Acamar Dwelling Corp.

TRANSPORTATION IMPACT STUDY

PROPOSED MIXED-USE DEVELOPMENT

2072 LAKESHORE ROAD, CITY OF BURLINGTON

December 2024

23356

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December 17, 2024

Reference Number: 23356/2072 Old Lakeshore Road, Burlington

Acamar Dwelling Corp.
Julian Baldassarra, A.S.O.

Dear Mr. Baldassarra:

RE: Transportation Impact Study (TIS)
Proposed Mixed-Use Development
2072 Lakeshore Road, City of Burlington

LEA Consulting Ltd. is pleased to present the findings of our Transportation Impact Study (TIS) for the proposed mixed-use development at 2072 Lakeshore Road in the City of Burlington. This report concluded that the traffic associated with the proposed development will have minimum traffic impact to the surrounding road network. Vehicular traffic is also able to circulate the site in an acceptable manner, and the parking supply is appropriate for the development, with the inclusion of a TDM Plan to encourage alternative modes of travel.

Should you have any comments with our assumptions or have any concerns, please contact the undersigned.

Yours truly,

LEA CONSULTING LTD.

Kenneth Chan, P.Eng., PTOE, PMP
Senior Vice President, Transportation Engineering and Planning

Andy Bilawejian, B.Eng., EIT
Project Coordinator

Encl.

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1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by Acamar Dwelling Corp. to undertake a Transportation Impact Study (TIS) for the proposed mixed-use development located at 2072 Lakeshore Road in the City of Burlington (herein referred to as the "subject site").

The subject site is located at the southeast corner of the Lakeshore Road and Pearl Street intersection, approximately 75 m west of Martha Street, as shown in **Figure 1-1**. The subject site is currently occupied by a one and a half storey former real estate office building. The existing vehicular and loading accesses to the site are located along Lakeshore Road and Old Lakeshore Road via full-movement accesses.

Figure 1-1: Subject Site



Source: Google Earth, Accessed November 2023

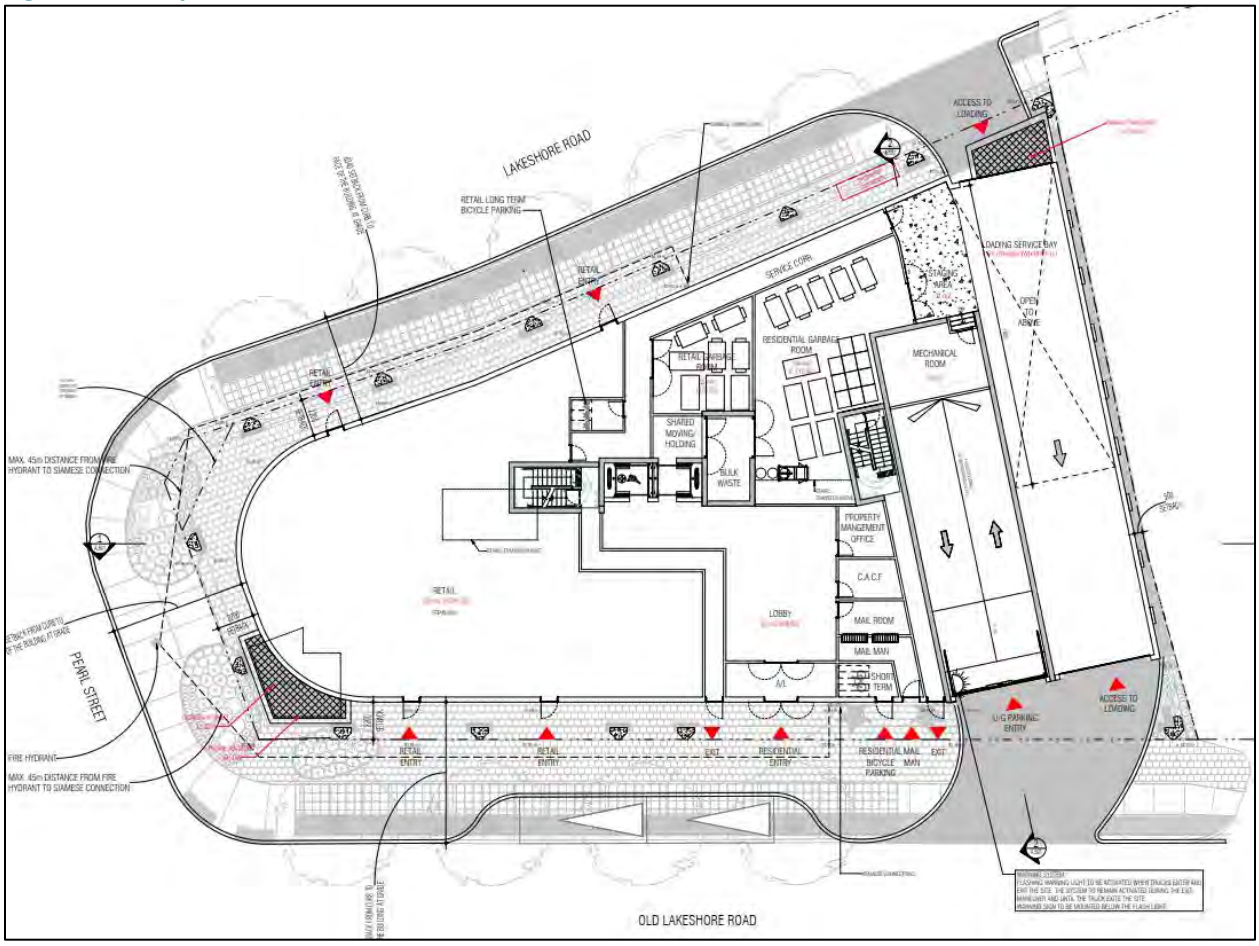
The proposed development will replace the existing building with a 20-storey mixed-use building, consisting of 165 residential units and 583 m^2 of retail GFA. The proposed mixed-use development will consist of 162 parking spaces across seven (7) levels of underground parking. Passenger vehicle access to the site is proposed via a full-movement access along Old Lakeshore Road on the south side of the site. Loading access to the site is proposed via a left-in and right-in access along Lakeshore Road on the north side of the site and a right-out access along Old Lakeshore Road on the south side of the site.

The site statistics of the proposed development are presented in **Table 1-1,** and the proposed ground floor plan is illustrated in **Figure 1-2.**

Table 1-1: Proposed Development

Land Use	Units/GFA	Unit Mix
1-Bedroom	78	47%
2-Bedroom	43	26%
3-Bedroom	44	27%
Total Residential	**165**	**100%**
Retail	588 m^2	-

Figure 1-2: Proposed Ground Floor Plan



Source: Graziani + Corazza Architects, December 2024

The purpose of this TIS is to assess the proposed development from a transportation perspective by determining the anticipated traffic impact to the surrounding area, including the road, cycling, and pedestrian networks, over a five (5)-year horizon, and to identify mitigating factors to accommodate future trips to and from uses on-site where required.

The TIS includes a Parking Study which evaluates the proposed parking supply and confirms that the supply is sufficient to accommodate the anticipated parking demand. A Transportation Demand Management (TDM) Plan has been included in this study to support future patrons of the subject site to use transportation alternatives to single occupancy vehicles (SOVs). A functional design review, including swept path diagrams demonstrating vehicular and loading functionality of the subject site, is also included in this study.

2 EXISTING TRAFFIC CONDITIONS

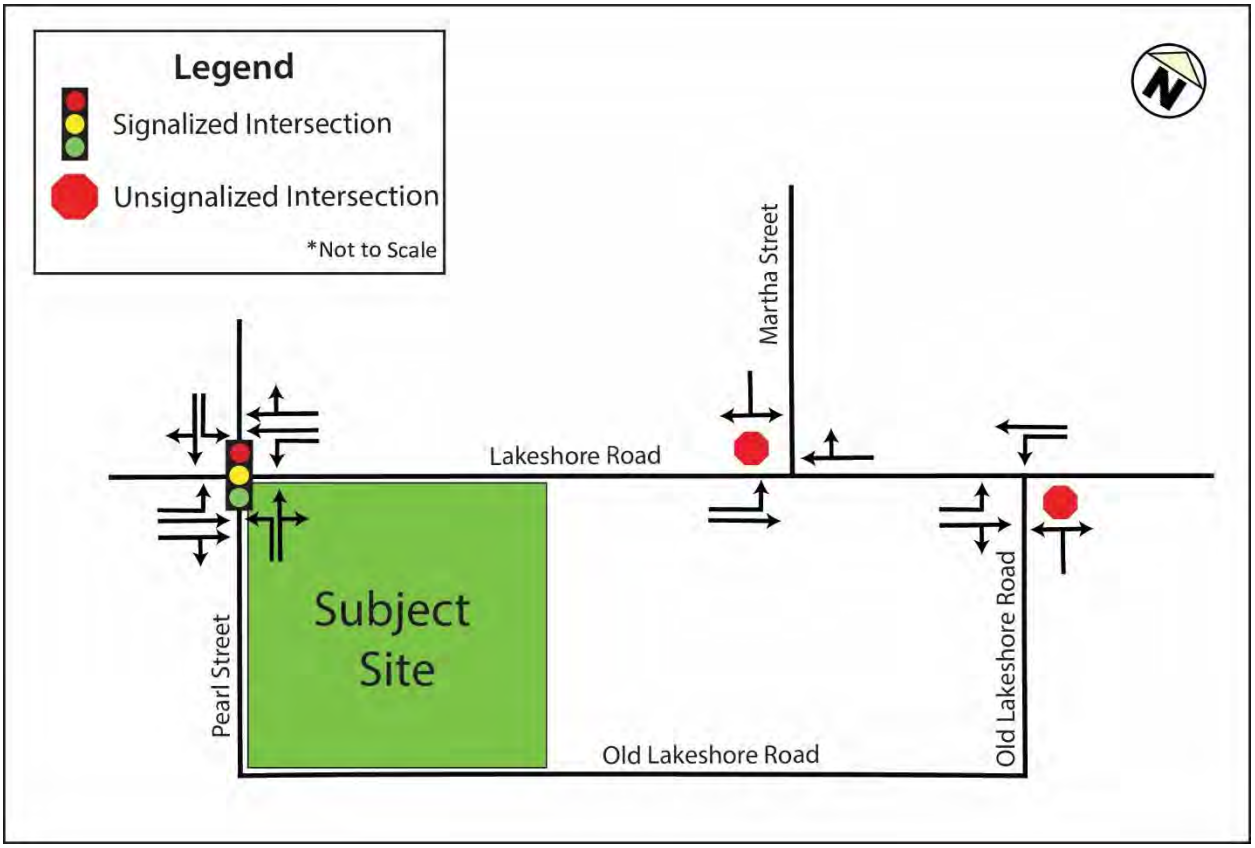
This section identifies and assesses the existing transportation conditions present in the study area, including the road, transit, cyclist, and pedestrian networks. The study area was determined by assessing the size of the proposed development and its anticipated transportation impact, and through consultation with the City of Burlington staff through a Terms of Reference (TOR). The TOR is provided in **Appendix A**. The study area includes the following intersection:

- Lakeshore Road & Pearl Street (Signalized);
- Lakeshore Road & Martha Street (Unsignalized); and
- Lakeshore Road & Old Lakeshore Road (Unsignalized);

2.1 ROAD NETWORK

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

Figure 2-1: Existing Lane Configuration and Traffic Control



Lakeshore Road is an east-west minor arterial road that operates with up to a four-lane cross-section (two lanes in each direction) within the study area. Lakeshore Road operates in the municipalities of Burlington, Oakville, and Mississauga. The roadway operates between Eastport Drive in Burlington to Fourty Third Street near the border of Toronto and Mississauga, and continues onwards as Lakeshore Boulevard in the City of Toronto. The roadway operates with an assumed speed limit of 50 km/h within the study area.

Old Lakeshore Road is an east-west local road that operates with a two-lane cross-section (one lane in each direction) within the study area. Old Lakeshore Road operates in the City of Burlington between Pearl Street and Lakeshore Road. The roadway operates with an assumed speed limit of 50 km/h within the study area.

