach	165m	291m	+ 126m	110m	291m	+ 181m
Northbound Approach	165m	75m	- 90m	130m	75m	- 55m

Table 7.1 indicates that there is sufficient departure and decision sight distance available for vehicles turning right out of the egress driveway and for vehicles traveling southbound on Argyle Road. Since, the proposed site access is located in proximity to the curve in the street, the limit of the sight distance for a vehicle turning left from the egress driveway and for vehicles traveling northbound on Argyle Road is limited to 75 meters. Drivers naturally slow down when the direction of the road changes, thus NexTrans believes this will not be an issue.

Given the information summarized above, it is our opinion that vehicles can sufficiently complete right and a left turns out of the site from the future stop bar location and is supportable from a traffic engineering and decision sight distance perspective.

7.3. Vehicle Maneuverability and Assessment

AutoTURN software was used to generate a vehicular turning template to confirm and demonstrate the accessibility of the proposed loading space and parking spaces. As illustrated in **Figure 7-1**, the AutoTURN analysis demonstrates that a Region of Peel Front-End Waste Collection Vehicle can effectively maneuver through the study area to the loading space. Passenger vehicles maneuvers are also illustrated in **Figure 7-2** to ensure the parallel parking spaces are accessible.

8.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) refers to variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. Typically, TDM strategies are for residential and office developments where large quantities of people congregate in one origin or destination.

Based on the review of the context of the proposed development, the following TDM measures are recommended:

- Construct direct shared pedestrian and cycling connections from the proposed development to Argyle Road; as shown on the proposed site plan;
- Provide long- and short-term bike parking spaces for residents and visitors; as shown on the proposed site plan;
- Owner to consider providing transit incentives for residents, if appropriate.

8.1. Transit and Active Transportation Mode Assessment

The public transportation services operated by MiWay provide a reliable, cost effective alternative mode of travel through the comprehensive and continually growing transit network system. MiWay transit only charges PRESTO card users 80 cents when taking the bus to connect to a GO Transit station or transferring from GO Transit to MiWay. The full fare will be charged from the PRESTO card at the first tap on the bus and later deducted when tapping on to the GO Transit, and vice versa.

The Hurontario LRT Project is proposed to bring a modern, reliable, rapid transit to serve the cities of Mississauga and Brampton. The LRT line proposes a future stop at Hurontario Street and Dundas Street West, approximately a 13-minute walk or 4-minute bike ride. This station will provide residents with a quick mode of transit north to Gateway Terminal in Brampton and south to the Port Credit GO Station. The LRT is set to be completed by the year 2022 and will also enhance the streetscape with bike lanes and pedestrian walkways throughout.

The proposed development is situated in a transit supportive neighbourhood with bus stops located approximately 4-minutes to the subject site within comfortable walking distance. The route services are illustrated in **Appendix I**. The route services in the immediate area are described below:

- **28 Confederation:** The 28 Confederation bus route operates approximately every 15 minutes northbound to the City Centre Transit Terminal and southbound to Trillium Health Centre. The 28 Confederation bus route provides service 7 days a week. Weekend service operates approximately every 25 minutes up to 7:30pm. Accessible service and bike racks are provided on the route. This route stops at the Cooksville GO Transit platform.

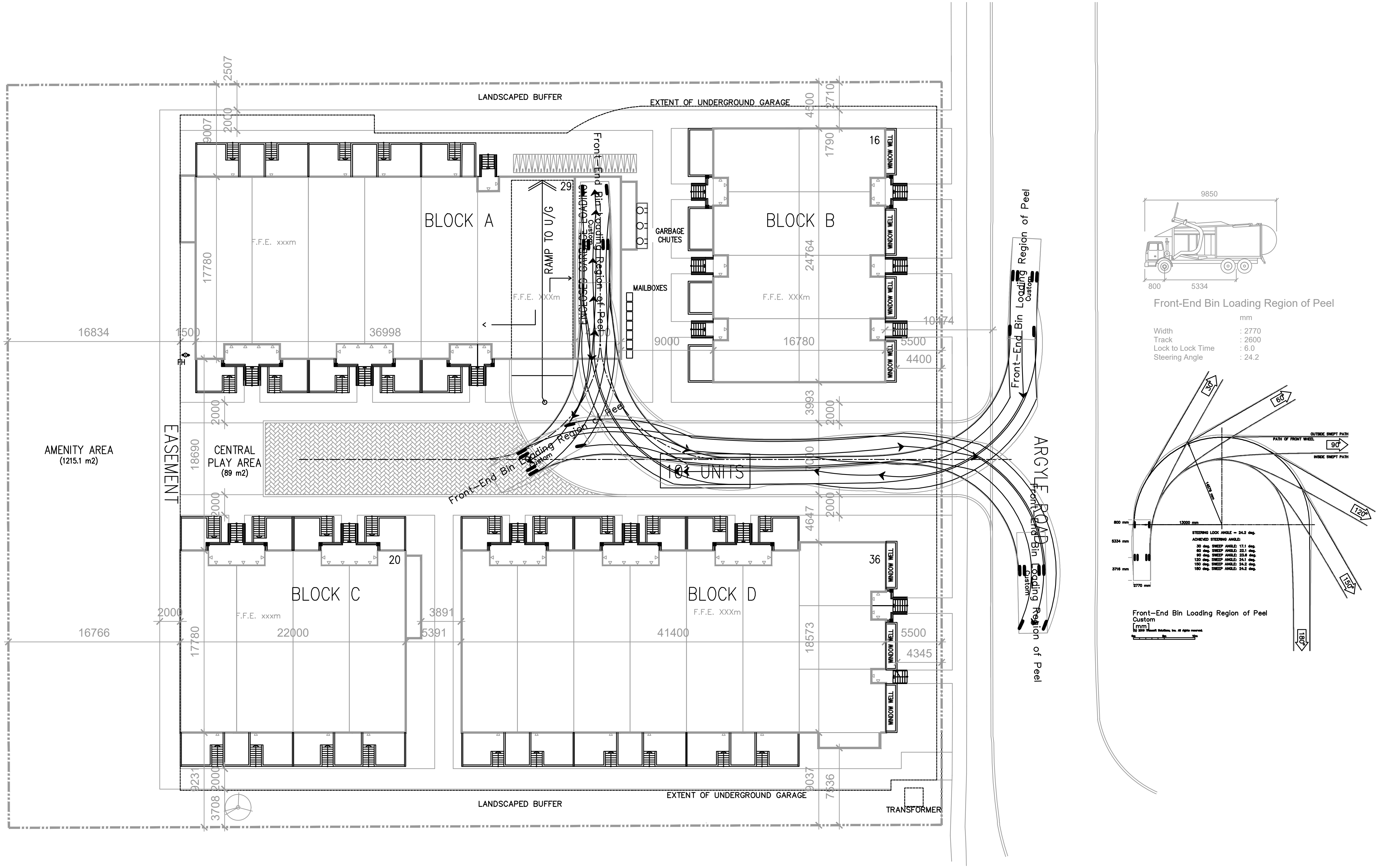
- **1 Dundas**: The 1 Dundas bus route operates approximately every 15 minutes eastbound to Islington TTC Subway Station, and westbound to Vega Boulevard and Laird Road. The 1 Dundas bus route provides service 7 days a week. Weekend service operates approximately every 20 minutes. Accessible service and bike racks are provided on the route. This bus route connects transit users to the University of Toronto Mississauga Campus.

Based on the study prepared by the Ministry of Transportation Ontario titled: 'Transit Supportive Guidelines', dated January 2012, transit users are generally willing to walk 400 meters to a local stop or 800 meters to a rapid transit station. The Dundas Street West at Argyle Road, and Confederation Parkway at Dunbar Road bus stops are both approximately 350 meters from the proposed subject site.

9.0 CONCLUSION

The findings and conclusions of our analysis are as follows:

- The development proposal is to redevelop the existing 6,483.5 m^2 site to include 101 residential units divided among four (4) blocks of stacked townhouses and provide an underground parking garage. Vehicular access to the site is proposed via a full movement driveway located on Argyle Road.
- The proposed development is anticipated to generate 27 two-way trips (7 inbound and 20 outbound) during the AM peak hours and 34 two-way trips (20 inbound and 14 outbound) during the PM peak hours.
- The intersection capacity analysis results (based on the methodology and procedures outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board) indicate that the study area intersections and access are expected to continue to operate at acceptable levels of service.
- To ensure safe traffic operation in the area, it is recommended that a STOP sign (Ra-1) and STOP bar be installed on the Argyle Road egress driveway and for cars exiting the underground garage.
- Based on the City of Mississauga Zoning By-law 0225-2007, a total of 165 parking spaces will be required for the proposed residential development. The proposed site plan provides for a total of 153 parking spaces, which results in a shortfall of 12 parking spaces (7% reduction). It is our opinion that the parking spaces provided by the proposed development is reasonable and justified for the following reasons:
    - NexTrans has undertaken a parking utilization study, provided in **Appendix I**, at a site with similar land use characteristics in the City of Mississauga which resulted to a maximum combined parking rate of 1.25 spaces per unit (1.12 resident and 0.13 visitor). On this basis, the proposed site is providing a combined rate of 1.51 spaces per unit which results in a surplus of 27 spaces and thus, meets future parking demands.
    - Based on the household demographic information retrieved from the Toronto Tomorrow Survey (TTS) for the City of Mississauga Ward 7, more than half (14% + 51% = 65%) of households contain no car or only one car. The site plan also provides 42 long-term and 20 short-term bike spaces encouraging cycling as another mode of transit.
- The proposed site full movement site access on Argyle Road is located appropriately.
- A Region of Peel Front-End Waste Collection Vehicle can effectively maneuver through the proposed loading space with no conflicts.
- The subject site is located in a transit supportive zone, with transit stops located 350 meters from the site. The future Hurontario Light Rail Transit also proposes a stop at Hurontario Street and Dundas Street West, which will provide a modern, quick, and reliable transportation alternative to residents.



LANDSCAPED BUFFER
EXTENT OF UNDERGROUND GARAGE
BLOCK A
BLOCK B
BLOCK C
BLOCK D
F.F.E. xxxm
F.F.E. XXXm
RAMP TO U/G
GARAGE CHUTES
MAILBOXES
AMENITY AREA
(1215.1 m2)
EASEMENT
CENTRAL PLAY AREA
(89 m2)
101 UNITS
ARGYLE ROAD
TRANSFORMER
Front-End Bin Loading Region of Peel
Width : 2770
Track : 2600
Lock to Lock Time : 6.0
Steering Angle : 24.2
9850
800
5334
16834
36998
16780
16766
22000
41400

BENCHMARK

REVISIONS

NO	REVISION	DATE	BY

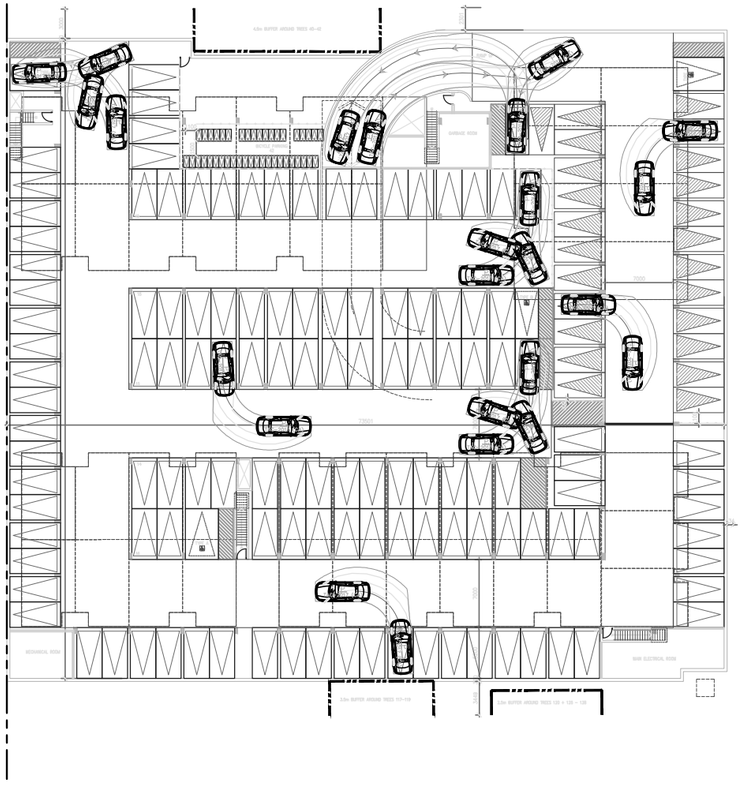
STAMP

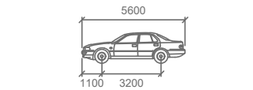
nexTrans
CONSULTING ENGINEERS
520 Industrial Parkway South, Suite 201
Aurora, Ontario L4G 6W8
Tel: 905-503-2563
www.nextrans.ca

PROJECT NAME:
RESIDENTIAL DEVELOPMENT
2532 Argyle Road
(CITY OF MISSISSAUGA)

DRAWING TITLE:
AutoTURN Analysis
(9.85m Front-End Loading Waste Collection)

DESIGN BY:	A.S.	DATE:	May 8, 2019
CHECKED BY:	R.P.	PROJECT NO.	NT-17-254
DRAWN BY:	A.S.		
SCALE:	NTS	DRAWING NO.	Figure 7-1





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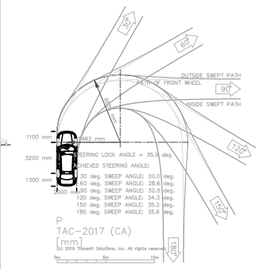
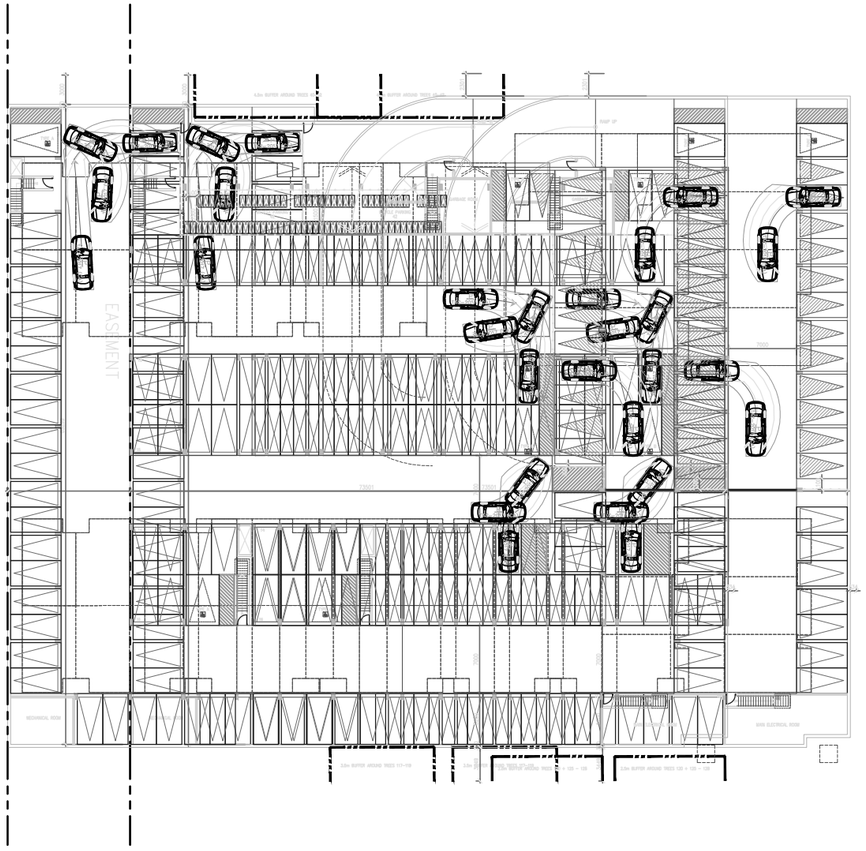
		mm
Width	:	2000
Track	:	2000
Lock to Lock Time	:	6.0
Steering Angle	:	35.9





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REVISONS

NO	REVISION	DATE	BY

STAMP

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

PROJECT NAME:
RESIDENTIAL DEVELOPMENT
2532 Argyle Road
(CITY OF MISSISSAUGA)

DRAWING TITLE:
AutoTURN Analysis
(P TAC-2017)

DESIGN BY: A.S.	DATE: May 8, 2019
CHECKED BY: R.P.	PROJECT NO. NT-17-254
DRAWN BY: A.S.	DRAWING NO. Figure 7-2
SCALE: NTS	

Appendix A **-** First Submission Comments

PLANNING AND BUILDING

PLANNER - DEV DESIGN

Contact: Jonathan Famme Tel. (905) 615-3200 x4229

No	Milestone	Condition
1	RECOMMENDATION REPORT	Your application has requested a Rezoning of the lands to an "RM8" zone, however this zone is only for Horizontal Multiple Dwellings with 4 to 6 units, as you are proposing in excess of 6 units, the correct zone category would be "RM9". Please amend your application to request the rezoning to RM9 (a letter and updated By-law is sufficient - we do not require a whole new application form). Please also see my comment on required Exceptions to By-law for amended Draft By-law. **Created :** 2019-01-13 03:06:31 **Last Modified :** 2019-01-13 04:12:43
2	RECOMMENDATION REPORT	A revised plan is required to address staff comments and concerns outlined within this report. Please provide updated statistical information for the proposed development. **Created :** 2019-01-13 03:09:43 **Last Modified :** 2019-01-13 04:12:50
3	RECOMMENDATION REPORT	Revise the title of drawing A101 from Site Plan to "Concept Plan" as there is currently no site plan application. **Created :** 2019-01-13 03:18:21 **Last Modified :** 2019-01-13 04:12:56
4	RECOMMENDATION REPORT	Please confirm if the application is for rental or condominium units, as there are different requirements such as parking rates and condominium road standards accordingly. Provide Parking Utilization Study if you cannot meet the required number of parking spaces (appears to be 22 spaces difficient), in order to determine if the proposed reduction can be justified. **Created :** 2019-01-13 03:20:33 **Last Modified :** 2019-01-13 04:55:06
5	RECOMMENDATION REPORT	Please provide the following additional information on the Concept Plan - Dwg A101: a) Existing Zoning (R3) and Proposed Zoning (RM9-Exception); b) Floor Space Index; c) update parking statistics to show correct required parking numbers (ex. Condominium: 1.1 space/unit - 1 Bedrm = 57 spaces; 1.5 spaces/unit - 2Bedrm = 84 spaces; 1.75 spaces/unit - 3 Bedrm = 7 spaces; 0.25 visitor spaces/unit = 28 spaces; Total Required = 176 spaces - NOT 161 spaces) Provide Parking Utilization Study if you cannot meet the required number of parking spaces (appears to be 22 spaces difficient), in order to determine if the proposed reduction can be justified. d) Landscaped Area - % lot area in addition to square metres; e) area of contiguous private outdoor space per dwelling unit; f) dimension property boundaries and include meets and bounds (survey info); g) label landscape buffer dimension along north and south property lines; h) label surface parking spaces as "v" visitor spaces as described on Parking Plan (A201); **Created :** 2019-01-13 03:35:17 **Last Modified :** 2019-01-13 04:54:19

TRANSPORTATION AND WORKS

TRAFFIC REVIEW (PPP)

Contact: Gregory Borys Tel. (905) 615-3200 x3597

No	Milestone	Condition
1	RECOMMENDATION REPORT	This department is in receipt of the Traffic Impact Study dated October 23, 2018 prepared by NexTrans Consulting Engineers and has the following comments: - 2.1 Argyle Road: Unposted speed limits along local roads are default 50 km/h - 8.0 Transportation Demand Management: "Consider providing transit incentives for residents, if appropriate." It should be noted that the City of Mississauga does not provide any transit incentives such as pre-loaded PRESTO cards. All TDM measures and associated costs are to be borne by the applicant. **Created :** 2019-01-03 10:22:45 **Last Modified :** 2019-01-10 01:29:23
2	RECOMMENDATION REPORT	- Existing Hydro Pole located next to proposed access requires a minimum 1.5 m clearance. Applicant will be required to contact appropriate agency and obtain a clearance letter to relocate the existing hydro pole; - Provide ramp grade for underground parking and trench grate at the bottom of ramp - Provide turning template for parallel parking spaces located in the underground parking. Turning template required for parallel parking located furthest east and west; **Created :** 2019-01-03 10:47:40 **Last Modified :** 2019-01-10 01:29:23
3	NOTE:	The cost for any/all road improvements required in support of this development application will be borne by the applicant. **Created :** 2019-01-03 09:48:50 **Last Modified :** 2019-01-10 01:29:23
4	NOTE:	Applicant will be required to obtain an Access Modification Permit (https://www7.mississauga.ca/documents/FormsOnline/Access_Modification_Application_Form.pdf) **Created :** 2019-01-03 09:37:15 **Last Modified :** 2019-01-10 01:29:23

TRANSIT REVIEWER

Contact: Alana Tyers Tel. (905) 615-3200 x3812

No	Milestone	Condition
1	NOTE:	This site is currently in proximity to MiWay's Route 1 on Dundas Street and Route 28 along Confederation Parkway. **Created :** 2018-11-20 01:50:33 **Last Modified :** 2019-01-03 01:06:22
2	NOTE:	The applicant is to ensure that convenient and accessible pedestrian linkages are provided between the site, the existing sidewalk network, and MiWay service. Pedestrian walkway connections to the existing municipal sidewalk are necessary to reduce walking time and encourage transit use. **Created :** 2018-11-20 01:50:33 **Last Modified :** 2019-01-03 01:06:22

Appendix B **-** Terms of Reference

520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8
Phone: 905-503-2563

nextrans CONSULTING ENGINEERS
NextEng Consulting Group Inc.