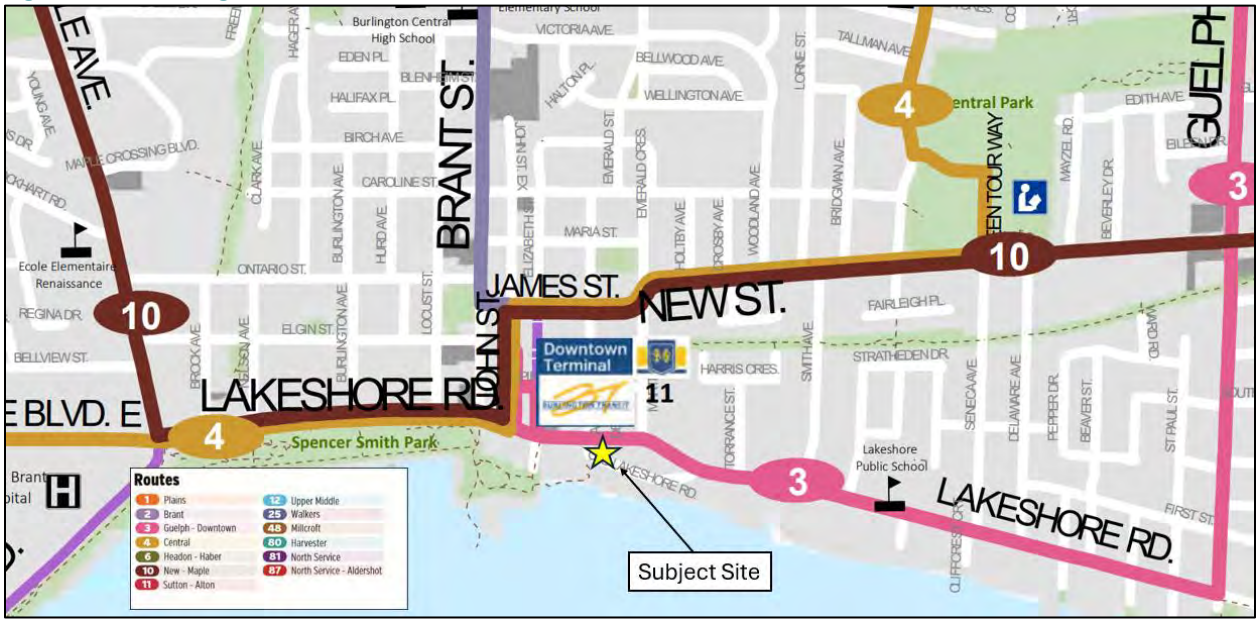
Pearl Street is a north-south collector road that operates with a two-lane cross-section (one lane in each direction) within the study area. Pearl Street operates in the City of Burlington between Old Lakeshore Road and Caroline Street. The roadway operates with an assumed speed limit of 50 km/h within the study area.

Martha Street is a north-south collector road that operates with a two-lane cross-section (one lane in each direction) within the study area. Martha street operates in the City of Burlington between Caroline Street and Lakeshore Road. The roadway operates with an assumed speed limit of 50 km/h within the study area.

2.2 TRANSIT NETWORK

The subject site is located in an area serviced by the Burlington Transit network. The subject site is within walking distance of Burlington Transit stops along Lakeshore Road, James Street and John Street and is within an approximate 400 m or 6-minute walking distance of the Downtown Bus Terminal. The transit routes servicing the area are illustrated in **Figure 2-2.**

Figure 2-2: Existing Transit Network



Source: Burlington Transit, Accessed December 2024

Burlington Transit Bus Route 2 – Brant-Downtown is a bus route that generally operates in a north-south direction along Brant Street between the GO 407 Carpool Area and the Burlington Downtown Terminal on John Street. The bus route operates everyday, from approximately 5:00AM to 11:00PM on weekdays and 6:30AM to 11:00PM on Saturdays, and 7:30AM to 8:30PM on Sundays and holidays. During the weekdays, bus service operates along the route with approximately 25-minute headways during the AM and PM peak periods. During the weekends, bus service operates along the route with approximately 1-hour headways in the morning and 30-minute headways in the afternoon and evenings.

> Access Location: The closest access location to the subject site is located at the Burlington Transit Downtown Terminal on John Street, which is approximately 400 m or a 5-6-minute walk from the subject site.

Burlington Transit Bus Route 3 – Guelph-Downtown is a bus route that generally operates in a north-south direction along Guelph Line between the GO 407 Carpool Area and the Burlington Downtown Terminal on John Street. The bus route operates everyday, from approximately 5:00AM to 11:00PM on weekdays, 6:00AM to 10:30PM on Saturdays, and 7:30AM to 9:00PM on Sundays and holidays. During the weekdays, bus service operates along the route with approximately 25-minute headways during the AM and PM peak periods. During the weekends, bus service operates along the route with approximately 30-minute headways.

> Access Location: The closest access location to the subject site is directly in front of the site on Lakeshore Road, which is 50 m or a 1-minute walk from the subject site.

Burlington Transit Bus Route 4 – Central is a bus route that generally operates in an east-west direction between Aldershot GO Station and Appleby GO Station. The bus route operates everyday, from approximately 5:30AM to 9:30PM on weekdays, 8:30AM to 9:00PM on Saturdays, and 11:30AM to 6:30PM on Sundays and holidays. During the weekdays, bus service operates along the route with approximately 30-minute headways during the AM and PM peak periods. During the weekends, bus service operates along the route with approximately 1-hour headways.

> Access Location: The closest access location to the subject site is located at the Burlington Transit Downtown Terminal on John Street, which is approximately 400 m or a 5-6-minute walk from the subject site.

Burlington Transit Bus Route 10 – New-Maple is a bus route that generally operates in an east-west direction between Burlington GO Station and Appleby GO Station. The bus route operates everyday, from approximately 5:00AM to 11:00PM on weekdays, 7:00AM to 11:00PM on Saturdays, and 8:00AM to 10:00PM on Sundays and holidays. During the weekdays, bus service operates along the route with approximately 15-minute headways during the AM and PM peak periods. During the weekends, bus service operates along the route with approximately 15-30-minute headways.

> Access Location: The closest access location to the subject site is located at the Burlington Transit Downtown Terminal on John Street, which is approximately 400 m or a 5-6-minute walk from the subject site.

Burlington Transit Bus Route 50 – Burlington South is a night bus route that generally operates in an east-west direction between Burlington GO Station and the intersection of Walkers Line & Harvester Road. The bus route operates Monday to Saturday from approximately 11:00PM to 1:00AM with 1-hour headways.

> Access Location: The closest access location to the subject site is located at the Burlington Transit Downtown Terminal on John Street, which is approximately 400m or a 5-6-minute walk from the subject site.

Burlington Transit Bus Route 52 – Burlington Northwest is a night bus route that generally operates in an east-west direction between Burlington GO Station and the Downtown Terminal located on John Street. The bus route operates Monday to Saturday from approximately 11:00AM to 1:30PM with 1-hour headways.

Access Location: The closest access location to the subject site is located at the intersection of James Street and Pearl Street, which is approximately 350 m or a 5-minute walk from the subject site.

Hamilton Street Railway

Hamilton Street Railway Bus Route 11 – Parkdale is a bus route that operates in a north-south and east-west direction between Burlington Bus Terminal and are near Valley Park in the City of Hamilton. The bus route operates Monday to Saturday from approximately 5:00AM to midnight with 30-minutes or better headways.

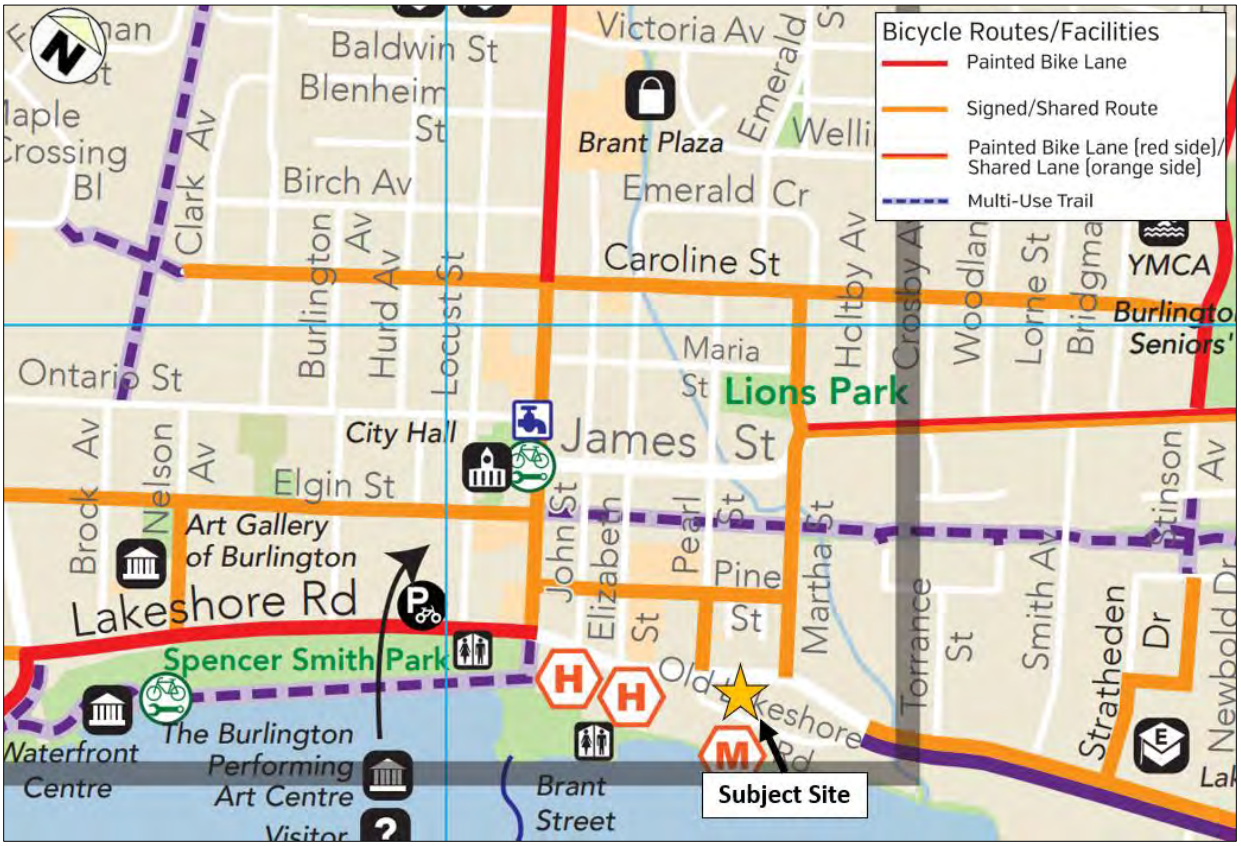
Access Location: The closest access location to the subject site is located at the Burlington Transit Downtown Terminal on John Street, which is approximately 400 m or a 5-6-minute walk from the subject site.

2.3 CYCLING NETWORK

The subject site is located within close proximity to dedicated cycling infrastructure and facilities. There are several nearby shared cycling routes including along Martha Street, Pine Street, John Street, Lakeshore Road, Elgin Street, New Street, and Caroline Street. There are also bike lanes near the site including along Lakeshore Road, Brant Avenue, and New Street. Multi-use trails include the Waterfront Trail, the north-south trail located north of Ontario Street, and the east-west trail located east of Brant Street.

The site has a BikeScore™ of 75/100 which indicates that it is “Very Bikeable” which is convenient for most trips. **Figure 2-3** shows the subject site in relation to the nearest cycling facilities.

Figure 2-3: Existing Cycling Network



Source: Tourism Burlington, 2022

2.4 PEDESTRIAN NETWORK

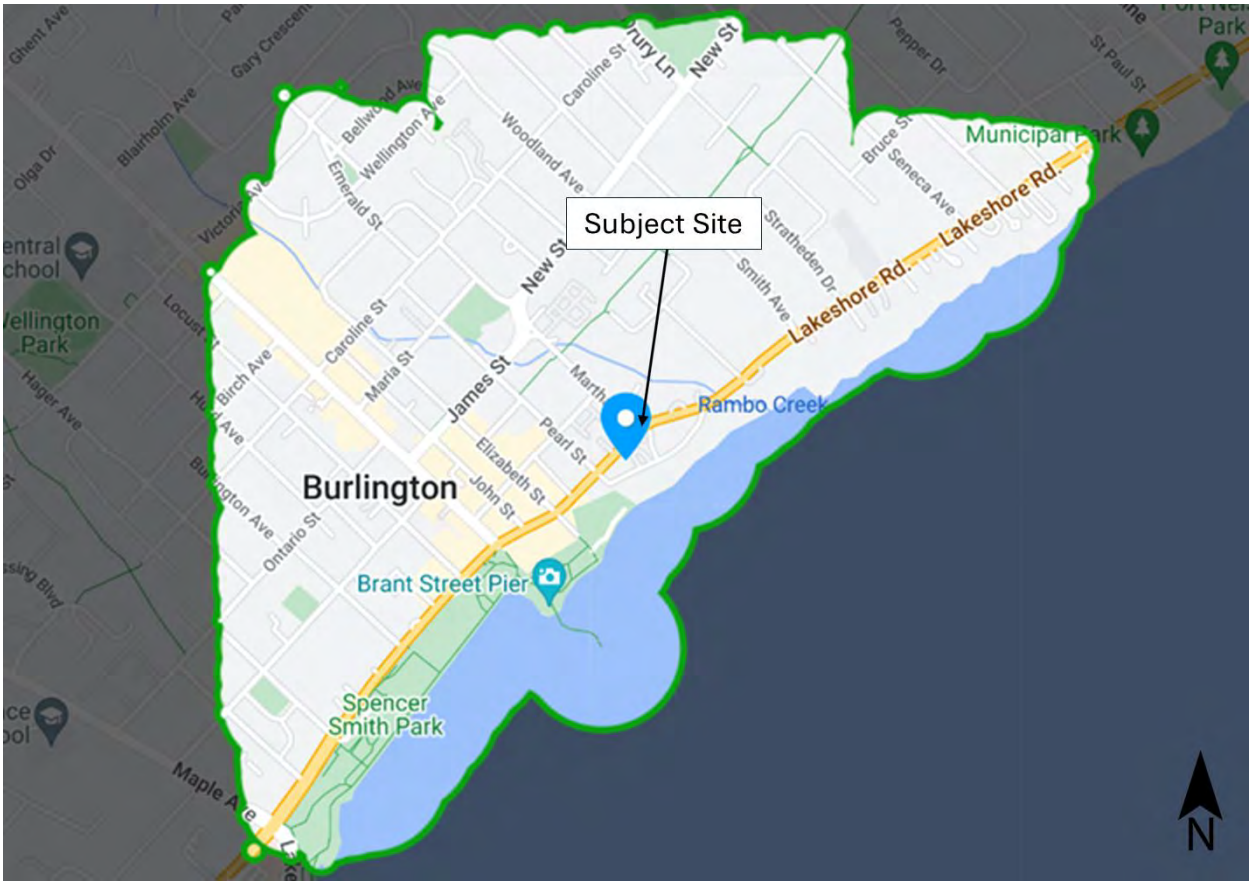
The subject site is located in a highly walkable area that can be accessed by the existing pedestrian network, with sidewalks located along both sides of Lakeshore Road, Old Lakeshore Road, Pearl Street, and Martha Street. As a testament to the site's walkability, the site has a WalkScore™ of 93/100 which indicates that it is a "Walker's Paradise".

Pedestrian crossings with pedestrian signals are available at all approaches at the signalized intersection of Lakeshore Road and Pearl Street. At the unsignalized intersection of Lakeshore Road and Martha Street, there is an east-west pedestrian crossing located at the south side of the intersection. There is also a north-south crossing located at the west side of the unsignalized intersection, though its access is blocked due to construction. For the intersection of Lakeshore Road and Old Lakeshore Road, there is an east-west pedestrian crossing located at the south side of the street.

As illustrated in **Figure 2-4**, a 15-minute walk from the subject site could permit an individual to reach the intersection of Emerald Street and Woodland Avenue to the north, the intersection of Beaver Street and Lakeshore Road to the east, Spencer Smith Park to the south, and the intersection of Lakeshore Road and Maple Avenue to the west.

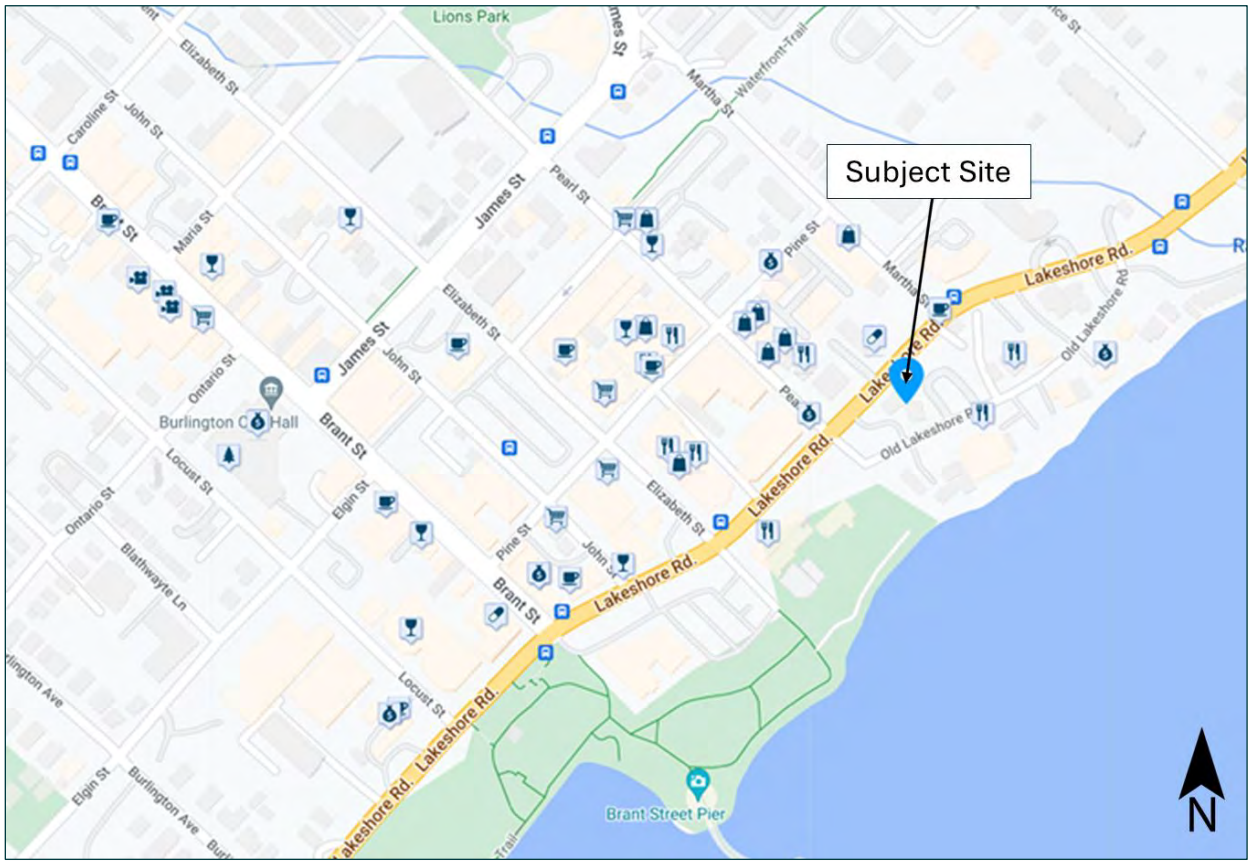
Within this area are amenities and services such as dining establishments, retail stores, banks, grocery stores, a school and a movie theatre, as shown in **Figure 2-5.**

Figure 2-4: Fifteen Minute Walking Distance from Subject Site



Source: walkscore.com, Accessed August 2024

Figure 2-5: Nearby Destinations Within Walking Distance



Source: walkscore.com, Accessed August 2024

2.5 TRAFFIC DATA COLLECTION

Turning movement counts (TMCs) were used as the source of traffic data in the intersection capacity analysis. TMCs for Lakeshore Road and the Existing Site Access (North) as well as Old Lakeshore Road and the Existing Site Access (South) were not collected due to the existing site being fenced off from the access. As well, it should be noted that the westbound lane capacity of Lakeshore Road from Pearl Street to Martha Street was reduced from two (2) lanes to one (1) lane at the time the survey was conducted due to ongoing construction.

A summary of TMC data collected is outlined in **Table 2-1** with detailed results provided in **Appendix B**.

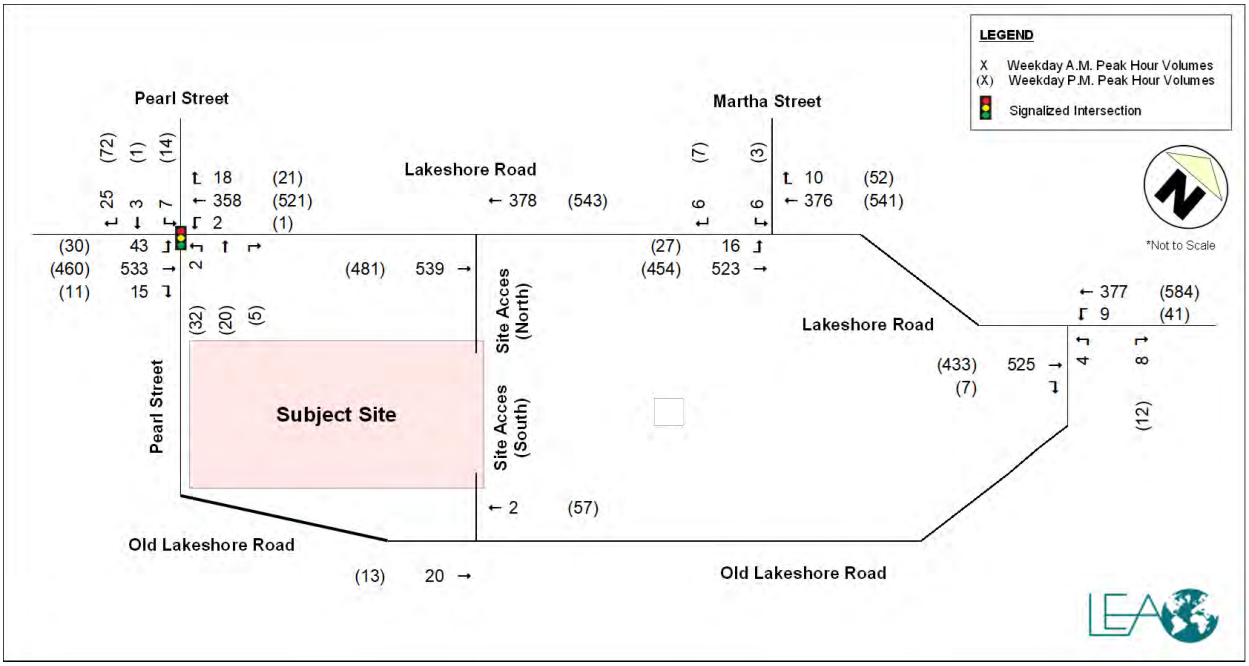
Table 2-1: Traffic Data Collection Summary

#	Location	TMC Date	Source
1	Lakeshore Road & Pearl Street	Thursday November 30, 2023	LEA
2	Lakeshore Road & Martha Street		
3	Lakeshore Road & Old Lakeshore Road		

2.6 EXISTING TRAFFIC VOLUMES

The existing traffic volumes in the study area during the weekday AM and PM peak hours are illustrated in **Figure 2-6.**

Figure 2-6: Existing Traffic Volumes



3 FUTURE BACKGROUND TRAFFIC CONDITIONS

For the analysis of future background traffic conditions, this study considers a 5-year full-build out horizon to the year 2028. Future background conditions include the traffic added to the network from other future developments within the surrounding study area, corridor growth, as well as all planned infrastructure improvements.

3.1 BACKGROUND DEVELOPMENTS

Background development information within the surrounding area is summarized in **Table 3-1**. Details regarding the background developments are detailed in **Appendix C**.

Table 3-1: Background Developments

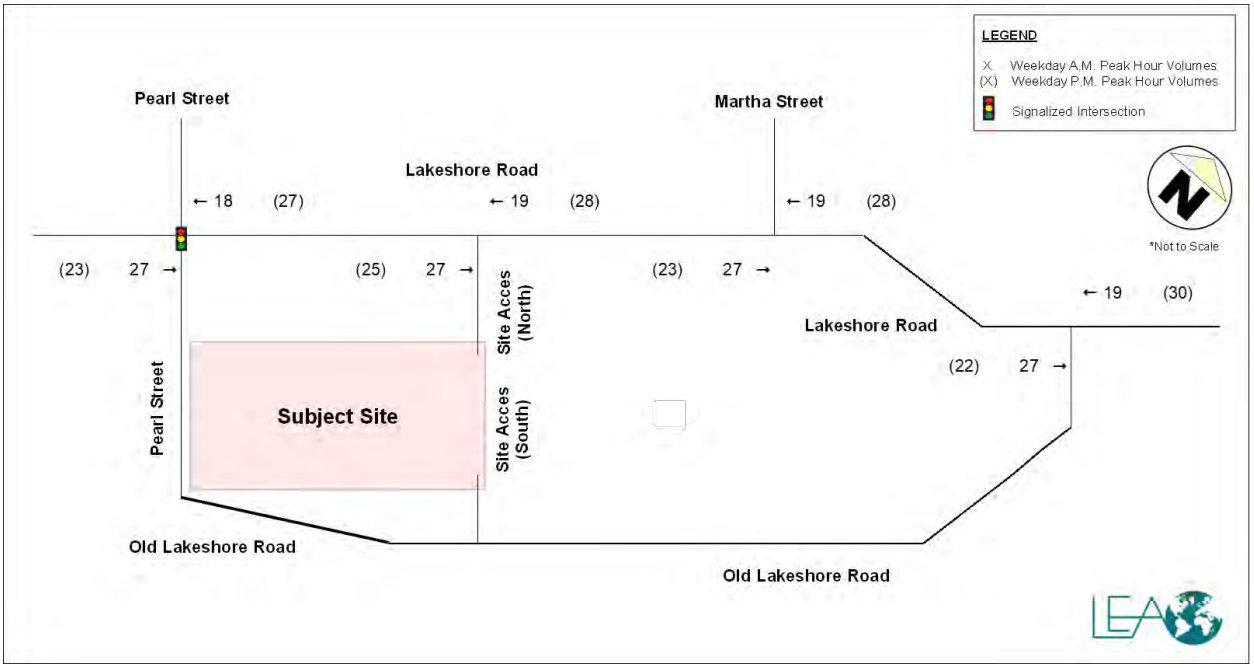
	Location	Site Stats	Source
1	2020 Lakeshore Road	557 residential units; 122 hotel suites; 4,455 m^2 commercial GFA; 4,348 m^2 office GFA	TIS dated October 2021 (Figure 3.2) Paradigm
2	2069-2079 Lakeshore Road 383-385 Pearl Street	291 residential units; 482.1 m^2 commercial GFA	TIS dated August 2018 (Figures 3.2A and 3.2B) Paradigm
3	2093, 2097, 2101 Old Lakeshore Road 2096, 2100 Lakeshore Road	310 residential units; 707.1 m^2 commercial GFA	TIS dated August 2019 (Figure 12) LEA
4	2107 Old Lakeshore Road 2119 Lakeshore Road	150 residential units; 598 m^2 commercial GFA	TIS dated February 2020 (Figure 3.2) Paradigm
5	374 Martha Street	240 residential units; 423 m^2 commercial GFA	TIS dated September 2015 (Figures 3.2A and 3.2B) Paradigm & Opinion Letter dated June 2016 Paradigm
6	407 Martha Street	130 residential units	TIS dated March 2020 (Figures 3.2A and 3.2B) Paradigm

For 374 Martha Street, an opinion letter dated June 2016 noted additional vehicle trips will be generated from the proposed development due to site plan revisions. Due to updated volume figures not being provided in the opinion letter, the additional vehicle traffic volumes were added to volume figures listed in their original TIS dated September 2015 with trips proportionally distributed based on trip distribution rates listed in the document.