Terms of Reference

To: Giancarlo Tedesco, E.I.T., C.E.T., Transportation Planning Technologist, City of Mississauga

From: Madeleine Catz, B.Eng., E.I.T., Nextrans Consulting Engineers

cc: Julianna Boldt

Date: January 31, 2018

Re: 2532 Argyle Road – TOR for Transportation Impact Study

These terms of reference have been prepared to outline (for the City's review and approval) the intended scope of work for a transportation impact study for a proposed residential development which will include approximately 92 townhouse units and is located west of Argyle Road in the City of Mississauga.

The following text outlines the intended scope for a transportation impact study for the 2532 Argyle Road residential development. Our transportation impact study will conform to the City of Mississauga "Traffic Impact Study Guidelines" which will include the following study parameters:

- Description of the proposed development, study area, and the horizon year for analysis
- Existing Conditions
- Background Traffic Demand
- Site Generated Traffic Demand
- Total Traffic Demand
- Evaluation of Impacts of Site Generated Traffic
- Access Location Analysis
- Alternatives to Mitigate Traffic Impacts
- Recommendations

Introduction

The report introduction will include:

1. Description of the site location
2. Description of the nature of application
3. Description of proposed development and land use
4. Proposed study area

Access to the site is proposed through a full movement driveway via Argyle Road.

Existing Traffic Assessment

The existing conditions within the study area will be summarized and documented. This will include, but not limited to:

- A description of key roads and intersections (lanes, speed limits)
- Identifying forms of traffic control, lane configurations, turning restrictions
- Identifying transit routes, service frequencies, stops and stations
- Identifying pedestrian and cycling facilities
- Noting the location of adjacent driveways and access points
- Identifying other traffic generators in the vicinity of the site

Turning movement counts will be collected during weekday AM (7am-10am), weekday PM (4pm-7pm) peak periods at the following study area intersections:

- Argyle Road and Dundas Street West and
- Dunbar Road and Confederation Parkway

Once existing traffic volumes have been collected, we will prepare a baseline model of existing traffic operations at the study area intersections using Synchro v.10 for the identified critical time periods (weekday AM and PM peak hours). The existing analysis will include levels of service, volume to capacity ratios, and queuing at the key study intersections.

Future Background Traffic Assessment

Future Background consists of background growth and other background development traffic. We will obtain historic AADT records and estimate a background growth rate for the assumed 5-year time horizon period.

We do understand that there is and may be further redevelopment applications, as such traffic generation associated with those developments will be included in our analysis to reflect our horizon year assessment.

Operational deficiencies as a result of future forecasted traffic volumes will be identified and mitigative measures will be proposed and documented in the final report.

Site Traffic Assessment

The weekday AM and PM and Sunday peak hour traffic to be generated by the proposed development will be estimated based on information published in the *Trip Generation, 9th Edition,* by the Institute of Transportation Engineers (ITE)

The directional distribution of traffic approaching and departing the site will be determined based upon existing traffic data and Transportation Tomorrow Survey (TTS) data.

Future Total Traffic Assessment

Future total traffic consists of future background plus site traffic. Operational deficiencies as a result of site traffic will be identified and mitigative measures will be proposed and documented in the final report. We will develop and recommend appropriate intersection controls and geometric improvements for all key intersections as well as determine the appropriateness of the proposed site access location(s) and the lane requirements at these new locations.

Parking Justification / On Site Circulation and Site Access Review

- Review the available parking to determine whether the proposed parking supply is sufficient to accommodate the parking demand of the proposed site and meets current and City-wide by-law requirements.
- We will review and provide comment on the most recent site plan with respect to the functionality of the internal vehicular circulation to facilitate vehicle maneuvering, loading, servicing, parking and pick-up / drop-off activities.
- Using Auto TURN, we will confirm the turning radius requirements and site circulation for passenger and heavy vehicles.
- Determine the appropriateness of access location and ensure adequate connections to main corridors are provided.
- Determine if the site access locations confirm to City standards vis-a-vis spacing, clear throat, sight lines and setback minimum criteria.

Transit and Transportation Demand Management Plan

A review of the existing and future transit availability in the area and recommendations shall be made in relation to the City's TDM requirements to ensure acceptable walking distances are proposed to the subject lands. Additionally, a review of whether additional STOP locations would be of benefit. Also required is a transit pedestrian study to ensure sufficient capacity is available along the existing routes and that appropriate pedestrian connectivity is provided.

Madeleine Catz

From: Jay Lee <Jay.Lee@mississauga.ca>
Sent: February-12-18 2:18 PM
To: Madeleine Catz
Cc: jboldt@plazacorp.com; Richard Pernicky; William Wright; Tyler Xuereb; Jim Kartsomanis; Linda Wu
Subject: RE: Terms of Reference for Transportation Impact Study

Follow Up Flag: Follow up
Flag Status: Completed

Hi Madeline,

Based on our review of the Terms of Reference for 2512, 2522, 2532 Argyle Rd., dated January 31, 2016, the following comments are provided:

Contact Information

- The historical AADT data and Turning Movement Count for City roads and intersections can be obtained from Traffic Operations Section (William.Wright@mississauga.ca, Ext. 3221).
- The growth rates for the City roads classified as arterials or major collector (Dundas Street West and Confederation Parkway) can be obtained from Transportation Planning Section (tyler.xuereb@mississauga.ca). It is not recommended applying background growth rates for minor collector and local roads.
- The signal timing plan for signalized intersections can be obtained from Traffic Signal Section (Jim.Kartsomanis@mississauga.ca, Ext. 3964).

References

- Please use the following link to gather information of any development proposed in the neighbouring lands for background traffic: http://www.mississauga.ca/portal/residents/developmentinformation. Specifically, the applications on Dundas St. West and Confederation Parkway close to the two intersections to be analyzed are to be included. These developments and any other that you find in your research are to be taken into consideration for the background traffic. Please contact the Planner for the specific application in process for proposal information.
- Miway 5 (http://www.mississauga.ca/portal/miway/miwayfive) is to be referenced for transit system.
- There are no roadway projects proposed within the study area and until the study horizon year.

Synchro Default Values

- Saturation flow rates, turning speed, headway factor should be based on the Synchro default values
- Lane widths should be based on field measurements
- Detector lengths for setback left turn lanes are 9.0 m
- Peak hour factor should be based on Synchro default values or calculated for each movement
- Reference phase(s) are the coordinated phases (ph.2 and/or 6)
- Minimum initial, minimum split, total split and vehicle extension values should be obtained from the City's Traffic Signals and Street Lighting Business Unit
- The City does not operate any of their intersections using time before reduce and time to reduce
- Walking speed is either 1.1 m/s or 0.9 m/s
- The City does not permit lagging left-turn phasing
- Heavy vehicle percentages should be obtained from the most recent turning movement counts

Please contact Traffic Signal Section if you have any questions regarding Synchro Default Values (Jim.Kartsomanis@mississauga.ca, Ext. 3964).

Analysis

- The existing signal timing plan is to be used for analysis. If there are any signal improvements recommended, a quick summary of the recommended signal timing changes and a comparison of analysis of the existing and proposed signal timing are to be provided in the body of the report.
- The existing conditions should be the year the TIS is completed, which presumably will be 2018 and the 5 year horizon from the date of the TIS is to be analyzed, which would be 2023 if the date of the TIS is 2018.
- For movements where queuing is identified, further queuing analysis is required using Sim Traffic.

Please be advised that the Parking Justification aspect of the City is reviewed by Planning and Building Department.

Please contact me if you have any questions .

Thank you,

Jay Lee, E.I.T. | Traffic Planning Technologist
Transportation Infrastructure Management Section | Transportation and Infrastructure Planning Division | Transportation and Works Department | City of Mississauga
201 City Centre Drive, Suite 800, Mississauga, Ontario, L5B 2T4 | T 905-615-3200 ext.3170 | jay.lee@mississauga.ca

MISSISSAUGA

Please consider the environment before printing

From: Giancarlo Tedesco
Sent: 2018/02/01 9:56 AM
To: madeleine@nextrans.ca; Jay Lee
Cc: jboldt@plazacorp.com; Richard Pernicky
Subject: FW: Terms of Reference for Transportation Impact Study

Hello Madeline,

I have forwarded your attached terms of Reference to my colleague Jay Lee as she previously worked on the DARC file.

Regards,

Giancarlo Tedesco, E.I.T., C.E.T.
Traffic Planning Technologist
T 905-615-3200 ext.5798
giancarlo.tedesco@mississauga.ca

From: Madeleine Catz [mailto:]
Sent: 2018/01/31 4:54 PM
To: Giancarlo Tedesco
Cc: jboldt@plazacorp.com; Richard Pernicky
Subject: Terms of Reference for Transportation Impact Study

Good afternoon Giancarlo,

I would like to establish a terms of reference with you regarding the Transportation Impact Study for a proposed residential development located at 2532 Argyle Road in the City of Mississauga. Please see attached terms of reference as well as, the preliminary site plan for your reference.

Sincerely,

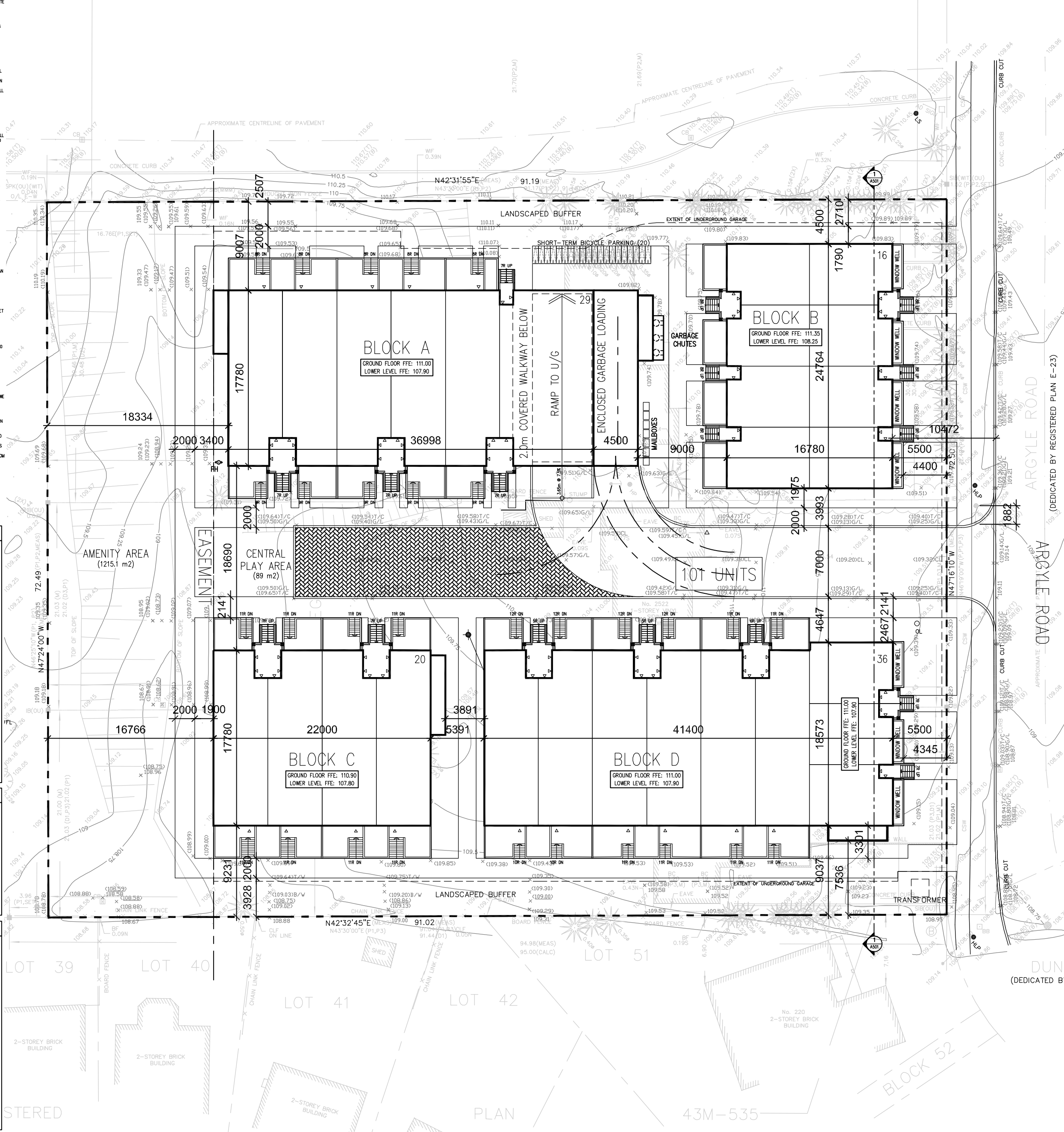
Madeleine Catz, B.Eng., EIT

Transportation Analyst

o: 905-503-2563 ext. 207
c: 647-893-1640
e: madeleine@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

Appendix C - Proposed Site Plan



GENERAL NOTES

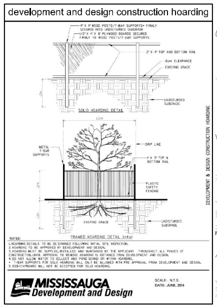
1. ALL SURFACE DRAINAGE WILL BE SELF-CONTAINED, COLLECTED AND DISCHARGED AT A LOCATION TO BE APPROVED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.
2 THE CITY OF MISSISSAUGA REQUIRES THAT ALL WORKING DRAWINGS BE SUBMITTED TO THE BUILDING DIVISION AS A PART OF AN APPLICATION OF THE ISSUANCE OF A BUILDING PERMIT, SHALL BE CERTIFIED BY THE ARCHITECT OR ENGINEER AS BEING IN CONFORMITY WITH THE SITE DEVELOPMENT PLAN AS APPROVED BY THE CITY OF MISSISSAUGA.
3. ALL EXTERIOR LIGHTING WILL BE DIRECTED ONTO THE SITE AND WILL NOT INFRINGE UPON THE ADJACENT PROPERTIES.
4. ALL ROOF TOP MECHANICAL UNITS SHALL BE SCREENED FROM VIEW BY THE APPLICANT.
5. AT THE ENTRANCES TO THE SITE, MUNICIPAL SIDEWALK AND CURBS WILL BE CONTINUOUS THROUGH THE DRIVEWAY. THE DRIVEWAY GRADE WILL BE COMPATIBLE WITH THE EXISTING OR FUTURE SIDEWALK AND CURB DEPRESSION WILL BE PROVIDED FOR EACH ENTRANCE.
6. ON SITE WASTE COLLECTION IS TO BE ARRANGED THROUGH A PRIVATE CONTRACTOR.
7. THE PORTIONS OF THE DRIVEWAYS WITHIN THE MUNICIPAL BOULEVARDS IS TO BE PAVED BY THE APPLICANT.
8. DRIVEWAYS ON THE MUNICIPAL RIGHT-OF-WAY SHALL BE PAVED BY THE APPLICANT.
9. FIRE AND EMERGENCY SERVICES ACCESS ROUTES SHALL BE DESIGNATED AS PER BY-LAW1036-81, AS AMENDED, PRIOR TO OCCUPANCY OF THE BUILDING. ALL FIRE AND EMERGENCY SERVICES ACCESS ROUTES SHALL BE CONSTRUCTED OF HARD SURFACE MATERIAL SUCH AS ASPHALT, CONCRETE OR LOCKSTONE AND DESIGNED TO SUPPORT A LOAD OF NOT LESS THAN 11,363 kg PER AXLE AND HAVE A CHANGE IN GRADIENT OF NOT MORE THAN 1 IN 12.5 OVER MINIMUM DISTANCE OF 15m.
10. THE TOPS OF ANY CURBS BORDERING DRIVEWAYS WITHIN THE MUNICIPAL BOULEVARD WILL BE FLUSH WITH THE MUNICIPAL SIDEWALK AND ROAD CURB.
11. PARKING SPACES RESERVED FOR PEOPLE WITH DISABILITIES MUST BE IDENTIFIED BY A SIGN INSTALLED AT THE APPLICANT'S EXPENSE, IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS OF SCHEDULE 2 & 3 OF BY-LAW 10-2016.
12. GRADES WILL BE MET WITHIN A 33% MAXIMUM SLOPE AT THE PROPERTY LINES AND WITHIN THE SITE.
13. ALL DAMAGED AREAS ARE TO BE REINSTATED WITH TOPSOIL AND SOD PRIOR TO THE RELEASE OF SECURITIES.
14. SIGNAGE SHOWN ON THE DEVELOPMENT PLANS IS FOR INFORMATION PURPOSES ONLY. ALL SIGNS WILL BE SUBJECT TO THE PROVISIONS OF SIGN BY-LAW0054-2002, AS AMENDED, AND A SEPARATE SIGN APPLICATION WILL BE REQUIRED THROUGH THE BUILDING DIVISION.
15. ALL SIGNAGE IS SUBJECT TO FURTHER REVIEW AND APPROVALS BY THE PLANNING AND BUILDING DEPARTMENT WHICH MAY INCLUDE A STAFF REVIEW THROUGH THE SIGN PERMIT PROCESS.
16. THE APPLICANT WILL BE RESPONSIBLE FOR ENSURING THAT ALL PLANS CONFORM TO TRANSPORT CANADA'S RESTRICTION.
17. THE APPLICANT IS RESPONSIBLE FOR ENSURING THAT TREE PROTECTION HOARDING IS MAINTAINED THROUGHOUT ALL PHASE OF DEMOLITION AND CONSTRUCTION, IN THE LOCATION AND CONDITION AS APPROVED BY THE PLANNING AND BUILDING DEPARTMENT. NO MATERIALS (BUILDING MATERIALS, SOIL, ETC.) MAY BE STOCKPILED WITHIN THE AREA OF HOARDING. FAILURE TO MAINTAIN THE HOARDING AS ORIGINALLY APPROVED FOR THE STORAGE OF MATERIALS WITHIN THE HOARDING WILL BE THE CAUSE FOR THE TREE PRESERVATION 'LETTER OF CREDIT' TO BE HELD FOR TWO (2) YEARS FOLLOWING COMPLETION OF ALL SITE WORKS.