3.2 CORRIDOR GROWTH

Based on correspondence with City of Burlington staff, an annual growth rate of 1% was applied was applied to Lakeshore Road. **Figure 3-1** presents the projected volume growth from existing to future conditions. Complete corridor growth details are available in **Appendix D**.

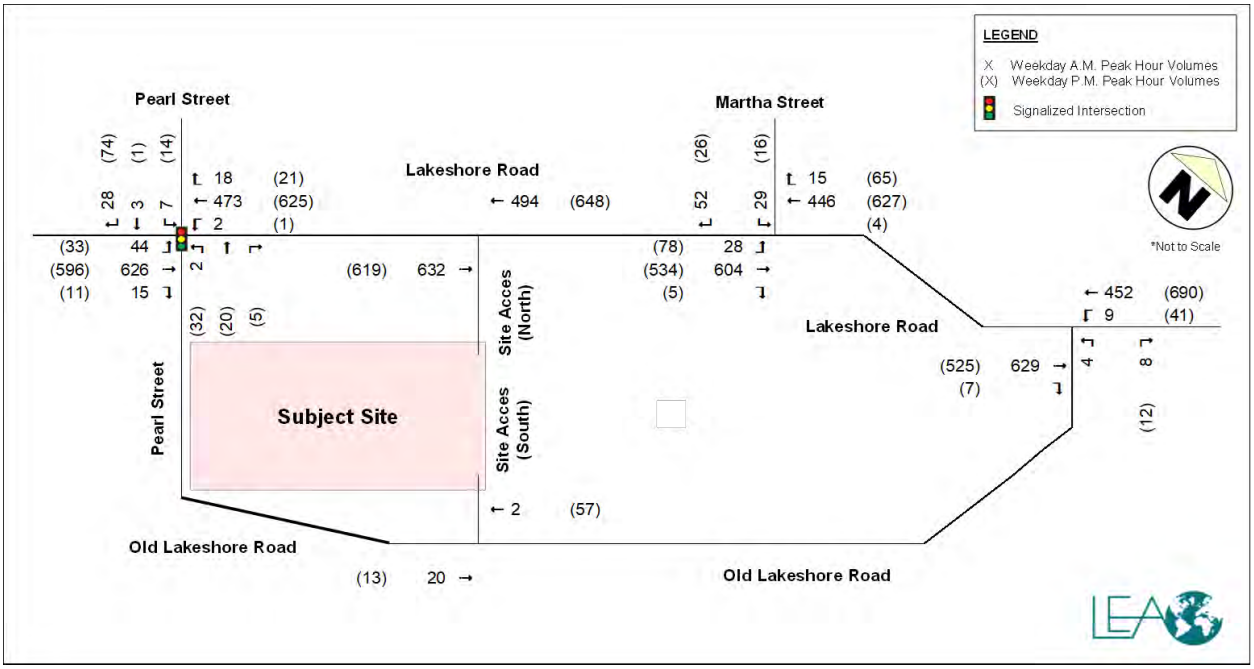
Figure 3-1: Future Background Growth (2023-2028)



3.3 FUTURE BACKGROUND TRAFFIC VOLUMES

Future background traffic volumes were determined by adding corridor growth traffic and background development volumes to existing volumes. Future background volumes for the 2028 horizon are illustrated in **Figure 3-2**.

Figure 3-2: Future Background Traffic Volumes (2028)



4 SITE TRIP GENERATION CONDITIONS

The proposed development is comprised of a 20-storey high-rise residential building with 165 units and 583 m^2 (6,270 ft^2) of retail GFA. The site plan for the proposed development indicates two site accesses, with Site Access (North) accessible on Lakeshore Road and Site Access (South) connecting to Old Lakeshore Road.

For passenger vehicles, Site Access (South) will serve as the exclusive entry and exit point from the subject site with all movements permitted at the intersection. Heavy vehicles will enter the subject site via Site Access (North) with all inbound movements permitted and exit via Site Access (South) in a right-out only configuration.

This section discusses the generation, distribution, and assignment of site-generated vehicle trips within the study area. Complete trip generation results are provided in **Appendix E**.

4.1 TRIP GENERATION

Trip generation for all proposed land uses were estimated using the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th* Edition rates for average vehicle trip rates for the AM/PM peak hours. The following was applied to each land use:

- **Residential:** ITE LUC 222 – Multifamily Housing (High-Rise); 'General Urban/Suburban' setting and 'Not Close to Rail Transit'.
- **Retail:** ITE LUC 822 – Strip Retail Plaza (<40k); General Urban/Suburban.

Land use subcategories were applied where applicable, and average vehicle trip generation rates were used to determine the number of vehicle trips generated by the proposed development. The Retail GFA was rounded up to 7,000 ft^2 and retail pass-by trip reduction factors were applied based on ITE methodology. The number of residential units was rounded up to 265 units as a conservative approach.

Table 4-1 summarizes the vehicle trip generation for the proposed development.

Table 4-1: Vehicle Site Trip Generation

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential *ITE LUC 222 – Multifamily Housing (High-Rise)* 265 Units	ITE Auto Trip Rate (/unit)	0.07	0.20	0.27	0.20	0.12	0.32
	Residential Auto Trips	19	53	72	53	32	85
	Site Interaction	0	0	0	-6	-2	-8
	External Auto Trips	**19**	**53**	**72**	**47**	**30**	**77**
Retail *ITE LUC 822 – Strip Retail Plaza (<40k)* 7,000 ft^2	ITE Auto Trip Rate (/1,000 ft^2)	1.42	0.94	2.36	3.30	3.30	6.59
	Retail Auto Trips	10	7	17	23	23	46
	Site Interaction	0	0	0	-2	-6	-8
	External Auto Trips	**10**	**7**	**17**	**21**	**17**	**38**
	Pass-By	-2	-1	-3	-8	-7	-15
	Primary External Auto Trips	**8**	**6**	**14**	**13**	**10**	**23**
Total New External Auto Trips (including pass-by trips)		**29**	**60**	**89**	**68**	**47**	**115**
Total New Primary External Auto Trips		**27**	**59**	**86**	**60**	**40**	**100**

With the conservative approach, the proposed development is anticipated to generate 86 new two-way vehicle trips (27 inbound, 59 outbound) during the weekday AM peak hour and 100 new two-way vehicle trips (60 inbound, 40 outbound) during the weekday PM peak hour.

4.2 MODAL SPLIT

The local mode split, as shown in **Table 4-2** was determined based on Transportation Tomorrow Survey (TTS) 2016 data of zones of household surrounding the study area. Detailed calculations are available in **Table 4-2**.

Table 4-2: Local Mode Split

Description	Land Use – Weekday AM/PM Peak Hour	
	Residential	Retail
Auto Driver Trips	70%	76%
Auto Passenger Trips	8%	15%
Transit Trips	9%	4%
Pedestrian Trips	9%	3%
Cycling Trips	4%	2%
Total	**100%**	**100%**

The local mode split was then used to calculate multi-modal trip generation volumes, which are summarized in **Table 4-3**.

Table 4-3: Multi-Modal Site Trip Generation

Land Use	Description	Modal Split	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
Residential	**External Person Trips**	**100%**	**27**	**74**	**101**	**67**	**43**	**110**
	Auto Driver Trips	70%	19	52	**71**	47	30	**77**
	Passenger Trip	8%	2	6	**8**	5	4	**9**
	Transit Trips	9%	2	7	**9**	6	4	**10**
	Pedestrian trips	9%	2	6	**8**	5	4	**9**
	Cycling Trips	4%	1	3	**4**	3	2	**5**
Retail	**External Person Trips**	**100%**	**9**	**8**	**17**	**17**	**13**	**30**
	Auto Driver Trips	76%	7	6	**13**	13	10	**23**
	Passenger Trip	15%	1	2	**3**	2	2	**4**
	Transit Trips	4%	1	0	**1**	1	1	**2**
	Pedestrian trips	3%	0	0	**0**	1	0	**1**
	Cycling Trips	2%	0	0	**0**	0	0	**0**
Total	**External Person Trips**		**36**	**82**	**118**	**84**	**56**	**140**
	Auto Driver Trips		26	58	**84**	60	40	**100**
	Passenger Trip		3	8	**11**	7	6	**13**
	Transit Trips		3	7	**10**	7	5	**12**
	Pedestrian trips		2	6	**8**	6	4	**10**
	Cycling Trips		1	3	**4**	3	2	**5**

With the conservative approach, the proposed development is expected to generate 118 total person trips (36 inbound, 82 outbound) during the weekday AM peak hour and 140 total person trips (84 inbound, 56 outbound) during the weekday PM peak hour. Amongst the new vehicle trips generated by the proposed development, the 84 new two-way vehicle trips (26 inbound, 58 outbound) during the weekday AM peak hour and the 100 new two-way vehicle trips (60 inbound, 40 outbound) during the weekday PM peak hour generated by the new retail land uses that are anticipated to park offsite, then walk to the subject site due to no non-residential parking being planned for the proposed development.

4.3 TRIP DISTRIBUTION AND ASSIGNMENT

Site trip distribution was estimated using 2016 TTS data, as summarized in **Table 4-4**. Trip assignment was based on local road network, turn restrictions, logical routing, and type of access. Detailed TTS calculations are provided in **Appendix E**.

Table 4-4: Subject Site Vehicle Trip Distribution

To/From	Expected Route	Residential		Retail	
		Weekday AM/PM		Weekday AM/PM	
		In	Out	In	Out
North	Brant Street	19%	14%	20%	25%
	Pearl Street	1%	1%	2%	4%
East	Lakeshore Road	44%	46%	35%	37%
West	Lakeshore Road	36%	39%	43%	34%
	Total	100%	100%	100%	100%

Site traffic volume assignments based on vehicle trip distribution is illustrated in **Figure 4-1** and **Figure 4-2**. Due to the lack of non-residential parking spaces provided in the proposed development, retail trips were assumed to travel to nearby on/off-street parking areas and walk to the subject site. With this condition in mind, it is expected that retail trips to the subject site will mainly be associated with traffic that is already in the area to visit other nearby retailers or other relevant purposes. Net site traffic volumes are shown in **Figure 4-3**.