SIGNED BY PROPERTY OWNER .... DATED:.................

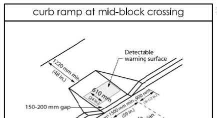
18. PLEASE BE ADVISED THAT THE DETAILED GRADING FOR THIS APPLICATION WILL BE FINALIZED AND APPROVED BY THE DEVELOPMENT SECTION OF THE TRANSPORTATION AND WORKS DEPARTMENT AS A REQUIREMENT FOR THE ISSUANCE OF A BUILDING PERMIT.
19. THE APPLICANT SHALL BE RESPONSIBLE FOR THE COST OF AN UTILITY RELOCATIONS NECESSITATED BY THE SITE PLAN.
20. THE STRUCTURAL DESIGN OF AN RETAINING WALL OVER 0.6m IN HEIGHT OR AN RETAINING WALL LOCATED ON A PROPERTY LINE IS TO BE SHOWN ON THE SITE GRADING PLAN FOR THIS PROJECT AND TO BE APPROVED BY THE CONSULTING ENGINEER FOR THE PROJECT.
21. SITE GRADING PLAN AND SITE SERVICING PLAN ARE TO BE ASSOCIATED WITH THE SITE PLAN.
22. I HEREBY CERTIFY THAT THIS DRAWING CONFORMS IN ALL RESPECTS TO THE SITE DEVELOPMENT PLANS AS APPROVED BY THE CITY OF MISSISSAUGA UNDER FILE NUMBER ....
23. ALL PROPOSED CURBING WITHIN THE MUNICIPAL BOULEVARD AREA FOR THE SITE IS TO SUIT AS FOLLOWS: a) FOR ALL SINGLE FAMILY RESIDENTIAL PROPERTIES INCLUDING ON STREET TOWNHOUSES, ALL CURBING IS TO STOP AT THE PROPERTY LIMIT OR THE BACK OF THE MUNICIPAL SIDEWALK, WHICHEVER IS APPLICABLE, OR b) FOR ALL OTHER PROPOSALS INCLUDING INDUSTRIAL, COMMERCIAL AND CONDOMINIUM DEVELOPMENTS, ALL ENTRANCES TO THE SITE ARE TO BE IN ACCORDANCE WITH O.P.S.D. 350.010.
24. PRIOR TO ANY CONSTRUCTION TAKING PLACE,STRUCTURALLY CERTIFIED OVERHEAD HOARDING WITHIN THE RIGHT-OF-WAY AS SHOWN ON THE SITE PLAN (AS APPLICABLE), HOARDING ADJACENT TO EXISTING PROPERTIES TO PROTECT FROM CONSTRUCTION ACTIVITY,AND ALL REQUIRED HOARDING IN ACCORDANCE WITH THE ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS MUST BE ERECTED AND MAINTAINED THROUGHOUT ALL PHASES OF CONSTRUCTION.
25. IF THE FINAL COURSE OF ASPHALT PAVING IS DELAYED,INSTALL A TEMPORARY LIFT OF ASPHALT AT RAMPS OR CURB CUTS TO BARRIER-FREE ACCESS.
26. ANY FENCING ADJACENT TO MUNICIPAL LANDS IS TO BE LOCATED 15cm (6.0in.) INSIDE THE PROPERTY LINE.
27 WE AGREE TO IMPLEMENT THE APPROVED SITE AND LANDSCAPED PLANS WITHIN 18 MONTHS AFTER THE EXECUTION OF THE SITE PLAN UNDERTAKING AND WILL RETAIN THE LANDSCAPE ARCHITECT TO MAKE PERIODIC INSPECTIONS. UPON COMPLETION OF THE WORKS WE WILL FORWARD TO THE CITY OF MISSISSAUGAA COPY OF THE COMPLETION CERTIFICATE FROM THE LANDSCAPE ARCHITECT AND THE APPLICABLE APPLICATION FEE THE LANDSCAPE ARCHITECT AND OR CONSULTING ENGINEER WILL ALSO PROVIDE CERTIFICATION TO INDICATE THAT THE BIOSWALE IN PARKING LOT, SWALE WITH OVERLAND FLOW AND RAINWATER HARVESTING SYSTEMS HAVE BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED SITE PLAN DRAWINGS. ANY REVISIONS TO THE SITE AND LANDSCAPE PLANS WILL BE SUBMITTED TO THE PLANNING AND BUILDING DEPARTMENT, CITY OF MISSISSAUGA FOR REVIEW AND APPROVAL. PRIOR TO THE COMMENCEMENT OF WORKS. WE HEREBY AUTHORIZE THE CITY. ITS AUTHORIZED AGENTS, SERVANTS OR EMPLOYEES TO ENTER UPON OUR LAND TO CARRY OUT INSPECTIONS FROM TIME TO TIME AND AGREE TO INDEMNIFY THE CITY, ITS AUTHORIZED AGENTS, SERVANTS OR EMPLOYEES TO ENTER UPON OUR LAND TO CARRY OUT INSPECTION FROM TIME TO TIME AND AGREE TO INDEMNIFY THE CITY,ITS AUTHORIZED AGENTS AND SAVE THEM HARMLESS FROM ANY AND ALL ACTIONS ARISING OUT OF THE EXCERSISE BY THE CITY, ITS AUTHORIZED AGENTS, SERVANTS OR EMPLOYEES OF THE RIGHTS HEREBY GIVEN THEM. WE UNDERTAKE TO NOTIFY THE CITY FORTHWITH OF ANY CHANGE OF OWNERSHIP OF THE SAID LANDS.

SIGNED BY PROPERTY OWNER .... DATED:.................

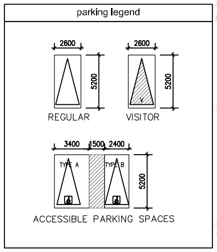
development and design construction hoarding



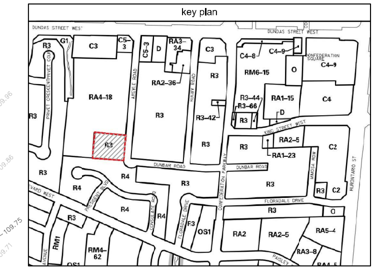
curb ramp at mid-block crossing



parking legend



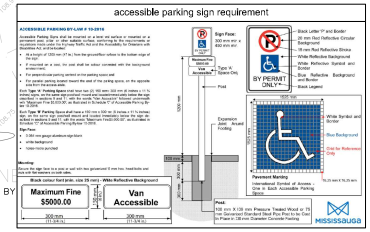
key plan



architectureunfolded

STATISTICS - 17-43 ARGYLE						
ZONING	CURRENT: R3; RM9-xx					
SITE AREA	6,483.5m2 / 1.6 acres					
UNIT AREAS		AREA		QUANTITY	TOTAL AREA	
		m2	ft2		m2	ft2
	LOWER 1A	46.96	505.5	15	704.40	7,582.1
	LOWER 1B	45.03	484.7	15	675.45	7,270.5
	UPPER 1A	82.50	888.0	1	82.50	888.0
	UPPER 1B	77.41	833.2	1	77.41	833.2
	LOWER 2A	83.72	901.2	15	1,255.80	13,517.3
	LOWER 2B	94.94	1,021.9	11	1,044.34	11,241.2
	UPPER 2A	127.31	1,370.4	30	3,819.30	41,110.6
	UPPER 2B	134.98	1,452.9	11	1,484.78	15,982.0
	3A	193.32	2,080.9	2	386.64	4,161.8
	GRAND TOTAL				9,530.62	102,586.6
FSI	PERMITTED:	1.5		PROPOSED:	1.47	
UNITS	UINTS BY DESIGNATION			UNITS BY TYPE		
	LOWER 1A (1 Bedroom)	15		1 BEDROOM		32
	LOWER 1B (1 Bedroom)	15				
	UPPER 1A (1 Bedroom)	1				
	UPPER 1B (1 Bedroom)	1				
	LOWER 2A (2 Bedroom)	15		2 BEDROOM		67
	LOWER 2B (2 Bedroom)	11				
	UPPER 2A (2 Bedroom)	30				
	UPPER 2B (2 Bedroom)	11				
	3A (3 Bedroom)	2		3 BEDROOM		2
	GRAND TOTAL					101
UNITS BY BLOCK		1B	2B	3B		TOTAL
	BLOCK A	12	15	2		29
	BLOCK B	0	16	0		16
	BLOCK C	8	12	0		20
	BLOCK D	12	24	0		36
	TOTAL	32	67	2		101
BUILDING HEIGHT	PERMITTED:	15.0m				
	PROPOSED:	BLOCK A	14.40m			
		BLOCK B	14.20m			
		BLOCK C	14.20m			
		BLOCK D	14.50m			
AVERAGE GRADE	PROPOSED:	BLOCK A	108.900			
		BLOCK B	109.240			
		BLOCK C	109.710			
		BLOCK D	109.260			
PARKING	REQUIRED - res=1.1sp/1B=35.2; 1.5sp/2B=100.5; 1.75sp/3B=3.5; vis=0.25/unit=25.3					164.5
	PROPOSED					153
PUBLIC AMENITY	GUIDELINE AMENITY = 648.4m2					
	1,304.10m2 OF WHICH 1,304.10m2 IS CONTIGUOUS (20% OF SITE; 12.9m2/UNIT)					
PRIVATE AMENITY	AVG/UNIT = 14.5m2; TOTAL = 1,464.30m2					
LANDSCAPED AREA	REQUIRED:	55%				
	PROPOSED:	3,681.03m2 / 56.8% OF SITE				
	SOFT:	2,256.83m2 / 34.8%				
	HARD:	1,424.20m2 / 22.0%				
BICYCLE PARKING	REQUIRED - N/A					
	PROPOSED LONG-TERM				42	62
	PROPOSED SHORT-TERM				20	

accessible parking sign requirement



survey information

BOUNDARY AND TOPOGRAPHIC SURVEY OF PART OF BLOCK A
REGISTERED PLAN E-23
CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL
(FORMERLY TOWNSHIP OF TORONTO, COUNTY OF PEEL)

R. AVIS SURVEYING INC.
SUITE 203
235 YORKLAND BOULEVARD, TORONTO, ONTARIO, M2J 4Y8
PHONE: 416.490.8352
FAX: 416.491.6206
WWW.RAVISSURVEYING.COM
PROJECT NO.: 3167-0
FILE NAME: 3167-0T.DWG

notes:

2 issued to client for review	05.17.2019
2 issued to city for review	04.09.2019
1 issued for rezoning	10.26.2018

revisions:

architectural team :

mark zwicker

ONTARIO ASSOCIATION OF ARCHITECTS
MARK ALEXANDER ZWICKER
LICENCE
5887

planning:
design plan services inc

structural:
-

electrical:
-

mechanical:
-

landscape:
bsq landscape architects

site services:
odan-detech

owner:
plazacorp

project:
2512-2532 argyle rd
mississauga, ontario

concept plan & statistics

may.17.2019	date:
1:200	scale:
17-43	project:
mf	drawn by:

true north / construction north

drawing number:
A100

architectureunfolded
219 dufferin street, suite 201b, toronto, on. M6K 3J1 tel: (416)601.5416 info@unfolded.ca

Appendix D – Existing Traffic Data

NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6

Turning Movement Count (1 . ARGYLE RD & DUNDAS ST W)

Start Time	E Approach DUNDAS ST W					S Approach ARGYLE RD					W Approach DUNDAS ST W					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
07:00:00	96	1	0	1	97	10	9	0	1	19	1	207	0	1	208	324	
07:15:00	110	5	0	0	115	11	6	0	2	17	4	233	0	0	237	369	
07:30:00	113	3	0	0	116	17	14	0	0	31	3	282	0	0	285	432	
07:45:00	148	2	0	2	150	9	4	0	2	13	6	287	0	3	293	456	1581
08:00:00	139	6	0	1	145	18	9	0	2	27	2	305	0	2	307	479	1736
08:15:00	146	2	0	0	148	9	2	0	5	11	10	268	0	2	278	437	1804
08:30:00	151	5	0	0	156	11	3	0	0	14	7	262	0	0	269	439	1811
08:45:00	174	4	0	2	178	12	8	0	3	20	7	328	0	0	335	533	1888
09:00:00	171	4	0	2	175	12	1	0	4	13	6	251	0	1	257	445	1854
09:15:00	174	1	0	1	175	7	4	0	4	11	6	261	0	1	267	453	1870
09:30:00	145	2	0	1	147	10	7	0	12	17	8	223	0	1	231	395	1826
09:45:00	160	4	0	0	164	7	7	0	4	14	6	213	0	0	219	397	1690
BREAK																	
16:00:00	264	8	0	0	272	5	11	0	1	16	16	204	0	2	220	508	
16:15:00	288	7	0	0	295	10	5	0	4	15	11	235	0	0	246	556	
16:30:00	325	7	0	0	332	9	12	0	2	21	15	213	0	0	228	581	
16:45:00	293	11	0	1	304	10	10	0	7	20	21	195	0	1	216	540	2185
17:00:00	334	8	1	0	343	10	5	0	4	15	12	221	0	2	233	591	2268
17:15:00	307	8	0	0	315	10	9	0	4	19	17	227	0	1	244	578	2290
17:30:00	301	3	1	1	305	5	8	0	2	13	13	217	0	1	230	548	2257
17:45:00	305	8	0	0	313	10	12	0	3	22	12	223	0	1	235	570	2287
18:00:00	303	10	0	0	313	2	8	0	1	10	13	221	0	0	234	557	2253
18:15:00	291	6	0	0	297	11	10	0	6	21	12	210	1	1	223	541	2216
18:30:00	276	6	0	0	282	16	11	0	4	27	16	180	0	1	196	505	2173

NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6

18:45:00	261	13	0	2	274	11	5	0	1	16	11	172	0	0	183	473	2076
Grand Total	5275	134	2	14	5411	242	180	0	78	422	235	5638	1	21	5874	**11707**	-
Approach%	97.5%	2.5%	0%		-	57.3%	42.7%	0%		-	4%	96%	0%		-	**-**	-
Totals %	45.1%	1.1%	0%		46.2%	2.1%	1.5%	0%		3.6%	2%	48.2%	0%		50.2%	**-**	-
Heavy	187	2	0		-	3	2	0		-	6	185	0		-	**-**	-
Heavy %	3.5%	1.5%	0%		-	1.2%	1.1%	0%		-	2.6%	3.3%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (4.2 °C)

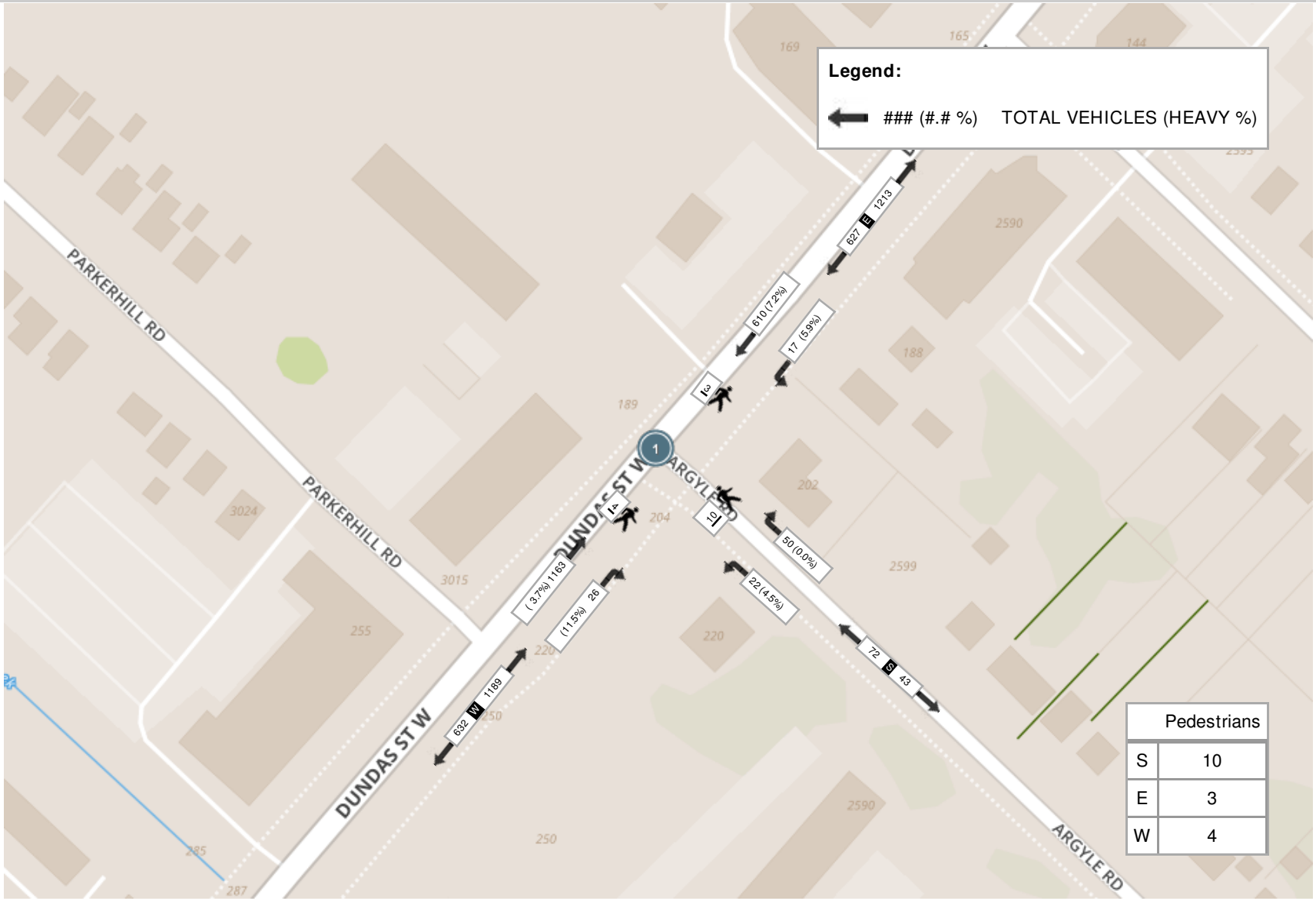
Start Time	E Approach DUNDAS ST W					S Approach ARGYLE RD					W Approach DUNDAS ST W					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
08:00:00	139	6	0	1	145	18	9	0	2	27	2	305	0	2	307	479
08:15:00	146	2	0	0	148	9	2	0	5	11	10	268	0	2	278	437
08:30:00	151	5	0	0	156	11	3	0	0	14	7	262	0	0	269	439
08:45:00	174	4	0	2	178	12	8	0	3	20	7	328	0	0	335	533
Grand Total	610	17	0	3	627	50	22	0	10	72	26	1163	0	4	1189	**1888**
Approach%	97.3%	2.7%	0%		-	69.4%	30.6%	0%		-	2.2%	97.8%	0%		-	-
Totals %	32.3%	0.9%	0%		33.2%	2.6%	1.2%	0%		3.8%	1.4%	61.6%	0%		63%	-
PHF	0.88	0.71	0		0.88	0.69	0.61	0		0.67	0.65	0.89	0		0.89	-
Heavy	44	1	0		45	0	1	0		1	3	43	0		46	-
Heavy %	7.2%	5.9%	0%		7.2%	0%	4.5%	0%		1.4%	11.5%	3.7%	0%		3.9%	-
Lights	566	16	0		582	50	21	0		71	23	1120	0		1143	-
Lights %	92.8%	94.1%	0%		92.8%	100%	95.5%	0%		98.6%	88.5%	96.3%	0%		96.1%	-
Single-Unit Trucks	12	0	0		12	0	0	0		0	3	15	0		18	-
Single-Unit Trucks %	2%	0%	0%		1.9%	0%	0%	0%		0%	11.5%	1.3%	0%		1.5%	-
Buses	27	1	0		28	0	1	0		1	0	25	0		25	-
Buses %	4.4%	5.9%	0%		4.5%	0%	4.5%	0%		1.4%	0%	2.1%	0%		2.1%	-
Articulated Trucks	5	0	0		5	0	0	0		0	0	3	0		3	-
Articulated Trucks %	0.8%	0%	0%		0.8%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	-
Pedestrians	-	-	-	3	-	-	-	-	10	-	-	-	-	4	-	-
Pedestrians%	-	-	-	17.6%		-	-	-	58.8%		-	-	-	23.5%		-

NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6

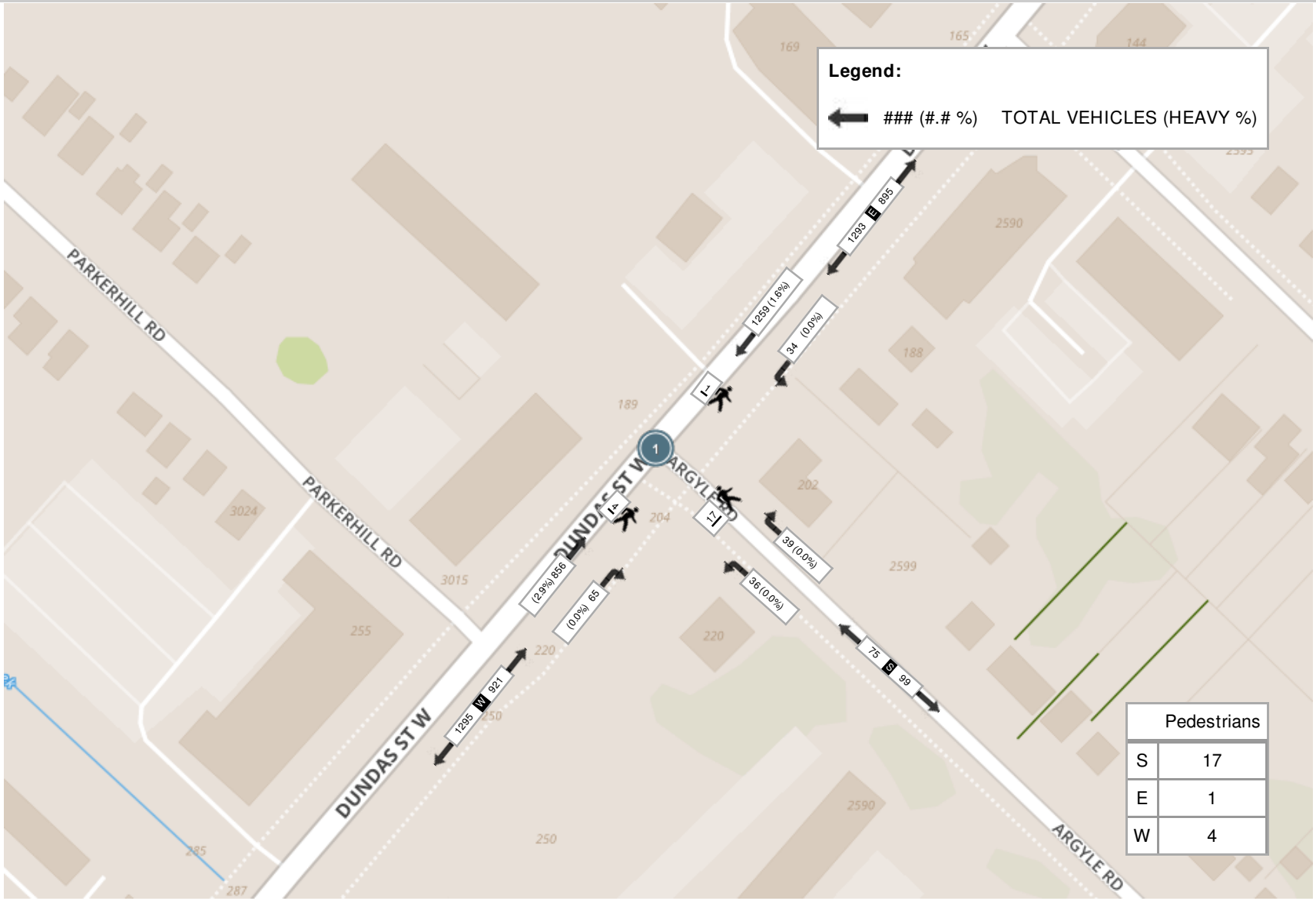
Peak Hour: 04:30 PM - 05:30 PM Weather: Rain (8.6 °C)

Start Time	E Approach DUNDAS ST W					S Approach ARGYLE RD					W Approach DUNDAS ST W					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
16:30:00	325	7	0	0	332	9	12	0	2	21	15	213	0	0	228	581
16:45:00	293	11	0	1	304	10	10	0	7	20	21	195	0	1	216	540
17:00:00	334	8	1	0	343	10	5	0	4	15	12	221	0	2	233	591
17:15:00	307	8	0	0	315	10	9	0	4	19	17	227	0	1	244	578
Grand Total	1259	34	1	1	1294	39	36	0	17	75	65	856	0	4	921	**2290**
Approach%	97.3%	2.6%	0.1%		-	52%	48%	0%		-	7.1%	92.9%	0%		-	-
Totals %	55%	1.5%	0%		56.5%	1.7%	1.6%	0%		3.3%	2.8%	37.4%	0%		40.2%	-
PHF	0.94	0.77	0.25		0.94	0.98	0.75	0		0.89	0.77	0.94	0		0.94	-
Heavy	20	0	0		20	0	0	0		0	0	25	0		25	-
Heavy %	1.6%	0%	0%		1.5%	0%	0%	0%		0%	0%	2.9%	0%		2.7%	-
Lights	1239	34	1		1274	39	36	0		75	65	831	0		896	-
Lights %	98.4%	100%	100%		98.5%	100%	100%	0%		100%	100%	97.1%	0%		97.3%	-
Single-Unit Trucks	6	0	0		6	0	0	0		0	0	10	0		10	-
Single-Unit Trucks %	0.5%	0%	0%		0.5%	0%	0%	0%		0%	0%	1.2%	0%		1.1%	-
Buses	13	0	0		13	0	0	0		0	0	13	0		13	-
Buses %	1%	0%	0%		1%	0%	0%	0%		0%	0%	1.5%	0%		1.4%	-
Articulated Trucks	1	0	0		1	0	0	0		0	0	2	0		2	-
Articulated Trucks %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	-
Pedestrians	-	-	-	1	-	-	-	-	17	-	-	-	-	4	-	-
Pedestrians%	-	-	-	4.5%		-	-	-	77.3%		-	-	-	18.2%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (4.2 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Rain (8.6 °C)



NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6

Turning Movement Count (2 . DUNBAR RD & CONFEDERATION PKWY)

Start Time	N Approach CONFEDERATION PKWY						E Approach DUNBAR RD						S Approach CONFEDERATION PKWY						W Approach DUNBAR RD						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	3	136	0	0	0	139	1	0	0	0	0	1	1	104	5	0	0	110	7	0	1	0	0	8	258	
07:15:00	1	139	0	0	0	140	0	0	0	0	3	0	0	107	5	0	3	112	11	0	1	0	2	12	264	
07:30:00	1	136	0	0	0	137	0	0	0	0	1	0	0	165	7	0	0	172	20	0	1	0	0	21	330	
07:45:00	0	168	1	0	0	169	1	0	2	0	1	3	1	148	9	0	0	158	21	0	2	0	3	23	353	1205
08:00:00	2	159	0	0	0	161	0	0	0	0	7	0	0	140	12	0	1	152	31	0	5	0	3	36	349	1296
08:15:00	3	171	0	0	0	174	0	0	0	0	4	0	0	138	8	0	0	146	15	0	6	0	1	21	341	1373
08:30:00	2	140	0	0	0	142	0	0	0	0	14	0	0	148	11	0	0	159	14	0	4	0	4	18	319	1362
08:45:00	2	188	0	0	0	190	2	0	0	0	6	2	0	160	17	0	0	177	36	0	0	0	4	36	405	1414
09:00:00	4	156	0	0	0	160	1	0	0	0	8	1	0	174	18	0	0	192	33	0	3	0	10	36	389	1454
09:15:00	7	118	1	0	0	126	0	0	0	0	7	0	0	162	5	0	0	167	13	0	0	0	4	13	306	1419
09:30:00	6	156	0	0	1	162	0	0	1	0	3	1	0	116	5	0	0	121	15	0	3	0	2	18	302	1402
09:45:00	1	137	1	0	2	139	1	0	2	0	4	3	1	134	8	0	0	143	18	0	3	0	4	21	306	1303
BREAK																										
16:00:00	7	171	3	0	2	181	2	0	1	0	6	3	0	159	20	0	0	179	15	0	1	0	3	16	379	
16:15:00	8	167	0	0	0	175	1	0	0	0	10	1	1	149	11	0	0	161	6	0	4	0	0	10	347	
16:30:00	15	172	0	1	0	188	0	0	0	0	3	0	0	158	12	0	0	170	9	0	2	0	3	11	369	
16:45:00	6	171	1	1	0	179	0	0	0	0	6	0	0	147	6	0	0	153	9	1	4	0	2	14	346	1441
17:00:00	10	170	2	0	0	182	0	0	0	0	5	0	0	164	5	0	0	169	14	0	0	0	6	14	365	1427
17:15:00	7	173	2	0	0	182	1	0	1	0	5	2	0	141	18	0	0	159	17	0	1	0	1	18	361	1441
17:30:00	4	164	2	0	3	170	0	0	1	0	1	1	0	148	10	0	0	158	13	0	2	0	5	15	344	1416
17:45:00	18	169	0	0	0	187	2	0	0	0	2	2	0	156	14	0	0	170	12	0	5	0	5	17	376	1446
18:00:00	16	148	2	0	0	166	0	0	2	0	2	2	0	141	11	0	0	152	17	0	4	0	2	21	341	1422
18:15:00	10	168	1	0	0	179	1	0	2	0	5	3	1	140	7	0	0	148	12	0	2	0	6	14	344	1405
18:30:00	14	155	1	0	0	170	1	0	0	0	4	1	0	150	10	2	1	162	18	0	1	0	2	19	352	1413
18:45:00	5	156	1	0	0	162	1	0	0	0	2	1	1	150	11	0	0	162	9	0	0	0	3	9	334	1371
Grand Total	152	3788	18	2	8	3960	15	0	12	0	109	27	6	3499	245	2	5	3752	385	1	55	0	75	441	**8180**	-
Approach%	3.8%	95.7%	0.5%	0.1%		-	55.6%	0%	44.4%	0%		-	0.2%	93.3%	6.5%	0.1%		-	87.3%	0.2%	12.5%	0%		-	-	-
Totals %	1.9%	46.3%	0.2%	0%		48.4%	0.2%	0%	0.1%	0%		0.3%	0.1%	42.8%	3%	0%		45.9%	4.7%	0%	0.7%	0%		5.4%	-	-
Heavy	4	81	0	0		-	1	0	0	0		-	2	74	8	0		-	8	0	3	0		-	-	-
Heavy %	2.6%	2.1%	0%	0%		-	6.7%	0%	0%	0%		-	33.3%	2.1%	3.3%	0%		-	2.1%	0%	5.5%	0%		-	-	-
Bicycles	1	2	0	0		-	0	1	0	0		-	0	2	0	0		-	0	0	0	0		-	-	-
Bicycle %	0.7%	0.1%	0%	0%		-	0%	0%	0%	0%		-	0%	0.1%	0%	0%		-	0%	0%	0%	0%		-	-	-

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4261-A14 Highway 7 East
Suite 489
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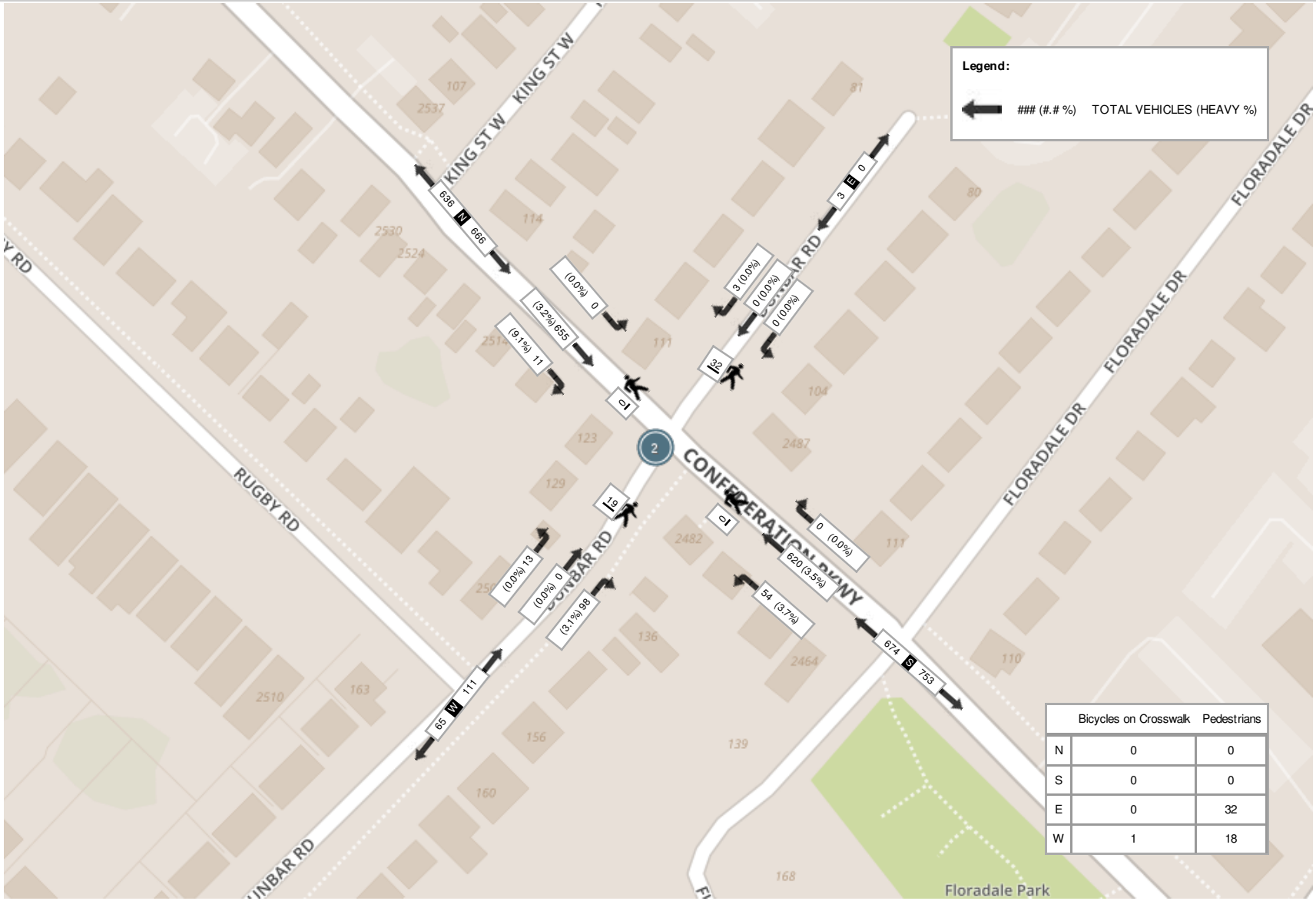
Peak Hour: 08:15 AM - 09:15 AM Weather: Overcast (4.2 °C)

Start Time	N Approach CONFEDERATION PKWY						E Approach DUNBAR RD						S Approach CONFEDERATION PKWY						W Approach DUNBAR RD						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	
08:15:00	3	171	0	0	0	174	0	0	0	0	4	0	0	138	8	0	0	146	15	0	6	0	1	21	341
08:30:00	2	140	0	0	0	142	0	0	0	0	14	0	0	148	11	0	0	159	14	0	4	0	4	18	319
08:45:00	2	188	0	0	0	190	2	0	0	0	6	2	0	160	17	0	0	177	36	0	0	0	4	36	405
09:00:00	4	156	0	0	0	160	1	0	0	0	8	1	0	174	18	0	0	192	33	0	3	0	10	36	389
Grand Total	11	655	0	0	0	666	3	0	0	0	32	3	0	620	54	0	0	674	98	0	13	0	19	111	**1454**
Approach%	1.7%	98.3%	0%	0%		-	100%	0%	0%	0%		-	0%	92%	8%	0%		-	88.3%	0%	11.7%	0%		-	-
Totals %	0.8%	45%	0%	0%		45.8%	0.2%	0%	0%	0%		0.2%	0%	42.6%	3.7%	0%		46.4%	6.7%	0%	0.9%	0%		7.6%	-
PHF	0.69	0.87	0	0		0.88	0.38	0	0	0		0.38	0	0.89	0.75	0		0.88	0.68	0	0.54	0		0.77	-
Heavy	1	21	0	0		22	0	0	0	0		0	0	22	2	0		24	3	0	0	0		3	-
Heavy %	9.1%	3.2%	0%	0%		3.3%	0%	0%	0%	0%		0%	0%	3.5%	3.7%	0%		3.6%	3.1%	0%	0%	0%		2.7%	-
Lights	10	634	0	0		644	3	0	0	0		3	0	598	52	0		650	95	0	13	0		108	-
Lights %	90.9%	96.8%	0%	0%		96.7%	100%	0%	0%	0%		100%	0%	96.5%	96.3%	0%		96.4%	96.9%	0%	100%	0%		97.3%	-
Single-Unit Trucks	0	2	0	0		2	0	0	0	0		0	0	3	1	0		4	1	0	0	0		1	-
Single-Unit Trucks %	0%	0.3%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0.5%	1.9%	0%		0.6%	1%	0%	0%	0%		0.9%	-
Buses	1	19	0	0		20	0	0	0	0		0	0	19	1	0		20	2	0	0	0		2	-
Buses %	9.1%	2.9%	0%	0%		3%	0%	0%	0%	0%		0%	0%	3.1%	1.9%	0%		3%	2%	0%	0%	0%		1.8%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	32	-	-	-	-	-	0	-	-	-	-	-	18	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	62.7%		-	-	-	-	0%		-	-	-	-	35.3%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	2%		-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 05:00 PM - 06:00 PM Weather: Rain (8.6 °C)