Figure 4-1: Residential Site Traffic Volumes

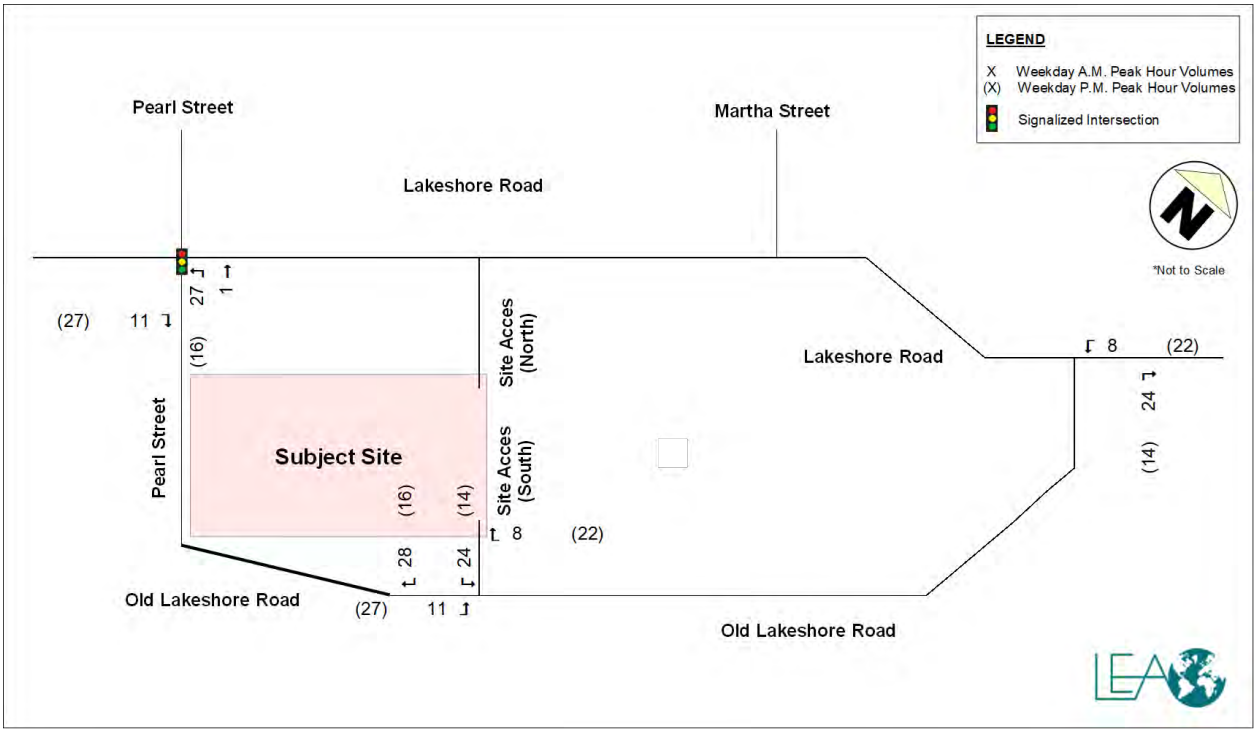


Figure 4-2: Retail Site Traffic Volumes

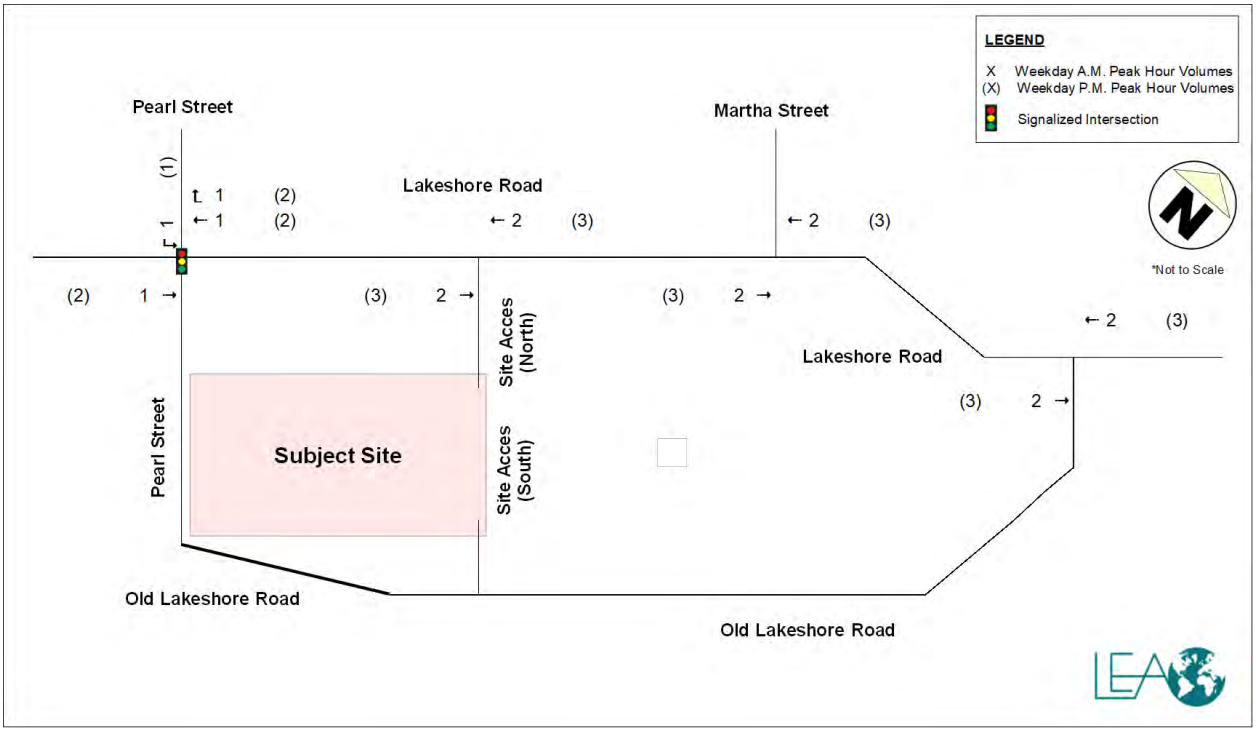
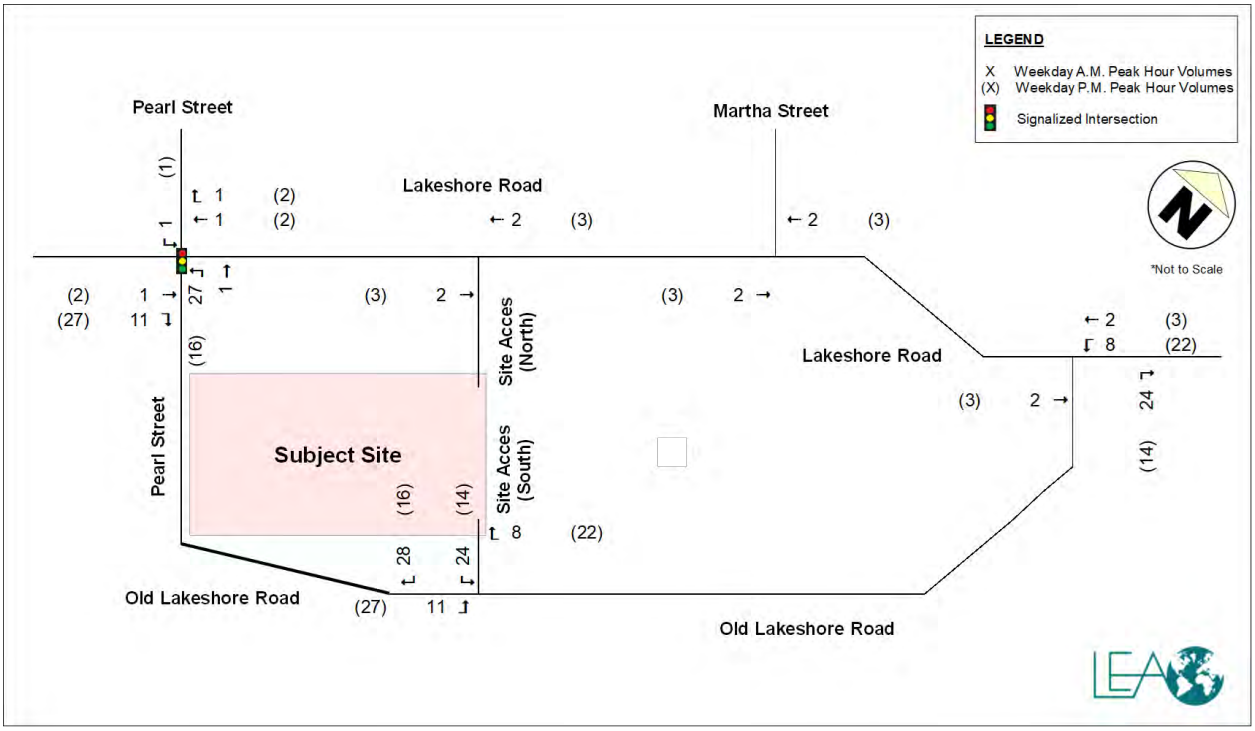


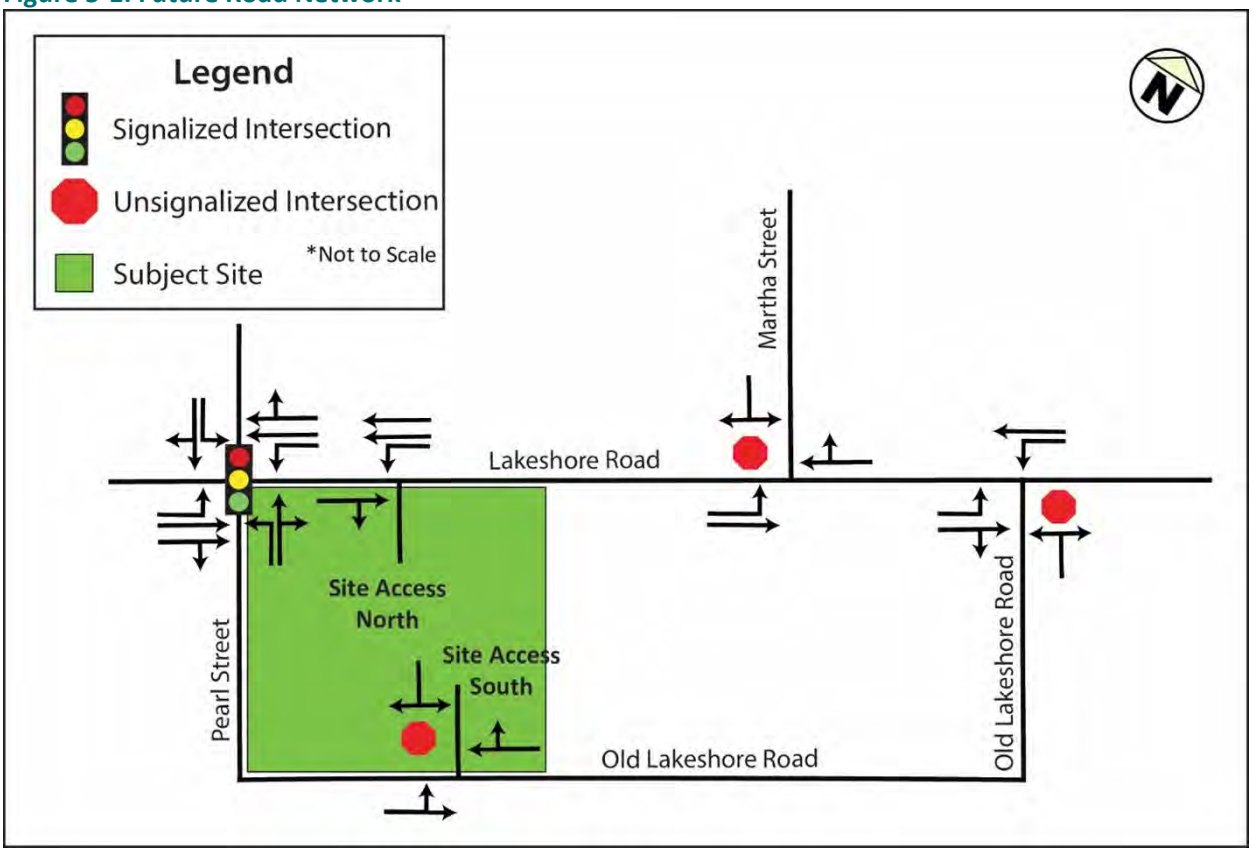
Figure 4-3: Net Site Traffic Volumes



5 FUTURE TOTAL TRAFFIC VOLUMES

Future total traffic conditions include the addition of site trips to the 2028 future background volumes. Future road network changes are detailed in **Figure 5-1**.