Start Time	N Approach CONFEDERATION PKWY						E Approach DUNBAR RD						S Approach CONFEDERATION PKWY						W Approach DUNBAR RD						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	
17:00:00	10	170	2	0	0	182	0	0	0	0	5	0	0	164	5	0	0	169	14	0	0	0	6	14	365
17:15:00	7	173	2	0	0	182	1	0	1	0	5	2	0	141	18	0	0	159	17	0	1	0	1	18	361
17:30:00	4	164	2	0	3	170	0	0	1	0	1	1	0	148	10	0	0	158	13	0	2	0	5	15	344
17:45:00	18	169	0	0	0	187	2	0	0	0	2	2	0	156	14	0	0	170	12	0	5	0	5	17	376
Grand Total	39	676	6	0	3	721	3	0	2	0	13	5	0	609	47	0	0	656	56	0	8	0	17	64	**1446**
Approach%	5.4%	93.8%	0.8%	0%		-	60%	0%	40%	0%		-	0%	92.8%	7.2%	0%		-	87.5%	0%	12.5%	0%		-	**-**
Totals %	2.7%	46.7%	0.4%	0%		49.9%	0.2%	0%	0.1%	0%		0.3%	0%	42.1%	3.3%	0%		45.4%	3.9%	0%	0.6%	0%		4.4%	**-**
PHF	0.54	0.98	0.75	0		0.96	0.38	0	0.5	0		0.63	0	0.93	0.65	0		0.96	0.82	0	0.4	0		0.89	**-**
Heavy	0	7	0	0		7	0	0	0	0		0	0	5	2	0		7	0	0	0	0		0	**-**
Heavy %	0%	1%	0%	0%		1%	0%	0%	0%	0%		0%	0%	0.8%	4.3%	0%		1.1%	0%	0%	0%	0%		0%	**-**
Lights	39	669	6	0		714	3	0	2	0		5	0	604	45	0		649	56	0	8	0		64	**-**
Lights %	100%	99%	100%	0%		99%	100%	0%	100%	0%		100%	0%	99.2%	95.7%	0%		98.9%	100%	0%	100%	0%		100%	**-**
Single-Unit Trucks	0	2	0	0		2	0	0	0	0		0	0	0	2	0		2	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0.3%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0%	4.3%	0%		0.3%	0%	0%	0%	0%		0%	**-**
Buses	0	5	0	0		5	0	0	0	0		0	0	5	0	0		5	0	0	0	0		0	**-**
Buses %	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.8%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	3	-	-	-	-	-	12	-	-	-	-	-	0	-	-	-	-	-	16	-	**-**
Pedestrians%	-	-	-	-	9.1%		-	-	-	-	36.4%		-	-	-	-	0%		-	-	-	-	48.5%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	3%		-	-	-	-	0%		-	-	-	-	3%		**-**
Bicycles on Road	0	1	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 08:15 AM - 09:15 AM Weather: Overcast (4.2 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	0	32
W	1	18

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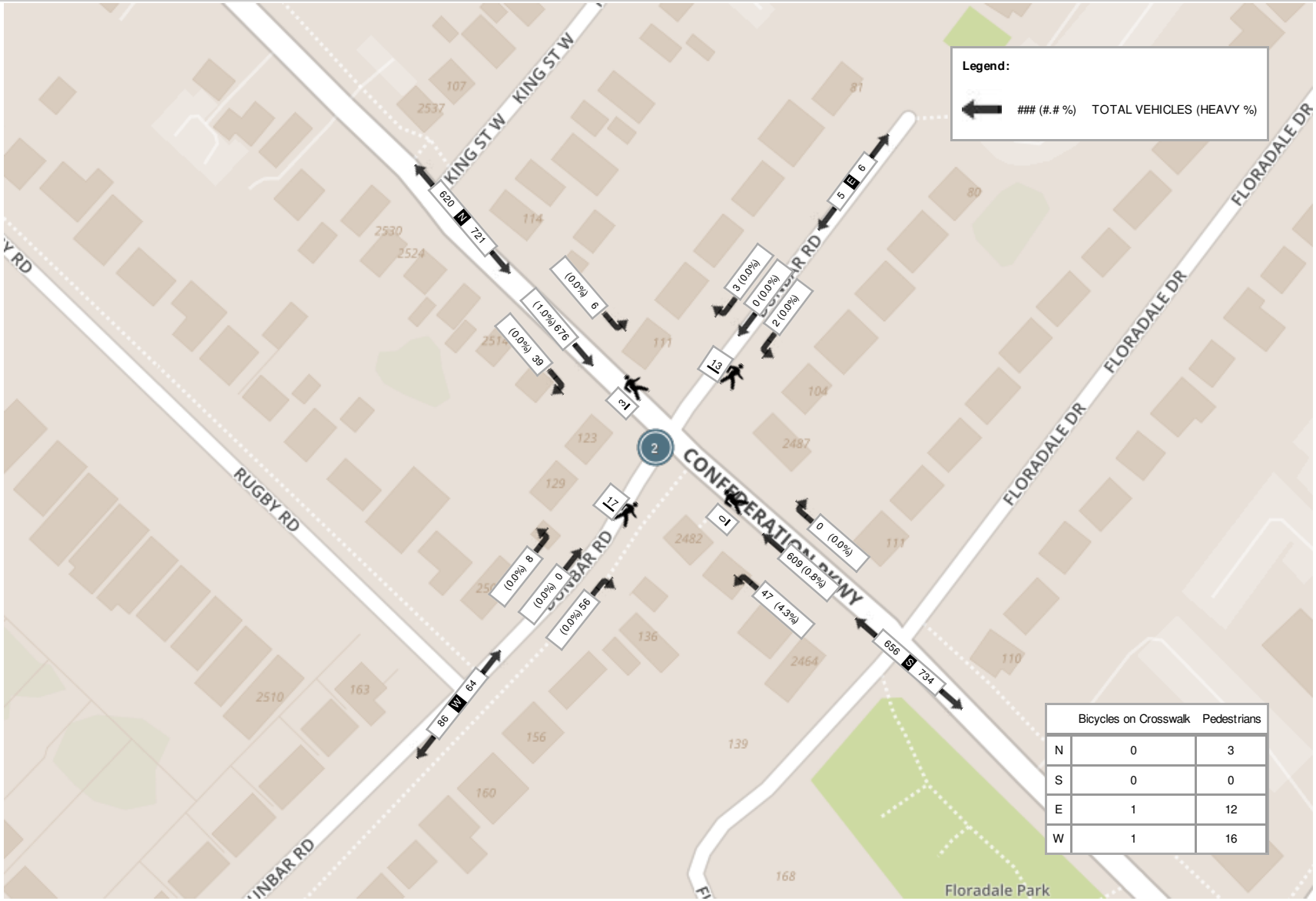
Peak Hour: 05:00 PM - 06:00 PM Weather: Rain (8.6 °C)



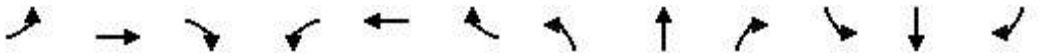
	Bicycles on Crosswalk	Pedestrians
N	0	3
S	0	0
E	1	12
W	1	16

Appendix E – Existing Traffic Level of Service Calculations

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1163	26	17	610	22	50
Future Volume (Veh/h)	1163	26	17	610	22	50
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.65	0.71	0.88	0.61	0.69
Hourly flow rate (vph)	1307	40	24	693	36	72
Pedestrians	4			3	10	
Lane Width (m)	3.3			3.3	4.8	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1357		1736	686
vC1, stage 1 conf vol					1337	
vC2, stage 2 conf vol					398	
vCu, unblocked vol			1357		1736	686
tC, single (s)			4.2		6.9	6.9
tC, 2 stage (s)					5.9	
tF (s)			2.3		3.5	3.3
p0 queue free %			95		81	81
cM capacity (veh/h)			477		193	389

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	871	476	24	346	346	108
Volume Left	0	0	24	0	0	36
Volume Right	0	40	0	0	0	72
cSH	1700	1700	477	1700	1700	290
Volume to Capacity	0.51	0.28	0.05	0.20	0.20	0.37
Queue Length 95th (m)	0.0	0.0	1.3	0.0	0.0	13.2
Control Delay (s)	0.0	0.0	12.9	0.0	0.0	24.5
Lane LOS			B			C
Approach Delay (s)	0.0		0.4			24.5
Approach LOS						C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	45.0%	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)	13	0	98	0	0	3	54	620	0	0	655	11
Future Volume (Veh/h)	13	0	98	0	0	3	54	620	0	0	655	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.54	0.25	0.68	0.25	0.25	0.38	0.75	0.89	0.25	0.25	0.87	0.69
Hourly flow rate (vph)	24	0	144	0	0	8	72	697	0	0	753	16
Pedestrians		19			32							
Lane Width (m)		4.5			3.3							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		2			2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1629	1653	780	1770	1661	729	788			729		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1629	1653	780	1770	1661	729	788			729		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	66	100	63	100	100	98	91			100		
cM capacity (veh/h)	71	87	386	36	86	416	806			862		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	168	8	72	697	0	769
Volume Left	24	0	72	0	0	0
Volume Right	144	8	0	0	0	16
cSH	237	416	806	1700	1700	1700
Volume to Capacity	0.71	0.02	0.09	0.41	0.00	0.45
Queue Length 95th (m)	37.8	0.5	2.3	0.0	0.0	0.0
Control Delay (s)	50.3	13.8	9.9	0.0	0.0	0.0
Lane LOS	F	B	A			
Approach Delay (s)	50.3	13.8	0.9		0.0	
Approach LOS	F	B				

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	61.9%	ICU Level of Service		B
Analysis Period (min)	15			

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:50	7:50	7:50	7:50	7:50	7:50
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3173	3301	3298	3205	3149	3226
Vehs Exited	3179	3295	3290	3202	3153	3223
Starting Vehs	20	21	14	13	21	16
Ending Vehs	14	27	22	16	17	21
Travel Distance (km)	638	653	651	636	624	640
Travel Time (hr)	15.1	15.5	15.7	15.3	14.8	15.3
Total Delay (hr)	1.6	1.8	2.0	1.9	1.6	1.8
Total Stops	233	208	230	222	221	222
Fuel Used (l)	55.7	56.8	57.0	55.9	53.7	55.8

Interval #0 Information Seeding

Start Time	7:50
End Time	8:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3173	3301	3298	3205	3149	3226
Vehs Exited	3179	3295	3290	3202	3153	3223
Starting Vehs	20	21	14	13	21	16
Ending Vehs	14	27	22	16	17	21
Travel Distance (km)	638	653	651	636	624	640
Travel Time (hr)	15.1	15.5	15.7	15.3	14.8	15.3
Total Delay (hr)	1.6	1.8	2.0	1.9	1.6	1.8
Total Stops	233	208	230	222	221	222
Fuel Used (l)	55.7	56.8	57.0	55.9	53.7	55.8

Intersection: 1: Argyle Road & Dundas Street West

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (m)	15.5	5.4	12.6	9.8	1.8	25.1
Average Queue (m)	1.5	0.3	2.7	0.5	0.1	11.4
95th Queue (m)	9.2	2.9	10.0	4.2	1.3	20.6
Link Distance (m)	55.0	55.0	107.8	107.8	107.8	382.8
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Confederation Parkway & Dunbar Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	TR
Maximum Queue (m)	34.4	8.9	15.4	2.9
Average Queue (m)	12.6	0.7	5.9	0.1
95th Queue (m)	24.9	4.6	13.4	2.0
Link Distance (m)	274.9	59.1		77.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			28.0	
Storage Blk Time (%)				
Queuing Penalty (veh)				

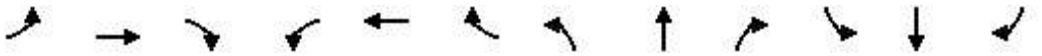
Network Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	856	65	34	1259	36	39
Future Volume (Veh/h)	856	65	34	1259	36	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.77	0.77	0.94	0.75	0.98
Hourly flow rate (vph)	911	84	44	1339	48	40
Pedestrians	4			1	17	
Lane Width (m)	3.3			3.3	4.8	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	2	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1012		1732	516
vC1, stage 1 conf vol					970	
vC2, stage 2 conf vol					762	
vCu, unblocked vol			1012		1732	516
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			94		81	92
cM capacity (veh/h)			680		256	500

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	607	388	44	670	670	88
Volume Left	0	0	44	0	0	48
Volume Right	0	84	0	0	0	40
cSH	1700	1700	680	1700	1700	329
Volume to Capacity	0.36	0.23	0.06	0.39	0.39	0.27
Queue Length 95th (m)	0.0	0.0	1.7	0.0	0.0	8.5
Control Delay (s)	0.0	0.0	10.7	0.0	0.0	19.9
Lane LOS			B			C
Approach Delay (s)	0.0		0.3			19.9
Approach LOS						C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	46.2%	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)	8	0	56	2	0	3	47	609	0	6	676	39
Future Volume (Veh/h)	8	0	56	2	0	3	47	609	0	6	676	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.40	0.25	0.82	0.50	0.25	0.38	0.65	0.93	0.25	0.75	0.98	0.54
Hourly flow rate (vph)	20	0	68	4	0	8	72	655	0	8	690	72
Pedestrians		17			13						3	
Lane Width (m)		4.5			3.3						3.2	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		2			1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1569	1571	743	1586	1607	671	779			668		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1569	1571	743	1586	1607	671	779			668		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	75	100	83	94	100	98	91			99		
cM capacity (veh/h)	79	98	411	66	93	454	814			922		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	88	12	72	655	8	762
Volume Left	20	4	72	0	8	0
Volume Right	68	8	0	0	0	72
cSH	211	154	814	1700	922	1700
Volume to Capacity	0.42	0.08	0.09	0.39	0.01	0.45
Queue Length 95th (m)	15.3	2.0	2.3	0.0	0.2	0.0
Control Delay (s)	33.8	30.4	9.8	0.0	8.9	0.0
Lane LOS	D	D	A		A	
Approach Delay (s)	33.8	30.4	1.0		0.1	
Approach LOS	D	D				

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:50	7:50	7:50	7:50	7:50	7:50
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3635	3677	3586	3616	3618	3626
Vehs Exited	3639	3690	3586	3617	3619	3630
Starting Vehs	18	26	19	22	17	21
Ending Vehs	14	13	19	21	16	15
Travel Distance (km)	758	763	744	756	734	751
Travel Time (hr)	18.7	18.4	18.3	18.2	17.3	18.2
Total Delay (hr)	2.6	2.2	2.5	2.1	1.8	2.3
Total Stops	217	211	207	221	182	208
Fuel Used (l)	66.1	66.0	64.3	65.3	62.0	64.7

Interval #0 Information Seeding

Start Time	7:50
End Time	8:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3635	3677	3586	3616	3618	3626
Vehs Exited	3639	3690	3586	3617	3619	3630
Starting Vehs	18	26	19	22	17	21
Ending Vehs	14	13	19	21	16	15
Travel Distance (km)	758	763	744	756	734	751
Travel Time (hr)	18.7	18.4	18.3	18.2	17.3	18.2
Total Delay (hr)	2.6	2.2	2.5	2.1	1.8	2.3
Total Stops	217	211	207	221	182	208
Fuel Used (l)	66.1	66.0	64.3	65.3	62.0	64.7

Intersection: 1: Argyle Road & Dundas Street West

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (m)	13.9	8.3	11.9	11.4	6.7	35.5
Average Queue (m)	1.0	0.6	4.6	0.7	0.2	14.3
95th Queue (m)	6.9	4.6	12.4	5.5	2.9	28.5
Link Distance (m)	55.0	55.0	107.8	107.8	107.8	382.8
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Confederation Parkway & Dunbar Road

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	19.6	8.9	13.6	6.0	10.3	10.9
Average Queue (m)	9.7	1.2	5.6	0.2	0.9	0.4
95th Queue (m)	16.4	6.2	12.9	2.6	5.5	4.8
Link Distance (m)	274.9	59.1		71.7		77.5
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			28.0		27.0	
Storage Blk Time (%)						0
Queuing Penalty (veh)						0

Network Summary

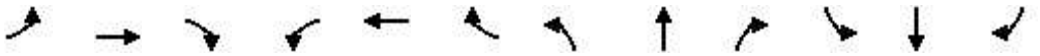
Network wide Queuing Penalty: 0

Appendix F – Future Total Traffic Level of Service Calculations

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1193	26	17	662	22	50
Future Volume (Veh/h)	1193	26	17	662	22	50
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.65	0.71	0.88	0.61	0.69
Hourly flow rate (vph)	1340	40	24	752	36	72
Pedestrians	4			3	10	
Lane Width (m)	3.3			3.3	4.8	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1390		1798	703
vC1, stage 1 conf vol					1370	
vC2, stage 2 conf vol					428	
vCu, unblocked vol			1390		1798	703
tC, single (s)			4.2		6.9	6.9
tC, 2 stage (s)					5.9	
tF (s)			2.3		3.5	3.3
p0 queue free %			95		81	81
cM capacity (veh/h)			463		185	379

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	893	487	24	376	376	108
Volume Left	0	0	24	0	0	36
Volume Right	0	40	0	0	0	72
cSH	1700	1700	463	1700	1700	281
Volume to Capacity	0.53	0.29	0.05	0.22	0.22	0.38
Queue Length 95th (m)	0.0	0.0	1.3	0.0	0.0	13.9
Control Delay (s)	0.0	0.0	13.2	0.0	0.0	25.6
Lane LOS			B			D
Approach Delay (s)	0.0		0.4			25.6
Approach LOS						D

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	98	0	0	3	54	637	0	0	679	11
Future Volume (Veh/h)	13	0	98	0	0	3	54	637	0	0	679	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.54	0.25	0.68	0.25	0.25	0.38	0.75	0.89	0.25	0.25	0.87	0.69
Hourly flow rate (vph)	24	0	144	0	0	8	72	716	0	0	780	16
Pedestrians		19			32							
Lane Width (m)		4.5			3.3							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		2			2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1675	1699	807	1816	1707	748	815			748		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1675	1699	807	1816	1707	748	815			748		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	100	61	100	100	98	91			100		
cM capacity (veh/h)	66	81	372	33	80	405	788			848		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	168	8	72	716	0	796
Volume Left	24	0	72	0	0	0
Volume Right	144	8	0	0	0	16
cSH	224	405	788	1700	1700	1700
Volume to Capacity	0.75	0.02	0.09	0.42	0.00	0.47
Queue Length 95th (m)	41.3	0.5	2.4	0.0	0.0	0.0
Control Delay (s)	57.4	14.1	10.0	0.0	0.0	0.0
Lane LOS	F	B	B			
Approach Delay (s)	57.4	14.1	0.9		0.0	
Approach LOS	F	B				

Intersection Summary				
Average Delay	5.9			
Intersection Capacity Utilization	63.2%	ICU Level of Service	B	
Analysis Period (min)	15			

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:50	7:50	7:50	7:50	7:50	7:50
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3319	3352	3406	3346	3258	3336
Vehs Exited	3326	3346	3403	3343	3264	3336
Starting Vehs	20	21	16	14	19	16
Ending Vehs	13	27	19	17	13	18
Travel Distance (km)	660	656	677	669	646	662
Travel Time (hr)	15.6	15.5	16.0	16.1	15.5	15.7
Total Delay (hr)	1.7	1.7	1.8	1.9	1.8	1.8
Total Stops	223	209	238	231	230	226
Fuel Used (l)	57.5	57.1	59.0	58.6	56.3	57.7

Interval #0 Information Seeding

Start Time	7:50
End Time	8:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3319	3352	3406	3346	3258	3336
Vehs Exited	3326	3346	3403	3343	3264	3336
Starting Vehs	20	21	16	14	19	16
Ending Vehs	13	27	19	17	13	18
Travel Distance (km)	660	656	677	669	646	662
Travel Time (hr)	15.6	15.5	16.0	16.1	15.5	15.7
Total Delay (hr)	1.7	1.7	1.8	1.9	1.8	1.8
Total Stops	223	209	238	231	230	226
Fuel Used (l)	57.5	57.1	59.0	58.6	56.3	57.7

Intersection: 1: Argyle Road & Dundas Street West

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (m)	18.9	12.0	12.9	11.5	3.6	27.8
Average Queue (m)	1.8	0.7	2.3	0.6	0.1	11.6
95th Queue (m)	9.7	5.1	9.2	4.6	1.8	21.7
Link Distance (m)	55.0	55.0	107.8	107.8	107.8	382.8
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Confederation Parkway & Dunbar Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	TR
Maximum Queue (m)	26.9	8.8	16.7	1.2
Average Queue (m)	12.7	0.6	6.1	0.0
95th Queue (m)	21.8	4.3	14.1	0.9
Link Distance (m)	274.9	59.1		77.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			28.0	
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

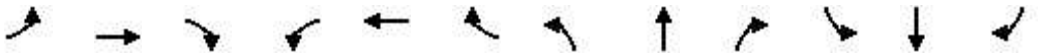
Network Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	953	65	34	1295	36	39
Future Volume (Veh/h)	953	65	34	1295	36	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.77	0.77	0.94	0.75	0.98
Hourly flow rate (vph)	1014	84	44	1378	48	40
Pedestrians	4			1	17	
Lane Width (m)	3.3			3.3	4.8	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	2	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1115		1854	567
vC1, stage 1 conf vol					1073	
vC2, stage 2 conf vol					781	
vCu, unblocked vol			1115		1854	567
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			93		79	91
cM capacity (veh/h)			622		232	463

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	676	422	44	689	689	88
Volume Left	0	0	44	0	0	48
Volume Right	0	84	0	0	0	40
cSH	1700	1700	622	1700	1700	300
Volume to Capacity	0.40	0.25	0.07	0.41	0.41	0.29
Queue Length 95th (m)	0.0	0.0	1.8	0.0	0.0	9.5
Control Delay (s)	0.0	0.0	11.2	0.0	0.0	21.9
Lane LOS			B			C
Approach Delay (s)	0.0		0.3			21.9
Approach LOS						C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.2%	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)	8	0	56	2	0	3	47	644	0	6	711	39
Future Volume (Veh/h)	8	0	56	2	0	3	47	644	0	6	711	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.40	0.25	0.82	0.50	0.25	0.38	0.65	0.93	0.25	0.75	0.98	0.54
Hourly flow rate (vph)	20	0	68	4	0	8	72	692	0	8	726	72
Pedestrians		17			13						3	
Lane Width (m)		4.5			3.3						3.2	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		2			1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1642	1644	779	1659	1680	708	815			705		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1642	1644	779	1659	1680	708	815			705		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	72	100	83	93	100	98	91			99		
cM capacity (veh/h)	70	88	392	58	84	433	789			893		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	88	12	72	692	8	798
Volume Left	20	4	72	0	8	0
Volume Right	68	8	0	0	0	72
cSH	192	138	789	1700	893	1700
Volume to Capacity	0.46	0.09	0.09	0.41	0.01	0.47
Queue Length 95th (m)	17.4	2.3	2.4	0.0	0.2	0.0
Control Delay (s)	38.6	33.6	10.0	0.0	9.1	0.0
Lane LOS	E	D	B		A	
Approach Delay (s)	38.6	33.6	0.9		0.1	
Approach LOS	E	D				

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	50.8%	ICU Level of Service		A
Analysis Period (min)	15			

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:20	4:20	4:20	4:20	4:20	4:20
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3837	3779	3787	3814	3751	3794
Vehs Exited	3831	3785	3794	3819	3763	3797
Starting Vehs	19	20	24	27	29	21
Ending Vehs	25	14	17	22	17	18
Travel Distance (km)	802	777	773	796	772	784
Travel Time (hr)	21.9	18.5	19.0	20.2	19.5	19.8
Total Delay (hr)	4.9	2.1	2.8	3.3	3.2	3.3
Total Stops	236	191	189	232	207	211
Fuel Used (l)	72.1	66.6	67.1	70.1	67.2	68.6

Interval #0 Information Seeding

Start Time	4:20
End Time	4:30
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3837	3779	3787	3814	3751	3794
Vehs Exited	3831	3785	3794	3819	3763	3797
Starting Vehs	19	20	24	27	29	21
Ending Vehs	25	14	17	22	17	18
Travel Distance (km)	802	777	773	796	772	784
Travel Time (hr)	21.9	18.5	19.0	20.2	19.5	19.8
Total Delay (hr)	4.9	2.1	2.8	3.3	3.2	3.3
Total Stops	236	191	189	232	207	211
Fuel Used (l)	72.1	66.6	67.1	70.1	67.2	68.6

Intersection: 1: Argyle Road & Dundas Street West

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (m)	16.9	13.9	11.9	16.5	8.0	61.7
Average Queue (m)	0.9	0.7	5.5	0.7	0.3	20.9
95th Queue (m)	6.9	6.3	13.3	6.2	3.7	50.3
Link Distance (m)	55.0	55.0	107.8	107.8	107.8	382.8
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Confederation Parkway & Dunbar Road

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	20.2	8.9	14.7	2.8	9.0	6.1
Average Queue (m)	10.0	1.2	5.3	0.1	0.8	0.3
95th Queue (m)	17.7	6.2	13.0	2.3	4.9	3.6
Link Distance (m)	274.9	59.1		71.7		77.5
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			28.0		27.0	
Storage Blk Time (%)						0
Queuing Penalty (veh)						0

Network Summary

Network wide Queuing Penalty: 0

Appendix G – TTS Data

TTS AM

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11	Column12	Column13	Column14	Column15	Column16
Mon Apr 23 2018 13:39:57 GMT-0400 (Eastern Daylight Time) - Run Time: 2071ms															
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 zone of origin - gta06_orig In 3656	3657														
and															
Start time of trip - start_time In 700-959															
and															
Primary travel mode of trip - mode_prime In D	M	T	)												
Trip 2016															
Table:															
	PD 1 of Toronto	PD 2 of Toronto	PD 3 of Toronto	PD 4 of Toronto	PD 5 of Toronto	PD 7 of Toronto	PD 8 of Toronto	PD 10 of Toronto	PD 11 of Toronto	Markham	Vaughan	Brampton	Mississauga	Oakville	Burlington
3656	18	21	26	49	9	99	80	27	4	13	7	61	608	0	0
3657	0	0	0	0	0	82	86	11	0	28	23	28	1091	58	164
Total	**18**	**21**	**26**	**49**	**9**	**181**	**166**	**38**	**4**	**41**	**30**	**89**	**1699**	**58**	**164**

TTS PM

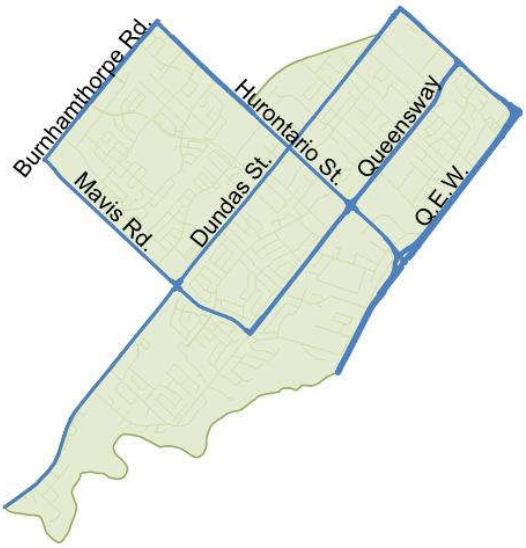
Column1	Column2	Column3	Column4	Column5	Column6
Mon Apr 23 2018 13:40:34 GMT-0400 (Eastern Daylight Time) - Run Time: 1860ms					
Cross Tabulation Query Form - Trip - 2016 v1.1					
Row: 2006 GTA zone of origin - gta06_orig					
Column: Planning district of destination - pd_dest					
Filters:					
(2006 GTA zone of origin - gta06_orig In 3656	3657				
and					
Start time of trip - start_time In 1600-1859					
and					
Primary travel mode of trip - mode_prime In D	M	T	)		
Trip 2016					
Table:					
	PD 7 of Toronto	Caledon	Brampton	Mississauga	Milton
3656	0	9	22	469	0
3657	36	0	0	488	24
Total	**36**	**9**	**22**	**957**	**24**

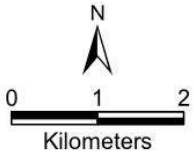
TTS NON-AUTO

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
Mon Apr 23 2018 13:41:58 GMT-0400 (Eastern Daylight Time) - Run Time: 1408ms										
Cross Tabulation Query Form - Trip - 2016 v1.1										
Row: 2006 GTA zone of household - gta06_hhld										
Column: Primary travel mode of trip - mode_prime										
Filters:										
(Type of dwelling unit - dwell_type In 1	2	3								
and										
2006 GTA zone of household - gta06_hhld In 3656	3657)									
Trip 2016										
Table:										
	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Joint GO rail and local transit	Other	Auto passenger	School bus	Taxi passenger	Walk
3656	642	224	4894	93	15	0	1117	166	84	449
3657	2491	0	6383	133	239	103	909	93	13	913
Total	**3133**	**224**	**11277**	**226**	**254**	**103**	**2026**	**259**	**97**	**1362**

Transit	**3613**	**19%**
Cycle	**224**	**1%**
Auto	11277	59%
Other	103	1%
Passenger	2123	11%
School bus	259	1%
Walk	**1362**	**7%**
Total	18961	100%

CITY OF MISSISSAUGA
WARD 7





WARD 7

HOUSEHOLD CHARACTERISTICS

Households	Dwelling Type			Household Size					Number of Available Vehicles					Household Averages				
	House	Townhouse	Apartment	1	2	3	4	5+	0	1	2	3	4+	Persons	Workers	Drivers	Vehicles	Trips/Day
30,300	25%	6%	69%	27%	29%	18%	15%	10%	14%	51%	28%	5%	2%	2.6	1.3	1.7	1.3	4.6

POPULATION CHARACTERISTICS

Population	Age							Daily Trips per Person (age 11+)	Daily Work Trips per Worker	Population	Employment Type			Student	Licensed	Transit Pass
	0-10	11-15	16-25	26-45	46-64	65+	Median				Full Time	Part Time	At Home			
										Male						
										37,400	44%	6%	3%	22%	70%	26%
										Female						
77,600	12%	5%	13%	30%	25%	14%	38.8	2.0	0.75	40,200	31%	10%	2%	21%	60%	28%

TRIPS MADE BY RESIDENTS OF CITY OF MISSISSAUGA - WARD 7

Time Period	Trips	% 24hr	Trip Purpose				Mode of Travel						Median Trip Length (km)			
			HB-W	HB-S	HB-D	N-HB	Driver	Pass.	Transit	GO Train	Walk & Cycle	Other	Driver	Pass.	Transit	GO Train
6-9 AM	35,600	25.6%	49%	18%	24%	9%	60%	10%	12%	5%	9%	4%	8.6	3.3	7.7	21.3
24 Hrs	139,100		36%	12%	39%	14%	62%	13%	11%	3%	7%	3%	6.9	4.2	7.6	21.3

TRIPS MADE TO CITY OF MISSISSAUGA - WARD 7 - BY RESIDENTS OF THE TTS AREA

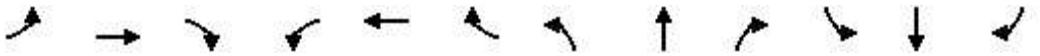
Time Period	Trips	% 24 hr	Trip Purpose				Mode of Travel						Median Trip Length (km)			
			Work	School	Home	Other	Driver	Pass.	Transit	GO Train	Walk & Cycle	Other	Driver	Pass.	Transit	GO Train
6-9 AM	26,300	22.4%	45%	21%	9%	25%	66%	11%	7%	*	12%	4%	7.8	2.6	3.4	*
24 Hrs	117,300		16%	5%	51%	27%	64%	13%	9%	2%	8%	3%	6.3	3.6	5.8	21.1

Appendix H – Future Total Traffic Level of Service Calculations

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1193	29	20	662	31	58
Future Volume (Veh/h)	1193	29	20	662	31	58
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.65	0.71	0.88	0.61	0.69
Hourly flow rate (vph)	1340	45	28	752	51	84
Pedestrians	4			3	10	
Lane Width (m)	3.3			3.3	4.8	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1395		1808	706
vC1, stage 1 conf vol					1372	
vC2, stage 2 conf vol					436	
vCu, unblocked vol			1395		1808	706
tC, single (s)			4.2		6.9	6.9
tC, 2 stage (s)					5.9	
tF (s)			2.3		3.5	3.3
p0 queue free %			94		72	78
cM capacity (veh/h)			461		184	378

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	893	492	28	376	376	135
Volume Left	0	0	28	0	0	51
Volume Right	0	45	0	0	0	84
cSH	1700	1700	461	1700	1700	270
Volume to Capacity	0.53	0.29	0.06	0.22	0.22	0.50
Queue Length 95th (m)	0.0	0.0	1.5	0.0	0.0	20.8
Control Delay (s)	0.0	0.0	13.3	0.0	0.0	30.9
Lane LOS			B			D
Approach Delay (s)	0.0		0.5			30.9
Approach LOS						D

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	46.8%	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)	13	0	104	0	0	3	55	637	0	0	679	11
Future Volume (Veh/h)	13	0	104	0	0	3	55	637	0	0	679	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.54	0.25	0.68	0.25	0.25	0.38	0.75	0.89	0.25	0.25	0.87	0.69
Hourly flow rate (vph)	24	0	153	0	0	8	73	716	0	0	780	16
Pedestrians		19			32							
Lane Width (m)		4.5			3.3							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		2			2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1677	1701	807	1827	1709	748	815			748		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1677	1701	807	1827	1709	748	815			748		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	100	59	100	100	98	91			100		
cM capacity (veh/h)	66	81	372	31	80	405	788			848		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	177	8	73	716	0	796
Volume Left	24	0	73	0	0	0
Volume Right	153	8	0	0	0	16
cSH	228	405	788	1700	1700	1700
Volume to Capacity	0.77	0.02	0.09	0.42	0.00	0.47
Queue Length 95th (m)	44.4	0.5	2.4	0.0	0.0	0.0
Control Delay (s)	59.9	14.1	10.0	0.0	0.0	0.0
Lane LOS	F	B	B			
Approach Delay (s)	59.9	14.1	0.9		0.0	
Approach LOS	F	B				

Intersection Summary				
Average Delay	6.5			
Intersection Capacity Utilization	63.6%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	6	1	65	43	6
Future Volume (Veh/h)	17	6	1	65	43	6
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	7	1	71	47	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	124	50	54			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	124	50	54			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	871	1018	1551			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	25	72	54
Volume Left	18	1	0
Volume Right	7	0	7
cSH	908	1551	1700
Volume to Capacity	0.03	0.00	0.03
Queue Length 95th (m)	0.7	0.0	0.0
Control Delay (s)	9.1	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:50	7:50	7:50	7:50	7:50	7:50
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3385	3377	3335	3297	3342	3347
Vehs Exited	3390	3377	3338	3308	3326	3349
Starting Vehs	19	17	20	20	13	18
Ending Vehs	14	17	17	9	29	15
Travel Distance (km)	683	675	664	661	668	670
Travel Time (hr)	16.9	16.4	16.3	16.2	16.3	16.4
Total Delay (hr)	2.3	2.0	2.1	2.1	2.0	2.1
Total Stops	282	256	257	275	290	271
Fuel Used (l)	59.9	59.2	58.3	57.9	58.9	58.9

Interval #0 Information Seeding

Start Time	7:50
End Time	8:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3385	3377	3335	3297	3342	3347
Vehs Exited	3390	3377	3338	3308	3326	3349
Starting Vehs	19	17	20	20	13	18
Ending Vehs	14	17	17	9	29	15
Travel Distance (km)	683	675	664	661	668	670
Travel Time (hr)	16.9	16.4	16.3	16.2	16.3	16.4
Total Delay (hr)	2.3	2.0	2.1	2.1	2.0	2.1
Total Stops	282	256	257	275	290	271
Fuel Used (l)	59.9	59.2	58.3	57.9	58.9	58.9

Intersection: 1: Argyle Road & Dundas Street West

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (m)	15.9	7.1	15.6	6.7	1.9	39.0
Average Queue (m)	0.9	0.4	2.6	0.3	0.1	14.4
95th Queue (m)	6.9	3.6	10.1	3.1	1.3	27.9
Link Distance (m)	55.0	55.0	107.8	107.8	107.8	342.9
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Confederation Parkway & Dunbar Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	TR
Maximum Queue (m)	32.9	8.8	19.1	1.1
Average Queue (m)	13.5	1.0	6.9	0.0
95th Queue (m)	23.8	5.7	15.2	0.8
Link Distance (m)	276.0	59.1		77.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			28.0	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Argyle Road & Site Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	10.4	1.8
Average Queue (m)	4.6	0.1
95th Queue (m)	11.9	1.2
Link Distance (m)	23.6	22.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

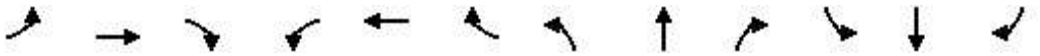
Network Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	953	76	44	1295	43	46
Future Volume (Veh/h)	953	76	44	1295	43	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.77	0.77	0.94	0.75	0.98
Hourly flow rate (vph)	1014	99	57	1378	57	47
Pedestrians	4			1	17	
Lane Width (m)	3.3			3.3	4.8	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	2	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1130		1888	574
vC1, stage 1 conf vol					1080	
vC2, stage 2 conf vol					807	
vCu, unblocked vol			1130		1888	574
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			91		75	90
cM capacity (veh/h)			614		225	457

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	676	437	57	689	689	104
Volume Left	0	0	57	0	0	57
Volume Right	0	99	0	0	0	47
cSH	1700	1700	614	1700	1700	292
Volume to Capacity	0.40	0.26	0.09	0.41	0.41	0.36
Queue Length 95th (m)	0.0	0.0	2.4	0.0	0.0	12.4
Control Delay (s)	0.0	0.0	11.5	0.0	0.0	24.0
Lane LOS			B			C
Approach Delay (s)	0.0		0.5			24.0
Approach LOS						C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	0	57	2	0	3	48	644	0	6	711	39
Future Volume (Veh/h)	8	0	57	2	0	3	48	644	0	6	711	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.40	0.25	0.82	0.50	0.25	0.38	0.65	0.93	0.25	0.75	0.98	0.54
Hourly flow rate (vph)	20	0	70	4	0	8	74	692	0	8	726	72
Pedestrians		17			13						3	
Lane Width (m)		4.5			3.3						3.2	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		2			1						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1646	1648	779	1665	1684	708	815			705		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1646	1648	779	1665	1684	708	815			705		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	71	100	82	93	100	98	91			99		
cM capacity (veh/h)	70	87	392	57	83	433	789			893		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	90	12	74	692	8	798
Volume Left	20	4	74	0	8	0
Volume Right	70	8	0	0	0	72
cSH	193	136	789	1700	893	1700
Volume to Capacity	0.47	0.09	0.09	0.41	0.01	0.47
Queue Length 95th (m)	17.8	2.3	2.5	0.0	0.2	0.0
Control Delay (s)	38.9	34.1	10.0	0.0	9.1	0.0
Lane LOS	E	D	B		A	
Approach Delay (s)	38.9	34.1	1.0		0.1	
Approach LOS	E	D				

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	50.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	1	1	86	99	21
Future Volume (Veh/h)	14	1	1	86	99	21
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)	15	1	1	93	108	23
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	120	131			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	214	120	131			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	773	932	1454			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	94	131
Volume Left	15	1	0
Volume Right	1	0	23
cSH	782	1454	1700
Volume to Capacity	0.02	0.00	0.08
Queue Length 95th (m)	0.5	0.0	0.0
Control Delay (s)	9.7	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:20	4:20	4:20	4:20	4:20	4:20
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3771	3899	3822	3667	3753	3783
Vehs Exited	3768	3890	3816	3677	3754	3781
Starting Vehs	16	19	17	22	19	17
Ending Vehs	19	28	23	12	18	18
Travel Distance (km)	770	807	787	771	781	783
Travel Time (hr)	19.2	21.5	19.7	19.6	19.4	19.9
Total Delay (hr)	2.7	4.2	2.9	3.0	2.6	3.1
Total Stops	220	251	237	249	251	241
Fuel Used (l)	66.8	71.3	68.6	68.0	67.9	68.5

Interval #0 Information Seeding

Start Time	4:20
End Time	4:30
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3771	3899	3822	3667	3753	3783
Vehs Exited	3768	3890	3816	3677	3754	3781
Starting Vehs	16	19	17	22	19	17
Ending Vehs	19	28	23	12	18	18
Travel Distance (km)	770	807	787	771	781	783
Travel Time (hr)	19.2	21.5	19.7	19.6	19.4	19.9
Total Delay (hr)	2.7	4.2	2.9	3.0	2.6	3.1
Total Stops	220	251	237	249	251	241
Fuel Used (l)	66.8	71.3	68.6	68.0	67.9	68.5

Intersection: 1: Argyle Road & Dundas Street West

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (m)	17.9	9.0	15.9	13.9	11.4	48.0
Average Queue (m)	1.0	0.7	5.8	0.8	0.5	19.2
95th Queue (m)	8.5	4.7	13.9	6.8	5.0	40.2
Link Distance (m)	55.0	55.0	107.8	107.8	107.8	342.8
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Confederation Parkway & Dunbar Road

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	25.5	10.3	22.4	3.9	9.0	11.9
Average Queue (m)	9.8	1.8	6.5	0.2	0.8	0.5
95th Queue (m)	17.9	7.7	16.1	3.0	5.1	5.0
Link Distance (m)	276.0	59.1		71.7		77.5
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			28.0		27.0	
Storage Blk Time (%)			0			0
Queuing Penalty (veh)			1			0

Intersection: 9: Argyle Road & Site Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	10.3	1.8
Average Queue (m)	2.9	0.1
95th Queue (m)	9.9	1.3
Link Distance (m)	25.2	22.7
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1

Appendix I **–** Parking Utilization Study

520 Industrial Parkway South, Suite 201
Aurora, Ontario L4G 6W8

Phone: 905-503-2563

www.nextrans.ca

nextrans CONSULTING ENGINEERS

NextEng Consulting Group Inc.