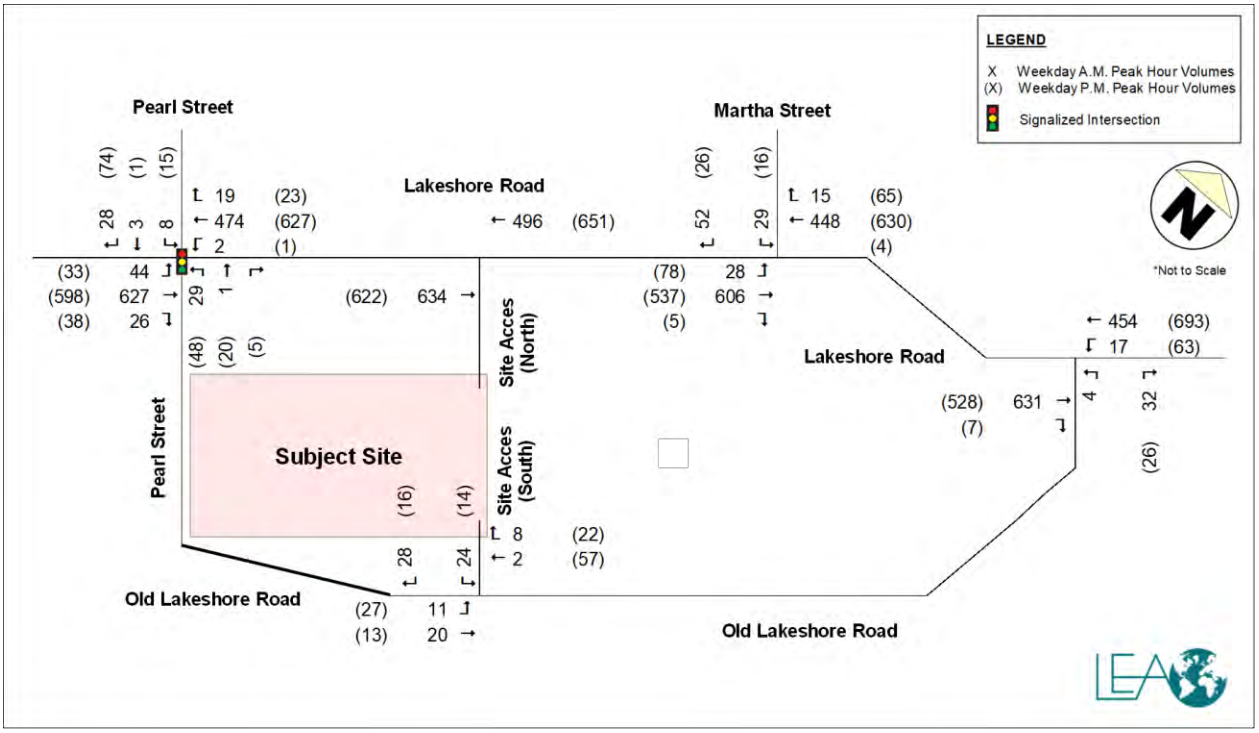
Figure 5-1: Future Road Network



5.1 FUTURE TOTAL TRAFFIC VOLUMES

Future total traffic volumes for the AM and PM peak hours under the 2028 horizon year are illustrated in **Figure 5-2**.

Figure 5-2: Future Total Traffic Volumes (2028)



6 INTERSECTION CAPACITY ANALYSIS RESULTS

The following sections provide an analysis of the intersection operations under existing, future background, and future total scenarios. The intersection capacity analysis for the study area was undertaken using Synchro version 11.0, with the Highway Capacity Manual 2000 methodology. Critical movements are defined as those with a volume-to-capacity (V/C) ratio greater than 0.85 or level of service (LOS) of 'E' or worse. Detailed capacity results are provided in **Appendix F**.

6.1 SIGNALIZED INTERSECTIONS

The results of the intersection capacity analysis for signalized intersections are shown in the following sections. Only the overall intersection results and critical movements are shown.

6.1.1 Lakeshore Road & Pearl Street

The results for the Lakeshore Road & Pearl Street intersection during the AM and PM peak hours are summarized in **Table 6-1**. Queueing analysis results are presented in **Table 6-2**.

Table 6-1: Intersection Capacity Analysis – Lakeshore Road & Pearl Street

AM	Existing Conditions (2023)				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
Overall	-	0.21	6	A	-	0.25	6	A	-	0.27	6	A
NBL	2	0.07	55	D	2	0.07	55	D	32	0.45	55	E
PM	**Existing Conditions (2023)**				**Future Background (2028)**				**Future Total (2028)**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
Overall	-	0.26	10	B	-	0.30	10	B	-	0.33	11	B
NBL	32	0.43	56	E	32	0.43	56	E	47	0.56	59	E

Existing Conditions: Under existing weekday AM and PM peak hour conditions, all movements are operating within capacity and with no significant delay. The northbound left movement in the PM peak hour operates at LOS E but has a v/c ratio below 0.50, which indicates the movement is operating at acceptable levels.

Future Background Conditions: Under future background conditions, both the AM and PM peak hour conditions are expected to continue operating within capacity and without significant delay. No new constraints have been identified.

Future Total Conditions: Under future total conditions, both the AM and PM peak hour conditions are expected to continue to operate within capacity and without significant delay. The northbound left movement operates at LOS E under both AM and PM peak hours with increased delay, but v/c ratios continue to remain below 1.00 and operate within capacity. No additional constraints have been identified as a result of site traffic.

Table 6-2: Queueing Analysis – Lakeshore Road & Pearl Street

AM	Existing Conditions (2023)			Future Background (2028)		Future Total (2028)	
Mvmt	Available Storage	50th Queue (m)	95th Queue (m)	50th Queue (m)	95th Queue (m)	50th Queue (m)	95th Queue (m)
EBL	44	2	5	2	5	2	6
WBL	19	0	1	0	1	0	1
NBL	8	0	3	0	3	7	**16**
SBL	7	2	6	2	6	2	7
PM	**Existing Conditions (2023)**			**Future Background (2028)**		**Future Total (2028)**	
Mvmt	Available Storage	50th Queue (m)	95th Queue (m)	50th Queue (m)	95th Queue (m)	50th Queue (m)	95th Queue (m)
EBL	44	2	6	2	7	2	7
WBL	19	0	1	0	1	0	1
NBL	8	**9**	**18**	**9**	**18**	**14**	**24**
SBL	7	4	10	4	10	5	11

Under existing conditions, queues for the northbound left movement exceed available storage and is projected to grow longer under future total conditions. It is recommended that the northbound left storage lane be extended to 15 m or to the longest physically possible length.

6.2 UNSIGNALIZED INTERSECTIONS

The results of the intersection capacity analysis for unsignalized intersections are shown in the following sections. No critical movements were found for unsignalized intersections in the study area.

6.2.1 Lakeshore Road and Martha Street

The results for the Lakeshore Road & Martha Street intersection during the AM and PM peak hours are summarized in **Table 6-3**.

Table 6-3: Intersection Capacity Analysis – Lakeshore Road & Martha Street

AM	Existing Conditions (2023)					Future Background (2028)					Future Total (2028)				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Q (veh)	Vol	V/C	Delay (s)	LOS	95th Q (veh)	Vol	V/C	Delay (s)	LOS	95th Q (veh)
Overall	-	-	0	-	-	-	-	1	-	-	-	-	1	-	-
EBL	16	0.02	8	A	0	28	0.03	9	A	0	28	0.03	9	A	0
SBLR	12	0.03	13	B	0	81	0.19	15	C	1	81	0.19	15	C	1
PM	**Existing Conditions (2023)**					**Future Background (2028)**					**Future Total (2028)**				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Q (veh)	Vol	V/C	Delay (s)	LOS	95th Q (veh)	Vol	V/C	Delay (s)	LOS	95th Q (veh)
Overall	-	-	0	-	-	-	-	1	-	-	-	-	1	-	-
EBL	27	0.04	9	A	0	78	0.12	10	B	0	78	0.13	10	B	0
SBLR	10	0.03	15	B	0	42	0.18	20	C	1	42	0.18	20	C	1

Under existing and future conditions, the intersection of Lakeshore Road and Martha Street operate with acceptable levels of service. No critical movements are identified.

6.2.2 Lakeshore Road and Old Lakeshore Road

The results for the Lakeshore Road & Old Lakeshore Road intersection during the AM and PM peak hours are summarized in **Table 6-4**.

Table 6-4: Intersection Capacity Analysis – Lakeshore Road & Old Lakeshore Road

AM	Existing Conditions (2023)					Future Background (2028)					Future Total (2028)				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Q (veh)	Vol	V/C	Delay (s)	LOS	95th Q (veh)	Vol	V/C	Delay (s)	LOS	95th Q (veh)
Overall	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
NBLR	12	0.03	13	B	0	12	0.03	15	B	0	35	0.09	15	B	0
WBL	9	0.01	9	A	0	9	0.01	9	A	0	17	0.02	9	A	0
PM	Existing Conditions (2023)					Future Background (2028)					Future Total (2028)				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Q (veh)	Vol	V/C	Delay (s)	LOS	95th Q (veh)	Vol	V/C	Delay (s)	LOS	95th Q (veh)
Overall	-	-	1	-	-	-	-	0	-	-	-	-	1	-	-
NBLR	12	0.03	12	B	0	12	0.03	13	B	0	29	0.06	13	B	0
WBL	41	0.05	9	A	0	41	0.05	9	A	0	60	0.08	9	A	0

Under existing and future conditions, the intersection of Lakeshore Road and Old Lakeshore Road operate with acceptable levels of service. No critical movements are identified.

6.2.3 Old Lakeshore Road and Site Access (South)

The results for the Old Lakeshore Road & Site Access (South) intersection during the AM and PM peak hours are summarized in **Table 6-5**.

Table 6-5: Intersection Capacity Analysis, Old Lakeshore Road & Site Access (South)

AM	Future Total (2028)				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Q (veh)
Overall	-	-	6	-	-
EBL	10	0.01	7	A	0
EBT	20	0.00	0	A	0
SBLR	51	0.05	9	A	0
PM	Future Total (2028)				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Q (veh)
Overall	-	-	3	-	-
EBL	24	0.02	7	A	0
EBT	13	0.00	0	A	0
SBLR	29	0.03	9	A	0

Under future conditions, the intersection of Old Lakeshore Road and South Site Access operate with acceptable levels of service. No critical movements are identified.

6.3 OVERALL SUMMARY

Overall, both signalized and unsignalized study area intersections operate within capacity and without significant delay. For the signalized intersection of Lakeshore Road and Pearl Street it was noticed that northbound left movements are expected to exceed the available storage length. As a result, it is recommended that the northbound storage lane be extended to 15m to accommodate movements under existing and future conditions.

7 PARKING REVIEW

This section reviews the applicable vehicle parking standards for the subject site as well as the proposed parking strategy to assess whether the parking supply proposed will be sufficient to accommodate projected parking demand for the proposed uses on-site.

7.1 VEHICLE PARKING

The subject site is governed by the parking requirements within the City of Burlington Zoning By-law 2020 for the Downtown Old Lakeshore Road Zone (DLZ-A) designation. There are no required retail parking spaces for the proposed development as it is within the Downtown Parking Exemption Area, as indicated in Section 2.25.1 of the City of Burlington Zoning By-law 2020. **Table 7-1** summarizes the vehicle parking requirements and proposed parking supply.

Table 7-1: Vehicle Parking Requirements and Proposed Supply

Use	Units	City of Burlington Zoning By-law 2020 (DLZ-A)		Proposed Supply
		Minimum Rate	Required Spaces	
Residential	165 units	1.25 sp./unit	206	162 (0.98 sp./unit)
Total			**206**	**162 (0.98 sp./unit)**

Based on the Zoning By-law 2020 minimum vehicular parking requirements, the proposed development is required to provide a total of 206 parking spaces. The development is proposing a total supply of 162 parking spaces (excluding 2 layby spaces along Old Lakeshore Road) or 0.98 spaces per unit, which represents a shortfall of 44 spaces compared to by-law requirements.

Although the proposed parking supply does not meet the City's requirements, it has been deemed appropriate given the surrounding transportation context and observed vehicle ownership trends for apartment dwellings in the downtown Burlington area. In support of the proposed parking supply, a parking justification has been provided in **Section 7.4**.

7.2 BICYCLE PARKING

The City of Burlington Zoning By-law 2020 was reviewed to determine the bicycle parking requirements for the proposed development. Although residential uses do not require bicycle parking spaces, the provided residential rates were based on City's Development Application Pre-Consultation Form, dated October 11, 2023. The bicycle parking requirements and proposed supply are summarized in **Table 7-2**.

Table 7-2: Bicycle Parking Requirements and Proposed Supply

Use	Units / GFA	City of Burlington Zoning By-law 2020		Proposed Supply
		Minimum Rate	Required Spaces	
Residential (Long-Term)	165	0.5 sp/unit	83	84
Residential (Short-Term		0.05 sp/unit	9	10
Retail (Long-Term)	583 m^2	2 spaces + 1 space/1000 m^2	3	3
Retail (Short-Term)		3 spaces + 1 space/1000 m^2	4	4
Total			**99**	**101**

Based on the Zoning By-law 2020 and Pre-Consultation Form minimum bicycle parking requirements, the proposed development is required to provide a total of 99 bicycle parking spaces (86 long- and 13 short-term spaces). A total of 101 bicycle parking spaces are being proposed (84 residential long-term, 10

residential short-term, three (3) retail long-term, and four (4) retail short-term) which meets and exceeds the requirements. As the site is in a very walkable area and accessible to nearby amenities it is expected that retail trips will be accomplished via the existing sidewalk network.

7.3 ACCESSIBLE PARKING

The City of Burlington Zoning By-law 2020 was reviewed to determine the accessible parking requirements for the proposed development. The accessible parking requirements and proposed supply are summarized in **Table 7-3**.

Table 7-3: Accessible Parking Requirements and Proposed Supply

City of Burlington Zoning By-law 2020			Proposed Supply
# of Required Spaces	Minimum Rate	Required Accessible Spaces	
206	3% of Required Parking	7	7

Based on the Zoning By-law 2020 minimum accessible parking requirements, the proposed development is required to provide a total of seven (7) accessible parking spaces. The proposed supply of seven (7) accessible spaces meets By-law requirements.