May 8, 2019

Plazacorp Investments Ltd.
10 Wanless Avenue, Suite 201
Toronto, ON M4N 1V6

Re: Parking Utilization Study
1255 Birchmount Road, Toronto ON
Our Project No. NT-17-072

1.0 INTRODUCTION

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by Plazacorp Investments Limited (the 'Client') to undertake a Parking Utilization Study to address the City of Mississauga comments and in support of an Official Plan Amendment and Zoning By-law Amendment applications for a proposed residential development.

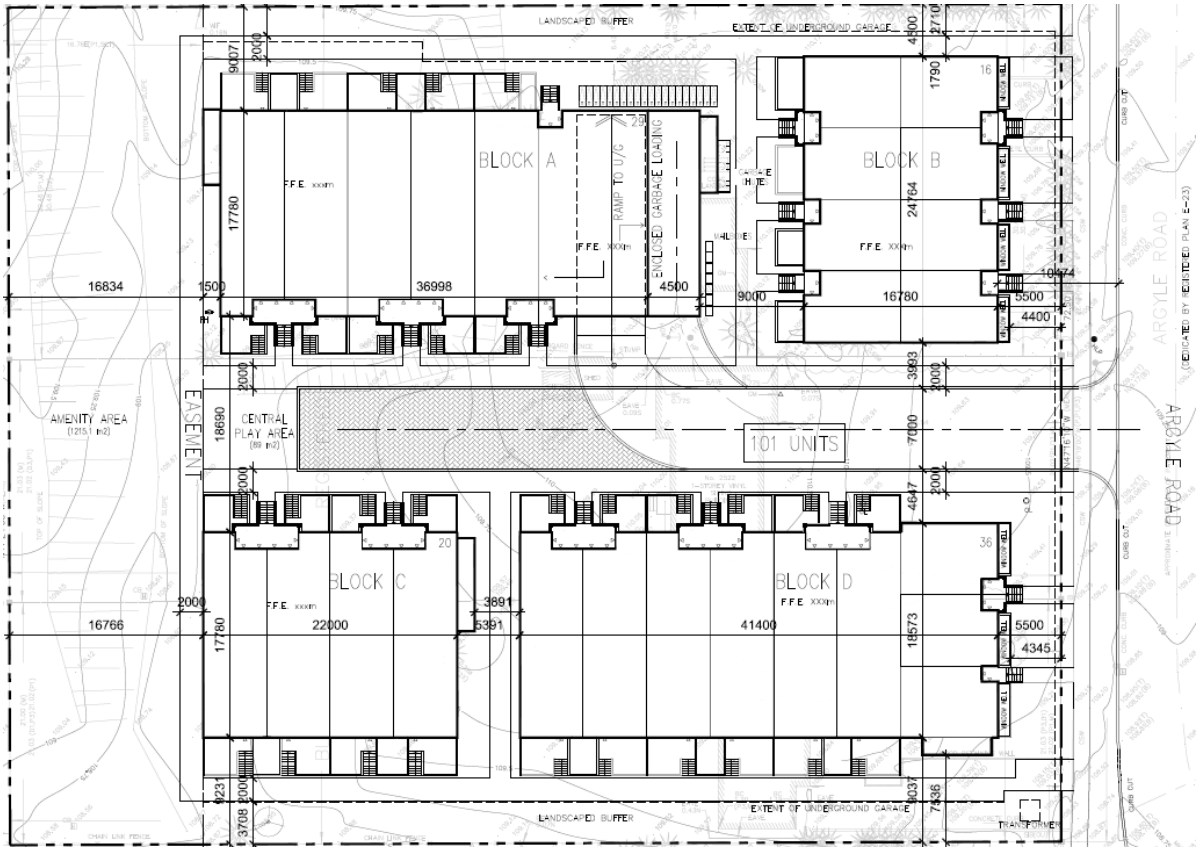
Based on the proposed site plan, the parking reduction is less than 10% of the by-law requirement and rather than providing a Letter of Justification, a Parking Utilization Study was undertaken to support the parking reduction of the residential development by using current parking utilization rates and demand at a proxy site. This Parking Utilization Study conforms to the City of Mississauga guidelines, see **Appendix A** for the established terms of reference.

The subject property municipally known as, 2512, 2522, 2532 Argyle Road, is located west of Argyle Road and south of Dundas Street West. The proposed subject site location is illustrated in **Figure 1-1**.

Figure 1-1 – Site Location

The development proposal is to redevelop the existing 6,483.5 m^2 site to include 101 residential units divided among four (4) blocks of stacked back-to-back townhouses and provide 153 underground parking spaces. Vehicular access to the site is proposed via a full movement driveway located on Argyle Road. **Figure 1-2** illustrates the current site plan; **Appendix B** also provides larger scale version of the current site plan.

Figure 1-2 – Proposed Development Site Plan



1.1 Parking By-law Requirements

The City-wide Zoning By-law No. 0225-2007 has been adopted by the City of Mississauga and it was enacted on June 20th, 2007. The Zoning By-law is a comprehensive By-law covering the entire amalgamated City of Mississauga.

The existing development provides a total of 101 stacked back-to-back townhouse units which are comprised of the following: 32 one-bedroom units, 67 two-bedroom units, and 2 three-bedroom unit. The technical parking requirement for the subject site is detailed in **Table 1.1**.

Table 1.1 – City of Mississauga Vehicle Parking Requirements (ZBL 0225-2007)

Use	Units	Parking Rate	Parking Requirement
Condominium Horizontal Multiple Dwelling (*without exclusive use garage and driveway*)	32 1-bedroom 67 2-bedroom 2 3-bedroom	1.10 spaces per 1-bedroom unit 1.50 spaces per 2-bedroom unit 1.75 spaces per 3-bedroom unit	35 101 4
Condominium Horizontal Multiple Dwelling – Visitor	101	0.25 spaces per unit	25
Total			**165**

Based on the City of Mississauga Zoning By-law 0225-2007, a total of 165 parking spaces will be required for the proposed residential development. The proposed development provides a total of 153 parking spaces, inclusive of resident and visitor parking, which results in a shortfall of 12 parking spaces.

2.0 PARKING REDUCTION JUSTIFICATION

2.1 Parking Data at Proxy Site

In order to recommend a reasonable parking provision rate, NexTrans has undertaken a parking survey at an existing site with similar characteristics to the proposed with the main difference is that residential parking is on the surface as opposed to an underground garage. The proxy site municipally known as, 5005-5055 Oscar Peterson Boulevard, is located at the northeast corner of the Eglinton Avenue West and Oscar Peterson Boulevard, in the City of Mississauga. The proxy surveys were based on the following:

- The proxy site is an existing stacked back-to-back townhouse complex with 157 residential units;
- The development includes 93 individual parking garages and 100 tenant and 32 visitor surface parking;
- The existing 93 individual garages are assumed to be occupied; and
- The surveys were undertaken for two consecutive weeks from 6:00PM to 1:00AM at 30-minute intervals on Friday March 1st, Saturday March 2nd, Sunday March 3rd, Friday March 8th, and Saturday March 9th. The surveys in the second week were based on the two days that experienced the highest peak parking demand in the first week.

The proxy site location is illustrated in **Figure 2-1** and the parking utilization survey results from Week 1 and Week 2, are summarized below.

Figure 2-1 – Proxy Site Location

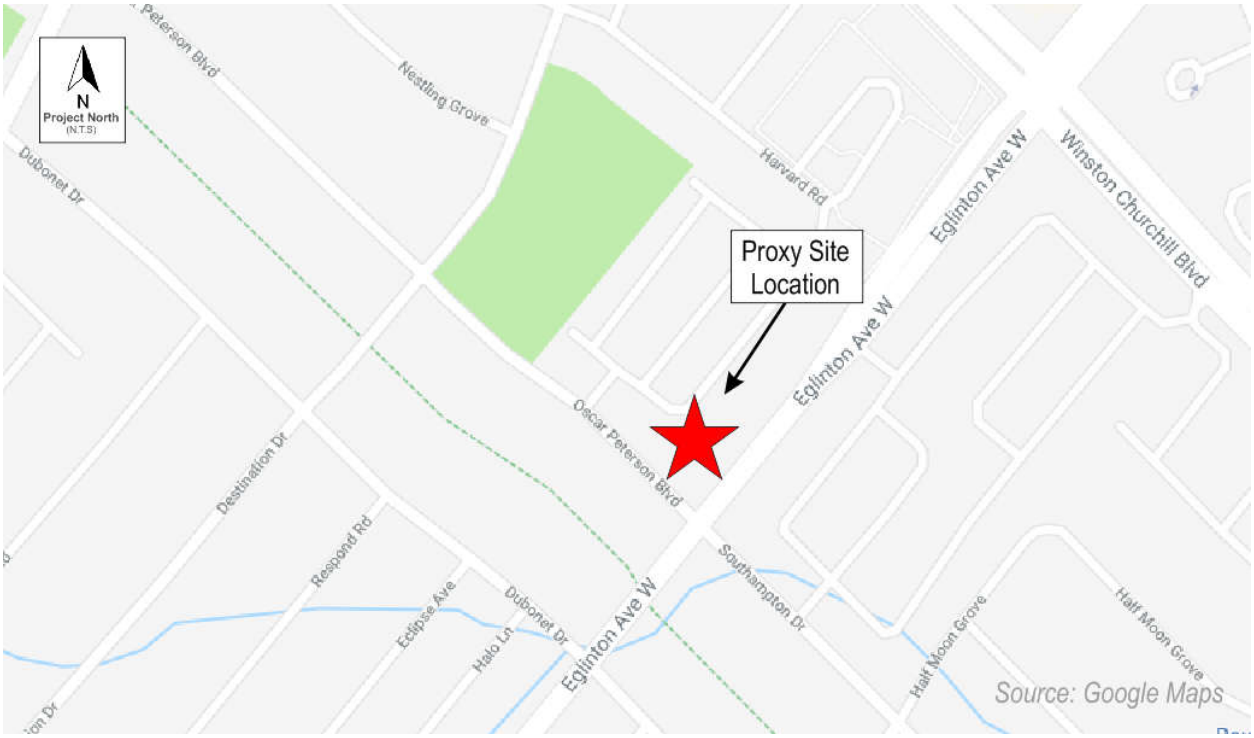


Table 2.1 – Parking Utilization Survey (Friday March 1st, 2019)

Time (Starting)	Resident				Visitor	
	Parking Demand			Parking Rate (spaces per unit)	Parking Demand	Parking Rate (spaces per unit)
	Surface	Garage	Total			
6:00 PM	49	93	142	0.90	11	0.07
6:30 PM	55	93	148	0.94	11	0.07
7:00 PM	58	93	151	0.96	9	0.06
7:30 PM	59	93	152	0.97	8	0.05
8:00 PM	63	93	156	0.99	7	0.04
8:30 PM	59	93	152	0.97	7	0.04
9:00 PM	57	93	150	0.96	6	0.04
9:30 PM	60	93	153	0.97	8	0.05
10:00 PM	65	93	158	1.01	7	0.04
10:30 PM	70	93	163	1.04	6	0.04
11:00 PM	72	93	165	1.05	6	0.04
11:30 PM	75	93	168	1.07	8	0.05
12:00 AM	76	93	169	1.08	6	0.04
12:30 AM	79	93	172	1.10	5	0.03
1:00 AM	79	93	172	1.10	4	0.03
1:30 AM	79	93	172	1.10	4	0.03
Max	**79**	**93**	**172**	**1.10**	**11**	**0.07**

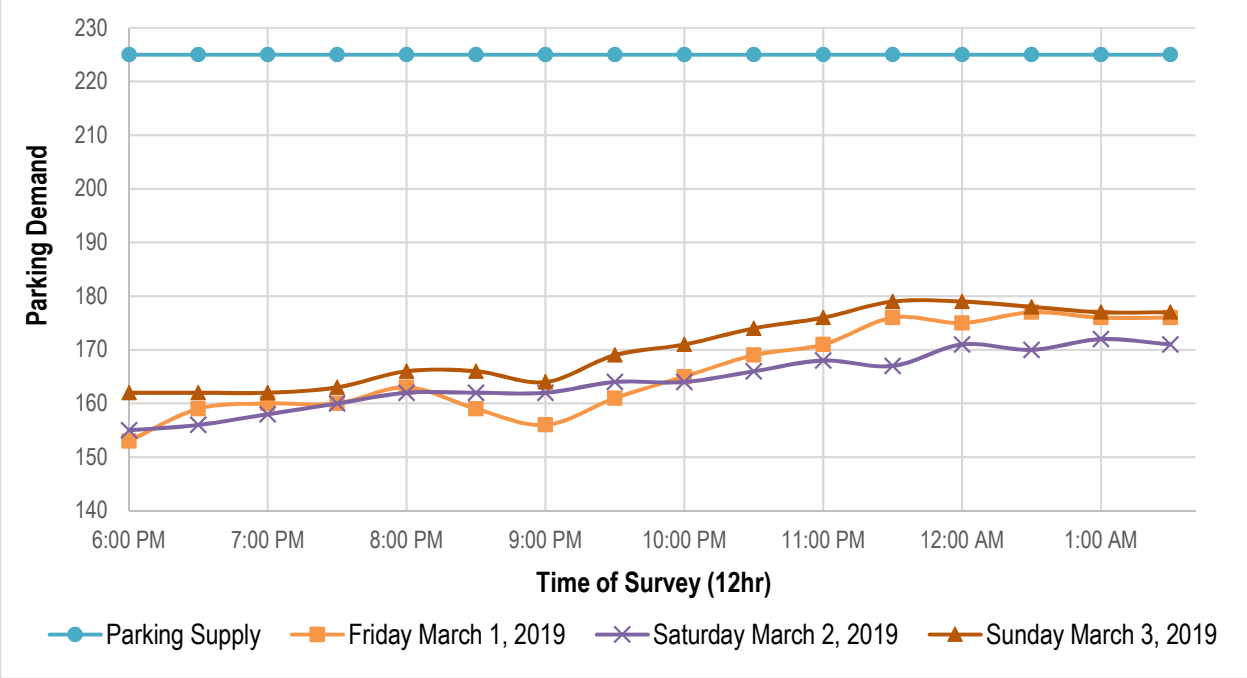
Table 2.2 – Parking Utilization Survey (Saturday March 2nd, 2019)

Time (Starting)	Resident				Visitor	
	Parking Demand			Parking Rate (spaces per unit)	Parking Demand	Parking Rate (spaces per unit)
	Surface	Garage	Total			
6:00 PM	45	93	138	0.86	17	0.11
6:30 PM	47	93	140	0.89	16	0.10
7:00 PM	50	93	143	0.91	15	0.10
7:30 PM	51	93	144	0.92	16	0.10
8:00 PM	52	93	145	0.92	17	0.11
8:30 PM	52	93	145	0.92	17	0.11
9:00 PM	51	93	144	0.92	18	0.12
9:30 PM	53	93	146	0.93	18	0.12
10:00 PM	54	93	147	0.94	17	0.11
10:30 PM	57	93	150	0.96	16	0.10
11:00 PM	60	93	153	0.97	15	0.10
11:30 PM	62	93	155	0.99	12	0.08
12:00 AM	67	93	160	1.02	11	0.07
12:30 AM	70	93	163	1.04	7	0.04
1:00 AM	73	93	166	1.06	6	0.04
1:30 AM	73	93	166	1.06	5	0.03
Max	**73**	**93**	**166**	**1.06**	**18**	**0.12**

Table 2.3 – Parking Utilization Survey (Sunday March 3rd, 2019)

Time (Starting)	Resident				Visitor	
	Parking Demand			Parking Rate (spaces per unit)	Parking Demand	Parking Rate (spaces per unit)
	Surface	Garage	Total			
6:00 PM	58	93	151	0.96	10	0.06
6:30 PM	58	93	151	0.96	9	0.06
7:00 PM	60	93	153	0.97	9	0.06
7:30 PM	62	93	155	0.99	8	0.05
8:00 PM	66	93	159	1.01	7	0.04
8:30 PM	66	93	159	1.01	6	0.04
9:00 PM	65	93	158	1.01	5	0.03
9:30 PM	68	93	161	1.03	5	0.03
10:00 PM	71	93	164	1.04	3	0.02
10:30 PM	75	93	168	1.07	3	0.02
11:00 PM	77	93	170	1.08	2	0.01
11:30 PM	78	93	171	1.09	2	0.01
12:00 AM	80	93	173	1.10	2	0.01
12:30 AM	79	93	172	1.10	3	0.02
1:00 AM	80	93	173	1.10	3	0.02
1:30 AM	80	93	173	1.10	3	0.02
Max	**80**	**93**	**173**	**1.10**	**10**	**0.06**

Figure 2-2 – Week 1 Parking Surveys Demand versus Supply



From the survey results, it is observed that the maximum parking utilization rate for the residential units is 1.10 spaces per unit and 0.12 visitor spaces per unit. In the summary tables above, Friday and Sunday experienced the same peak parking demand (tenant plus visitor) so Friday was selected as one of the survey days in Week 2. Saturday experienced the highest parking demand (91 total vehicles) and had the most visitor parking demand. On-street parking is a community concern at our proposed site so, in order to establish a visitor parking rate which will eliminate future on-street parking, Saturday is the most representative day to survey. Therefore, based on the surveyed days in Week 1,

Friday and Saturday have been selected as the survey days in Week 2. The parking utilization survey results from Week 2 are provided below.