7.4 PARKING JUSTIFICATION

The following parking justification has been provided in support of the proposed supply of 162 vehicle parking spaces at a rate of 0.98 spaces per unit. This supply represents a reduction from the minimum vehicle parking requirements outlined in Zoning By-law 2020.

Although the proposed parking supply is a departure from By-law requirements, one of purposes of the development is to provide future residents with travel alternatives for those who choose not to own a car. This approach to residential development aligns with current trends in land-use planning as noted in both provincial and regional policy documents, which supports reducing car dependency for travel or commuting purposes.

The proposed development is situated in an area that has access to existing public transit as well as ample active transportation options. The purpose of this parking justification will be to demonstrate how the proposed parking supply aligns with current provincial and municipal planning policies and guidelines as they pertain to public and active transportation and supporting a reduction in car dependency.

This justification will also review the existing public transit, transportation infrastructure, and multi-modal trends to show that the future residents to choose to live a car-free lifestyle have good multi-modal options to travel and commute to and from the development.

7.4.1 Planning Context

The proposed vehicle parking supply aligns with the prevailing provincial and municipal policies and guidelines as it relates to transportation planning and objectives, which have been summarized below.

Provincial Planning Statement (2024)

The *Provincial Planning Statement* (PPS 2024) is a province-wide land use policy framework document which replaces both the *Provincial Policy Statement* (2020) and *A Place to Grow: Growth Plan for the Greater Golden Horseshoe* (2019) while also building on the housing supportive policies from both documents. The PPS 2024 provides the necessary tools and policy direction on matters of provincial interest related to land use planning and development. Some of the key changes introduced to the PPS 2024 are in regard to growth targets, settlement area expansions, strategic growth areas and major transit

station areas, intensification, municipal comprehensive reviews, employment land conversions, and protection of employment uses amongst other changes.

The PPS 2024, which speaks to transportation systems including parking, provides key directions including providing efficient systems to address project needs, efficiently using existing and planned infrastructure through TDM strategies, minimizing the length and number of vehicle trips, and supporting the use of transit and active transportation modes.

Under Section 3 of the *Planning Act*, all decisions affecting land use planning matters "shall be consistent with" the PPS. One of the key matters pertaining to PPS policies includes the promotion of transportation decisions that increase active transportation and transit usage, which are highlighted throughout the PPS. Specifically:

- As stated under **Section 2.2.1.c)** of the PPS planning authorities shall provide an appropriate mix of housing options and densities to meat current and future resident needs by "promoting densities for new housing which efficiently use land, resources, infrastructure and public services, and support the use of active transportation.
- As stated under **Section 2.3.1.2**. of the PPS, land use patterns within settlement areas shall be based on densities and a mix of land uses which: "support active transportation" and "are transit-supportive, where transit is planned, exists or may be developed".
- As stated under **Section 2.9.1.a) and d)** of the PPS, planning authorities shall plan to reduce greenhouse gas emissions and prepare for the impacts of a changing climate through approaches that a) support the achievement of compact, transit-supportive, and complete communities and d) promote green infrastructure, low impact development, and active transportation.
- As stated under **Section 3.2 (1)(2)** of the PPS transportations systems should be "safe, energy efficient, facilitate the movement of people and goods, and support the use of zero and low emissions vehicles". Transportation systems should also make use of existing infrastructure including through the use of transportation demand management strategies.

The proposed development conforms to the provincial policy outlined in the PPS 2024 as it supports the goals of providing future residents with a car-free or less car-dependent quality of living and will take advantage of nearby public transit and active transportation available to the subject site.

Metrolinx 2041 Regional Transportation Plan: For the Greater Toronto and Hamilton Area

The 2041 Regional Transportation Plan: For the Greater Toronto and Hamilton Area provides a framework for transportation planning within the Greater Toronto and Hamilton Area (GTHA) with the intent of creating strong connections, complete travel experiences, and sustainable and healthy communities which supports the vision of both the PPS and the 2020 Growth plan. The Province of Ontario recognizes the role transportation will have in facilitating the province's vision, especially given the population growth projections which expects a population of 10 million persons by the year 2041. To ensure the best possible use of existing and proposed transportation system the Growth Plan has emphasized some of the following:

- Providing fast, frequent, and reliable transportation for people;
- Designing communities to support transit use and active transportation; and
- Using parking strategies to encourage car-sharing and other car-mode alternatives.

As it relates to land use planning and the role of government, the 2041 Regional Transportation Plan seeks to achieve reductions in greenhouse gas emissions, and increase active transportation as well as promote the integration of local transit systems in the regional transportation area with each other and with the regional transit system, work towards easing congestion and commute times in the regional transportation area, and promote transit-supportive development to increase transit ridership and to support the viability and optimization of transit infrastructure (2041 Regional Transportation Plan, P. 17).

The proposed development aligns with the aspirations of the 2041 Regional Transportation Plan by providing future residents with and encouraging them to use an alternative to single-occupancy cars to travel and commute. By doing so the development is committed to reducing greenhouse gas emissions and the number of vehicles on the road which is noted in the regional plan to help ease congestion in the area surrounding the subject site.

Halton Region Official Plan 2022

The Halton Region Official Plan 2022 is a regional municipal policy document which is to be used as a guide for both short- and long-term land use development within the Region of Halton. Through changes to the Planning Act that came about on July 4, 2024, the Region of Halton has been identified as an upper tier municipality with planning responsibilities. This is to say that the Region of Halton Official Plan is no longer the official plan for Halton Region but instead has been deemed as an official plan for the each lower-tier municipality which includes the City of Burlington, until it has been revoked ore amended by the City.

Halton Region recognizes its importance as an economic growth area within the Greater Toronto and Hamilton Area (GTHA) and is expected to see increased population growth between now and the year 2051. To facilitate this growth, Halton Region has set out it's vision of sustainable development to meet the current and future population needs which includes protecting the natural environment, preserving prime agricultural areas, enhancing its economic competitiveness, and fostering a healthy, equitable society (Halton Region Official Plan, P.6).

In terms of transportation, the Halton Region Official Plan has provided some of the following framework and objectives to support the Region's vision:

- Section 31(5): Where mobility is provided primarily through an affordable, convenient, safe and efficient public transportation system and non-motorized travel modes;
- Section 72(1)(2): To support a form of growth that is compact and supportive of transit usage and non-motorized modes of travel, reduces the dependence on the automobile, makes efficient use of space and services, promotes live-work relationships and fosters a strong and competitive economy;
- Section 72.1(7): To plan and invest for a balance of jobs and housing in communities across the Region to reduce the need for long distance commuting and to increase the modal share for transit and active transportation;
- Section 77(5)(f)(vi): Promoting active transportation and public transit use;
- Section 79(1): To provide an urban form that is complementary to existing developed areas, uses space more economically, promotes live-work relationships, fosters social interaction, enhances public safety and security, reduces travel by private automobile, promotes active transportation, and is environmentally more sustainable in order to promote the development of complete communities; and
- Section79(8): To support transit and active transportation for everyday activities.

The proposed parking reductions conforms to the Halton Region Official Plan as shown through the policies above, which support active transportation and public transit use for future residents. The area surrounding the subject site has many car-mode alternatives for residents to travel and commute and should be considered acceptable.

City of Burlington Official Plan 2020

The City of Burlington Official Plan 2020 is a municipal policy document which sets out the framework for long-term growth and land use development within the City of Burlington. As the City of Burlington continues to grow focus on development has shifted from away from greenfield communities to densification of specific areas which focuses on making efficient use of existing and or planned infrastructure. The City of Burlington vision is therefore to facilitate development which will help create an ever-evolving city that focuses on sustainability, resiliency, and complete communities. The framework for realizing this vison follows four strategic directions for 2031 planning horizons which includes a city that moves, a city that grows, a healthy and green city, and an engaging city.

In terms of transportation the City of Burlington Official Plan has provided some of the following framework and objectives to support the municipality's four strategic directions and the overall vision:

- **Section 1.4.2(a):** Co-ordinates land use and infrastructure strategies to achieve complete, diverse, adaptable and sustainable communities that are attractive and livable;
- **Section 1.4.3(a):** Integrates and prioritizes land use planning and transportation decision making to provide a range of multi-modal and sustainable transportation choices connecting people, goods and places;
- **Section 1.4.4(f):** Promotes development measures and patterns to achieve a low carbon, energy secure and climate resilient community, protect life and property from natural hazards, and achieve sustainable community and building design;
- **Section 1.4.4(g):** Promotes health, safety and social well-being in the community through equitable access to a wide range of choices in housing, jobs, transportation, health care and recreation facilities, parks, green spaces and other public spaces and facilities, and amenities for all ages and abilities; and;
- **Section 2.4.1(g):** Promotes health, safety and social well-being in the community through equitable access to a wide range of choices in housing, jobs, transportation, health care and recreation facilities, parks, green spaces and other public spaces and facilities, and amenities for all ages and abilities; and
- **Section79(8):** To support transit and active transportation for everyday activities.

The proposed parking reductions conforms to the City of Burlington Official Plan as noted in the above policies by ensuring that the development adheres to the vision of complete communities. The area surrounding the subject site has convenient access to active transportation by way of cycling facilities and the pedestrian network, with a number of services, amenities, retail, employment, and recreational opportunities within walking distance, and public transit use for future residents that facilitates local and regional connections. The area surrounding the subject site has many car-mode alternatives for residents to travel and commute and should be considered acceptable.

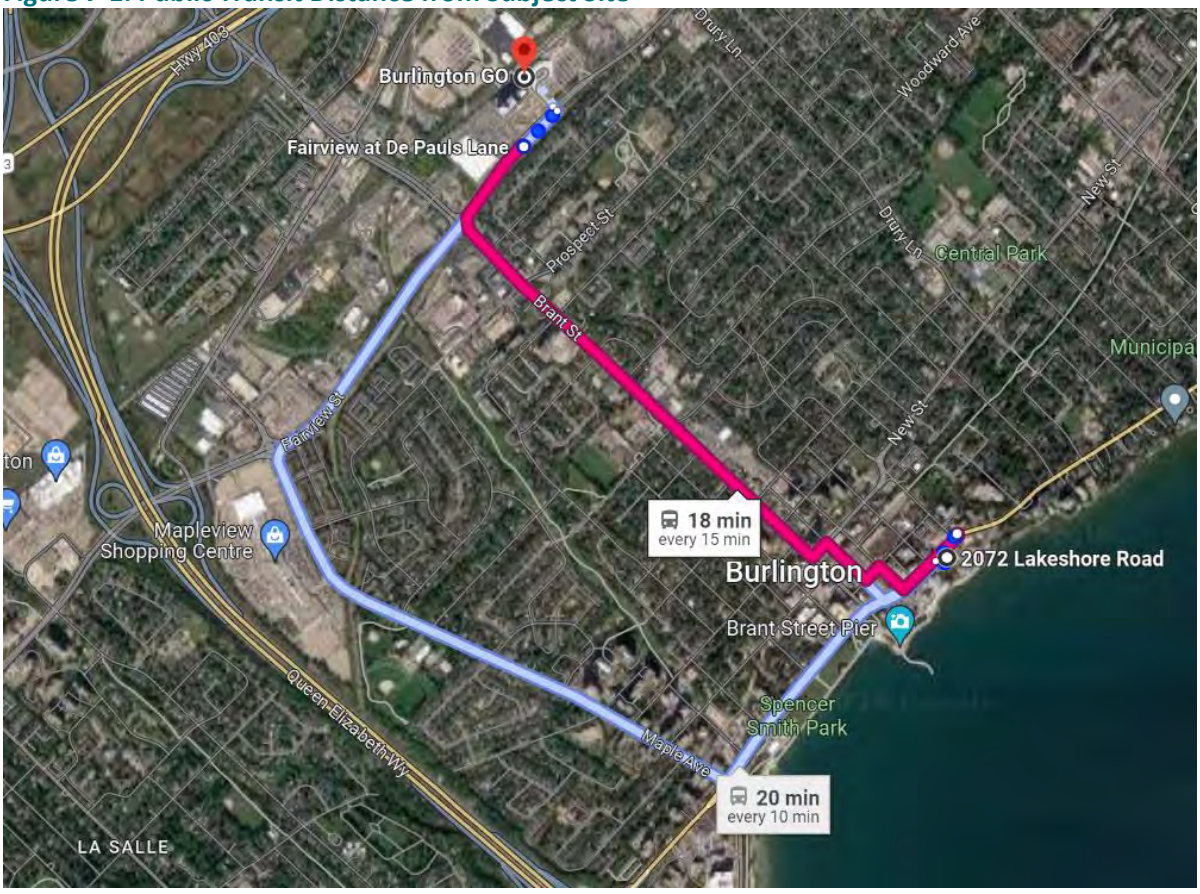
7.4.2 Public Transit and Active Transportation Context

Transit Context

As noted in **Section 2,** the proposed development is in an area that has access to several public transit routes operated by the City of Burlington Transit. The site is within walking distance (between a 1-to-5-minute walk) of many Burlington Transit route options along Lakeshore Road, James Street and John Street, which also provide direct connections to both the Burlington GO and Appleby GO Station's where there are both regional bus and train service connections.