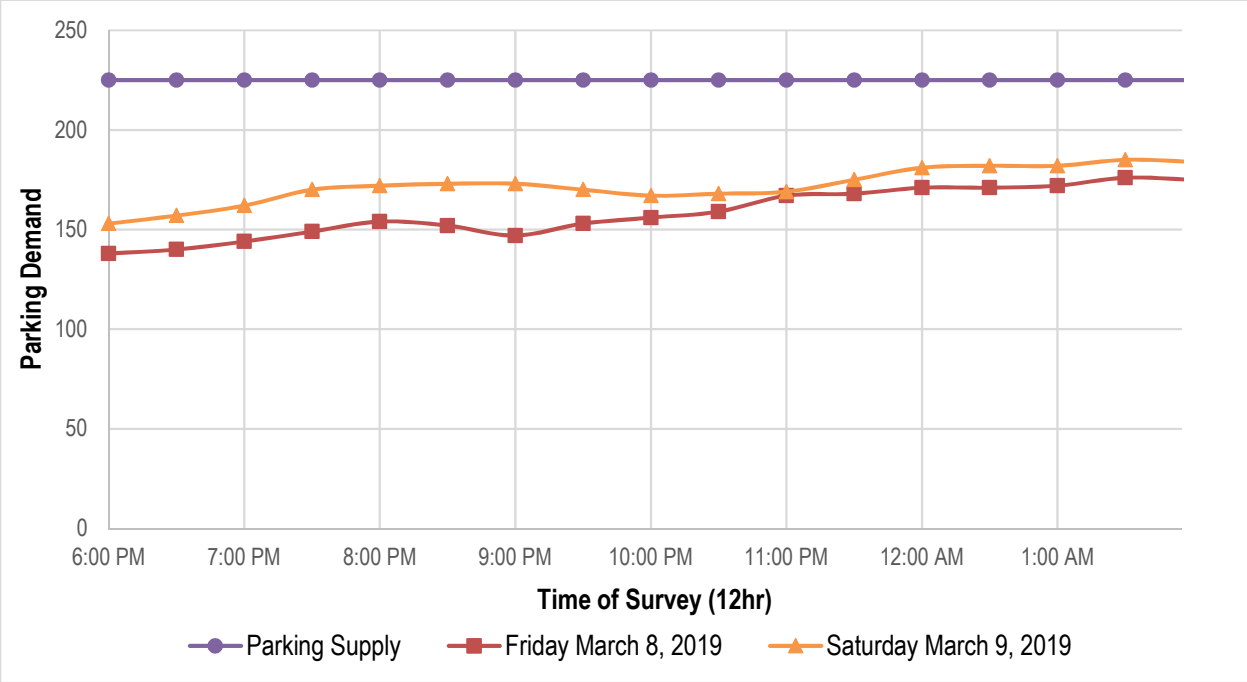
Table 2.4 – Parking Utilization Survey (Friday March 8th, 2019)

Time (Starting)	Resident				Visitor	
	Parking Demand			Parking Rate (spaces per unit)	Parking Demand	Parking Rate (spaces per unit)
	Surface	Garage	Total			
6:00 PM	38	93	131	0.83	7	0.05
6:30 PM	40	93	133	0.85	7	0.05
7:00 PM	43	93	136	0.87	8	0.05
7:30 PM	49	93	142	0.90	7	0.05
8:00 PM	54	93	147	0.94	7	0.05
8:30 PM	52	93	145	0.92	7	0.05
9:00 PM	47	93	140	0.89	7	0.05
9:30 PM	50	93	143	0.91	10	0.06
10:00 PM	52	93	145	0.92	11	0.07
10:30 PM	55	93	148	0.94	11	0.07
11:00 PM	62	93	155	0.99	12	0.08
11:30 PM	64	93	157	1.00	11	0.07
12:00 AM	67	93	160	1.02	11	0.07
12:30 AM	68	93	161	1.03	10	0.06
1:00 AM	70	93	163	1.04	9	0.06
1:30 AM	74	93	167	1.06	9	0.06
2:00 AM	74	93	167	1.06	8	0.05
Max	**74**	**93**	**167**	**1.06**	**12**	**0.08**

Table 2.5 – Parking Utilization Survey (Saturday March 9th, 2019)

Time (Starting)	Resident				Visitor	
	Parking Demand			Parking Rate (spaces per unit)	Parking Demand	Parking Rate (spaces per unit)
	Surface	Garage	Total			
6:00 PM	51	93	144	0.92	9	0.06
6:30 PM	52	93	145	0.92	12	0.08
7:00 PM	54	93	147	0.94	15	0.10
7:30 PM	58	93	151	0.96	19	0.12
8:00 PM	59	93	152	0.97	20	0.13
8:30 PM	60	93	153	0.98	20	0.13
9:00 PM	59	93	152	0.97	21	0.13
9:30 PM	59	93	152	0.97	18	0.12
10:00 PM	57	93	150	0.96	17	0.11
10:30 PM	60	93	153	0.98	15	0.10
11:00 PM	61	93	154	0.98	15	0.10
11:30 PM	66	93	159	1.01	16	0.10
12:00 AM	72	93	165	1.05	16	0.10
12:30 AM	74	93	167	1.06	15	0.10
1:00 AM	75	93	168	1.07	14	0.09
1:30 AM	78	93	171	1.09	14	0.09
2:00 AM	78	93	171	1.09	13	0.08
Max	**78**	**93**	**171**	**1.09**	**21**	**0.13**

Figure 2-3 – Week 2 Parking Surveys Demand versus Supply



From the survey results in Week 2, it is observed that the maximum parking utilization rate for the residential units is 1.09 resident spaces per unit and 0.13 visitor spaces per unit. The parking utilization survey results over the course of two consecutive weeks is summarized in **Table 2.6**.

Table 2.6 – Parking Utilization Survey Results Summary

Day of Survey	Number of Units	Peak Parking Demand		Parking Rates	
		Resident	Visitor	Resident	Visitor
Friday March 1, 2019	157	172	11	1.10	0.07
Saturday March 2, 2019		176	18	1.12	0.11
Sunday March 3, 2019		173	10	1.10	0.06
Friday March 8, 2019		167	12	1.06	0.08
Saturday March 9, 2019		171	21	1.09	0.13
Maximum Parking Rate per Unit				**1.12**	**0.13**
Combined Parking Rate per Unit				**1.25**	

Based on the survey information, the maximum parking utilization for residents is 1.12 spaces per unit and for visitors is 0.13 spaces per unit, with a combined rate of 1.25 spaces per unit. As indicated in Section 1.0, the proposed development will provide a total of 153 parking spaces with a combined rate of 1.51 spaces per unit.

As such, it is our opinion that the proposed parking rate for the proposed development are reasonable and consistent with other existing developments with similar characteristics.

Table 2.7 below, summarizes the recommended parking requirement for the proposed development based on the justification provided in this report.

Table 2.7 – Recommended Parking Rates for 2512, 2522, 2532 Argyle Road Residential Development

Use	Units	Parking Rate	Parking Requirement	Parking Provided	Difference
Condominium Horizontal Multiple Dwelling (*without exclusive use garage and driveway*)	101	1.12 spaces per unit	113	153	+27
Condominium Horizontal Multiple Dwelling – Visitor		0.13 spaces per unit	13		
Total			**126**	**153**	**+27**

As summarized in **Table 2.7**, the adjusted parking requirement is 126 parking spaces (113 resident and 13 visitor), the proposed site provides for 153 parking spaces which results in a surplus of 27 parking spaces. NexTrans recommends the surplus of parking spaces be allocated to visitor use to prevent on-street visitor parking during potential busy periods that might occur at the site. On this basis, the future parking demand is completely satisfied with the parking provision.

3.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) refers to variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. Typically, TDM strategies are for residential and office developments where large quantities of people congregate in one origin or destination.

Based on the review of the context of the proposed development, the following TDM measures are recommended:

- Construct direct shared pedestrian and cycling connections from the proposed development to Argyle Road; as shown on the proposed site plan;
- Provide long- and short-term bike parking spaces for residents and visitors; as shown on the proposed site plan;
- The Owner to consider providing transit incentives for residents, if appropriate.

3.1 Transit and Active Transportation Mode Assessment

The public transportation services operated by MiWay provide a reliable, cost effective alternative mode of travel through the comprehensive and continually growing transit network system. MiWay transit only charges PRESTO card users 80 cents when taking the bus to connect to a GO Transit station or transferring from GO Transit to MiWay. The full fare will be charged from the PRESTO card at the first tap on the bus and later deducted when tapping on to the GO Transit, and vice versa.

The Hurontario LRT Project is proposed to bring a modern, reliable, rapid transit to serve the cities of Mississauga and Brampton. The LRT line proposes a future stop at Hurontario Street and Dundas Street West, approximately a 13-minute walk or 4-minute bike ride. This station will provide residents with a quick mode of transit north to Gateway Terminal in Brampton and south to the Port Credit GO Station. The LRT is set to be completed by the year 2022 and will also enhance the streetscape with bike lanes and pedestrian walkways throughout.

The proposed development is situated in a transit supportive neighbourhood with bus stops located approximately 4-minutes to the subject site within comfortable walking distance. The route services are illustrated in **Appendix C**. The route services in the immediate area are described below:

- **28 Confederation:** The 28 Confederation bus route operates approximately every 15 minutes northbound to the City Centre Transit Terminal and southbound to Trillium Health Centre. The 28 Confederation bus route provides service 7 days a week. Weekend service operates approximately every 25 minutes up to 7:30pm. Accessible service and bike racks are provided on the route. This route stops at the Cooksville GO Transit platform.

- **1 Dundas**: The 1 Dundas bus route operates approximately every 15 minutes eastbound to Islington TTC Subway Station, and westbound to Vega Boulevard and Laird Road. The 1 Dundas bus route provides service 7 days a week. Weekend service operates approximately every 20 minutes. Accessible service and bike racks are provided on the route. This bus route connects transit users to the University of Toronto Mississauga Campus.

Based on the study prepared by the Ministry of Transportation Ontario titled: 'Transit Supportive Guidelines', dated January 2012, transit users are generally willing to walk 400 meters to a local stop or 800 meters to a rapid transit station. The Dundas Street West at Argyle Road, and Confederation Parkway at Dunbar Road bus stops are both approximately 350 meters from the proposed subject site.

3.2 Existing Active Transportation Infrastructure

Sidewalks

The area surrounding the proposed development is serviced with dedicated sidewalks. Currently, sidewalks are available on both sides of Dundas Street West and Confederation Parkway South. Argyle Road provides a sidewalk only on the west side of the roadway.

Bicycle Lanes

Dedicated bicycle lanes are provided on both sides of the roadway of Confederation Parkway South. There is a high density of amenities indicating many necessities are within walking distance in the study area.

3.3 Active Transportation Mode and Assessment

Existing Conditions

The review of the area surrounding the proposed development in downtown Cooksville, indicates numerous retail, food, and service establishments including a retail/commercial plaza at Dundas Street West and Confederation Parkway as well as a 1-km walk away from the Dundas Street West and Hurontario Street shops. Parks such as Floradale, Parkerhill, and Lummis Park are all within 500-meter radius from the site as well as the Floradale Public School.

The above combined public transportation services operated by the can provide a reliable, cost effective alternative mode of travelling through the comprehensive and continually growing transit network system. Pedestrian sidewalks are provided on both sides of the roadways, and sidewalk connectivity is provided throughout the proposed municipal road to ensure a complete sidewalk network.

4.0 CONCLUSIONS / RECOMMENDATIONS

The review and investigation of existing parking supply and demand trends within the City of Mississauga at a proxy site of similar characteristics, indicates that the current by-law parking requirements for Condominium Horizontal Multiple Dwelling (without exclusive use garage and driveway) are in excess and incomparable to the existing travel patterns and behaviors. Parking utilization surveys at the proxy site, 5005-5055 Oscar Peterson Boulevard, indicate a resident parking demand of 1.12 spaces per unit and a visitor parking demand of 0.13 spaces per unit with a combined parking rate of 1.25 spaces per unit.

In summary, we believe in light of the parking utilization surveys, the proposed parking provisions are sufficient to accommodate the anticipated parking demands for the proposed residential development at 2512, 2522, 2532 Argyle Road.

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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Principal

Appendix J – **TAC** Manual 2017 Figure 9.10.1: Decision Sight Distance

Maneuver time is the time to accomplish a vehicle maneuver. For design purposes, the calculated values are rounded. For guidance on selecting decision sight distance, refer to **Chapter 2**.

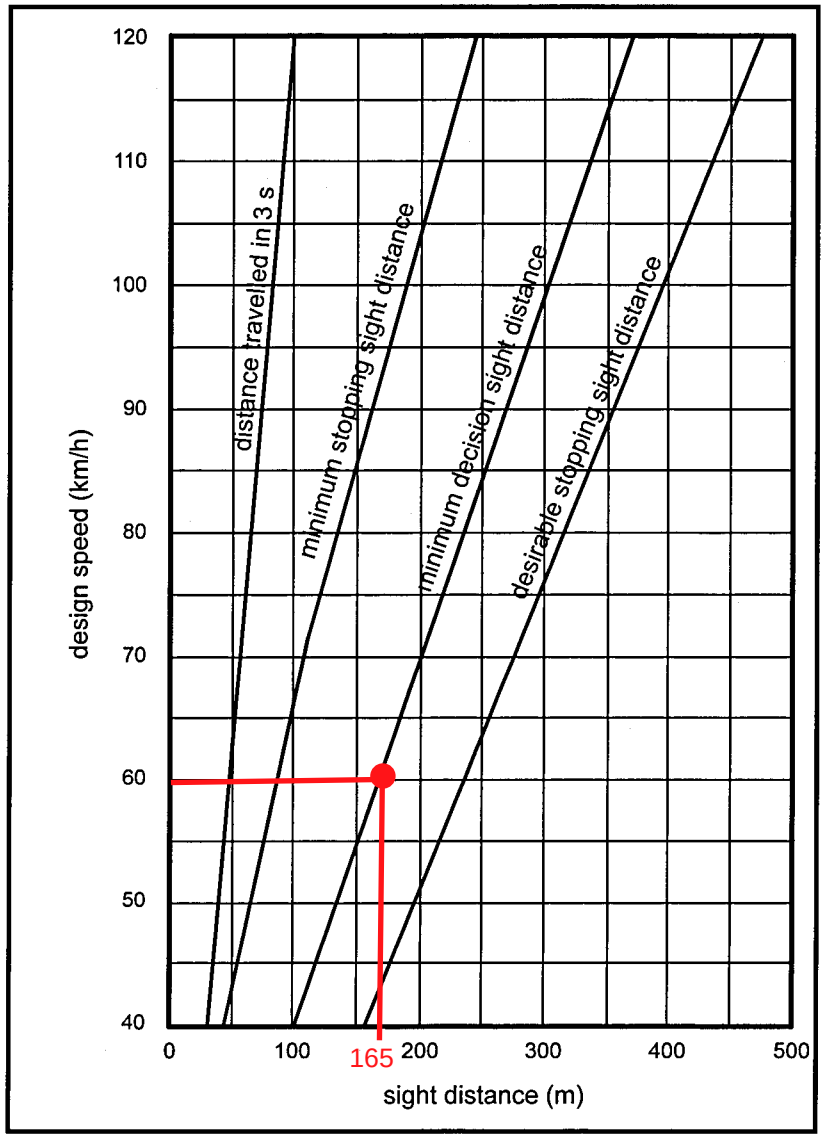

Figure 9.10.1: Decision Sight Distance[72]

9.11 SIGHT DISTANCE AT BRIDGE STRUCTURES

Where a bridge is close to an at-grade intersection, such as at the intersection of an interchange ramp with a cross road adjacent to an overpass, particular attention is required to ensure adequate sight distance is provided. This is due to the potential visual obstruction created by the bridge railing or other structural components. The typical critical factor, at a ramp intersection, is the sight distance required for the left-turning vehicle departing from the ramp to clear the traffic approaching from the left on the cross road. If the intersection is signalized, the minimum critical sight distance is then the distance needed for vehicles turning right, off the ramp, to clear vehicles approaching from the left. However, it

Appendix I – Transit Route Services

mi local

MiWAY

1 Dundas

Monday-Sunday Service

Effective: January 28, 2013

Legend

Islington	TTC Subway Station	Major Transit Terminal	Shopping Centre	Public Library
Clarkson	GO Train Station	Hospital	High School, University or College	Living Arts Centre
	Transitway Station	Ice Rink	Recreation or Community Centre	Civic Centre (City Hall)

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MISSISSAUGA

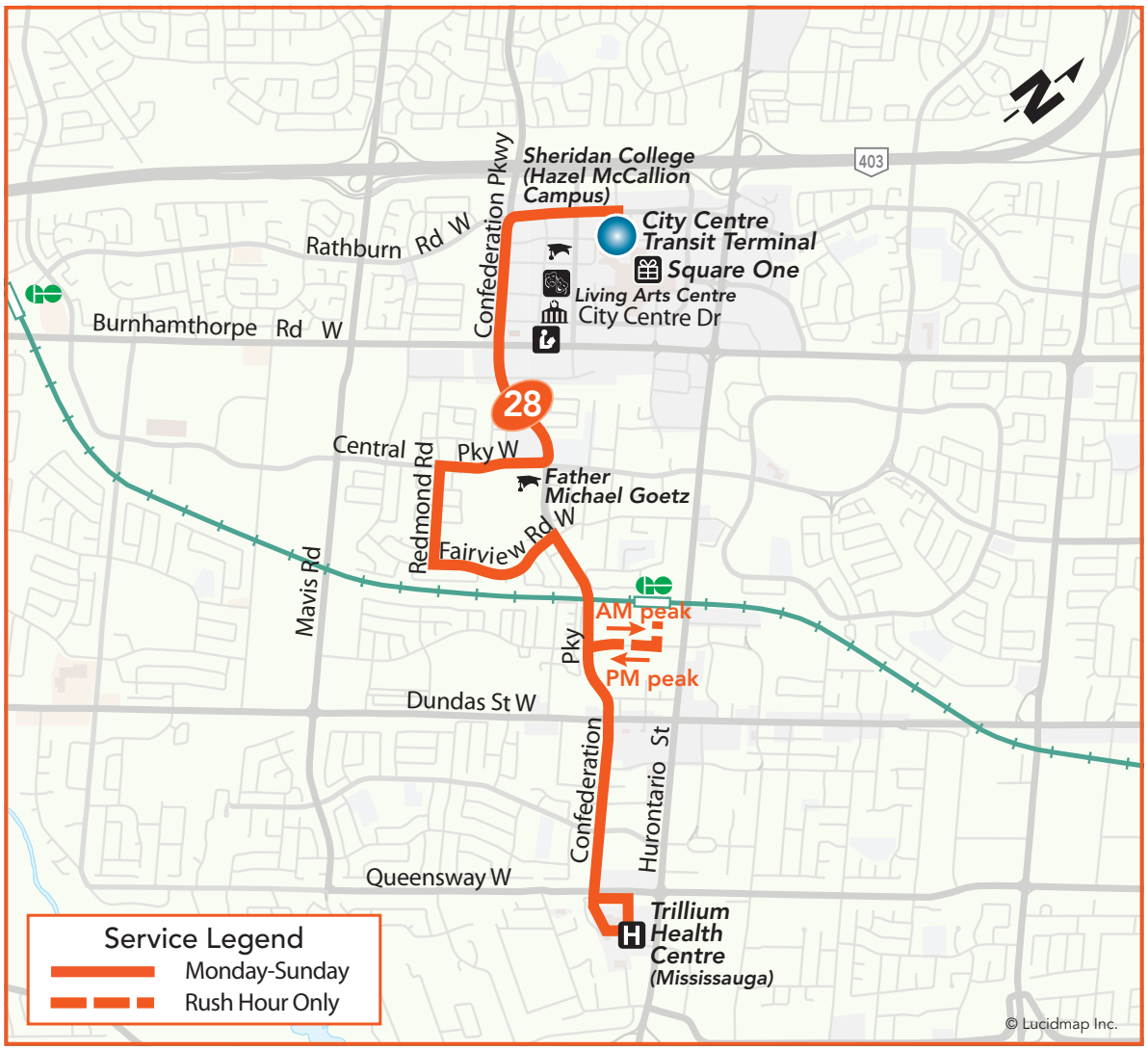
mi local

mi WAY

28 Confederation

Monday-Sunday Service

Effective: September 5, 2016



Legend

Islington	TTC Subway Station	Major Transit Terminal	Shopping Centre	Public Library
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