Access to the Burlington GO Station using the existing public transit service accounts for an approximate 16-20-minute bus ride as shown in **Figure 7-1**. The Burlington Bus Terminal in downtown Burlington is also within a 5-minute walking distance of the subject site and has the ability of providing future residents and visitors access to the broader public transit network, which includes connections to regional GO Transit at Burlington and Appleby GO Stations. Bus service to Hamilton is also available at the Burlington Bus Terminal via the Hamilton Street Rail (HSR) bus 11 route.

Figure 7-1: Public Transit Distance from Subject Site



Source: Google Maps, accessed April 2024

Active Transportation Context

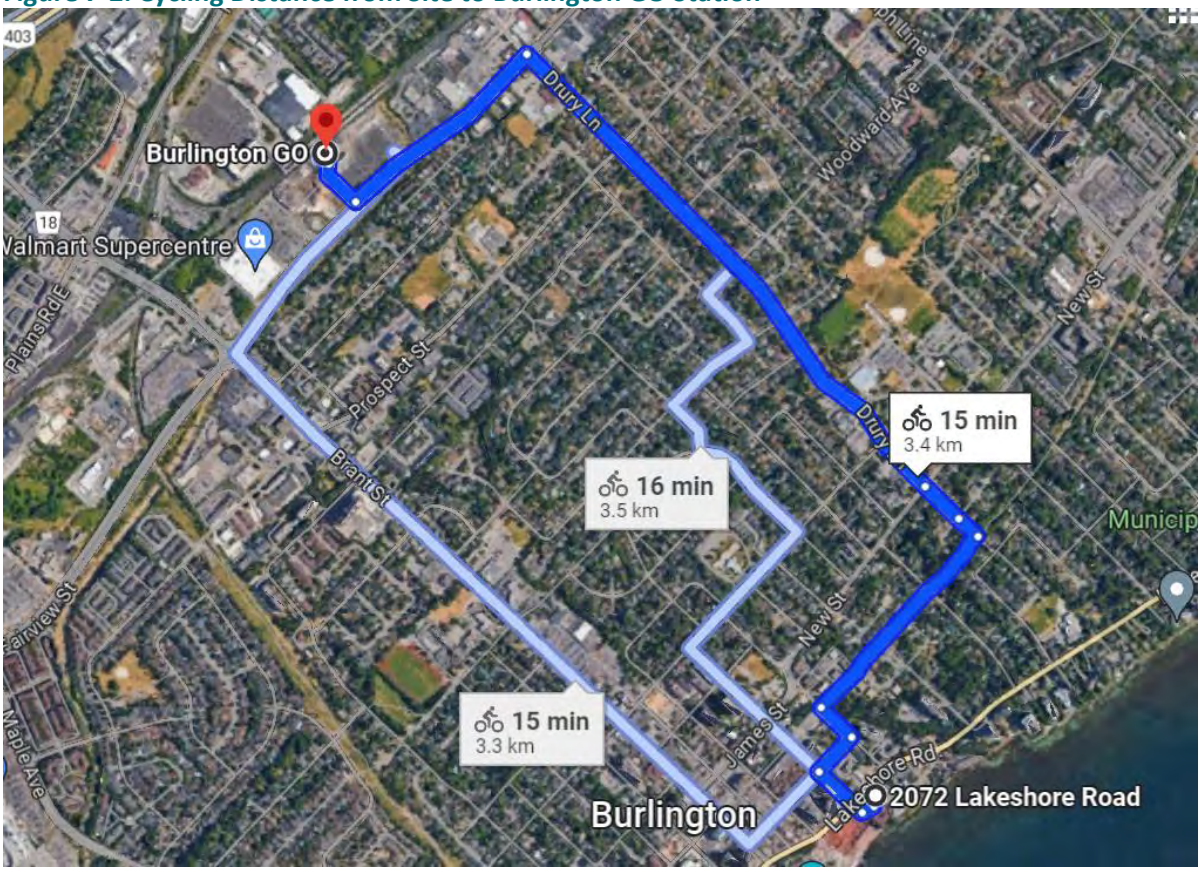
Active transportation, which includes walking and biking, is also available to the site and offers future residents and visitors an alternative to car use. The sidewalk network surrounding the area is well built-up with designated crosswalks at all signalized and unsignalized intersections. These features will allow site users to safely access the nearby amenities within a 10-minute walk. The WalkScore™ for the site,

used to measure a site's accessibility to nearby amenities using the existing sidewalk network, showed a score of 93/100 which indicates the site is accessible by foot.

Regarding biking to/from the site, the study area's BikeScore™ of 75/100 further demonstrates that the site is more than capable of being accessed using non-car modes. The area as noted in **Section 2.3** is located within close proximity to dedicated cycling infrastructure and facilities. There are several nearby shared cycling routes along the adjacent roadways as well as bike lanes near the site including along Lakeshore Road, Brant Avenue, and New Street.

The site also has access to multi-use trails include the Waterfront Trail, the north-south trail located north of Ontario Street, and the east-west trail located east of Brant Street. Cycling to/from the site to higher order transit is also convenient with trips to Burlington GO Station taking approximately 15-minutes.

Figure 7-2: Cycling Distance from Site to Burlington GO Station



Source: Google Maps accessed April 2024

Given the existing use of transit and active transportation to the site, and the site's location in a transit-oriented area, the reduced parking supply should be considered appropriate.

7.4.3 Historical Vehicle Ownership Data

In support of the proposed reduced parking supply, a review of historical vehicle ownership for apartment households was reviewed using Transportation Tomorrow Survey (TTS) data for zones 4057, 4059, and 4060 (Downtown Burlington). The data looked at households with 0 or more vehicles for the years 2006, 2011, and 2016, which also corresponds to the national census years. The vehicle ownership trends across this period are summarized in **Table 7-4**. Details of the TTS data are provided in **Appendix G.**

Table 7-4: Historical Vehicle Ownership – Downtown Burlington

Number of Household Cars	2006 TTS Data	2011 TTS Data	2016 TTS Data
	Percentage (%) of cars per apartment households		
0 Cars	17%	18%	11%
1 Cars	63%	61%	67%
2 Cars	19%	20%	20%
+3 Cars	1%	1%	2%
Total	**100%**	**100%**	**100%**

The results from the historical data show that the number of apartment households that choose not to own a car increased from 17% in 2006 to 18% in 2011, while there was a decrease in the percentage of car-less households in 2016 (11% of apartment households). This data reveals that, during a period where car travel was commonplace and municipal and regional planning policies were not as robust in terms of active transportation and public transit objectives, households were opting out of car ownership. Nearly one fifth of apartment households in downtown Burlington did not own a vehicle in the 2006-2011 period.

Contradictory, the number of car-less households decreased in 2016 despite trends in planning policy to support increased development in walkable and transit-accessible areas and the development of "complete communities" where car ownership is not necessary, as well as investments in local and regional transit service by local, provincial, and federal governments and agencies.

Notably, the current zoning by-law requirements for parking, even within the Downtown Old Lakeshore Road Zone (DLZ-A) designation where the subject site is located, require more than 1 vehicle parking space to be provided per residential unit in apartment dwellings, which further enforces household behaviour towards owning a vehicle regardless of the area's walkability and transit accessibility.

The proposed reduced parking supply aligns with the past trends in vehicle ownership, which indicates that apartment households located downtown can live without owning a personal vehicle. This aligns with the goals of the proposed development, which seeks to provide future residents with the choice to live a car-free lifestyle by providing vehicle parking a rate below 1 space per unit.

7.4.4 Off & On-Street Parking Facilities

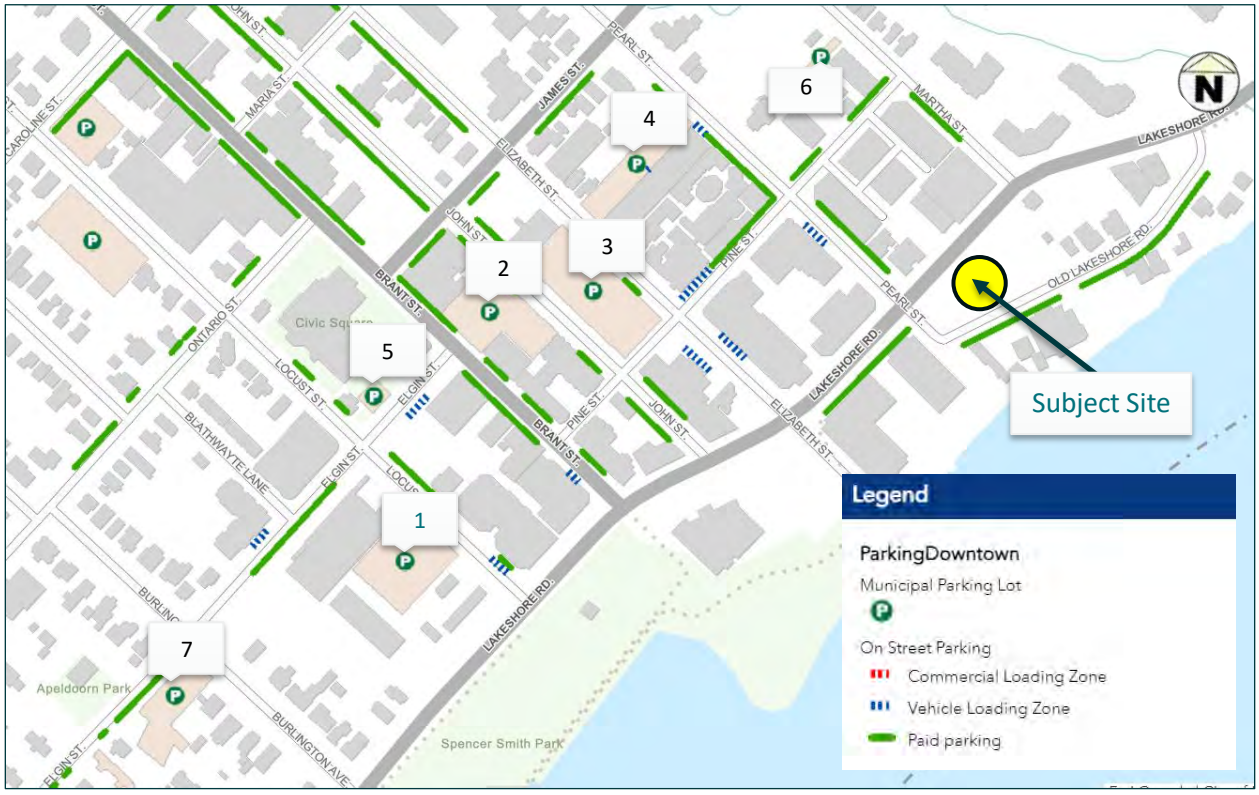
With the development proposing a reduced parking supply of 0.98 spaces per unit a review of the available off and on-street parking facilities was conducted to determine if visitors/retail site users accessing the site via car transportation would have ample opportunities to park. The following off-street parking facilities shown in **Table 7-5** and **Figure 7-3** are within a 10-minute walking distance from the subject site.

Table 7-5: Off-Street Parking Facilities within 10-minute walk from Subject Site

#	Address	Walking Distance from Site	Number of Spaces	Operating hours
1.	Lot 414-414 Locust Street	7-minute walk	339 spaces (10 Accessible Spaces)	Rates: Monday to Friday: 9 am – 6pm Free: Saturday, Sunday, Holidays
2.	Lot 5- 391 Brant Street	7-minute walk	60 spaces (2 Accessible spaces)	Rates: Monday to Friday: 9 am – 6pm Free: Saturday, Sunday, Holidays
3.	Lot 4 – 421 John Street	6-minute walk	93 spaces (3 accessible spaces)	Rates: Monday to Friday: 9 am – 6pm Free: Monday to Friday after 6 pm, Saturday, Sunday, Holidays
4.	Lot 1 – 431 Elizabeth Street	5-minute walk	39 spaces (2 accessible spaces)	Rates: Monday to Friday: 9 am – 6pm Free: Monday to Friday after 6 pm, Saturday, Sunday, Holidays
5.	Lot 13-426 Brant Street	8-minute walk	15 spaces (2 accessible spaces)	Rates: Monday to Friday: 9 am – 6pm (3hr limit) Free: Monday to Friday after 6 pm, Saturday, Sunday, Holidays
6.	Lot 11 – 412 Martha Street	6-minute walk	11 spaces (1 accessible spaces)	Rates: Monthly rate Free: Monday to Friday after 6 pm, Saturday, Sunday, Holidays
7.	Lot 2 – 446 Burlington Avenue	10-minute walk	44 spaces (1 accessible)	Free: Monday to Friday after 6 pm, Saturday, Sunday, Holidays

As noted in **Table 7-5** there are many off-street parking facilities that can accommodate visitors and retail users access to the site. Most of the parking facilities observed offers free parking after 6pm on weekdays as well as free weekend and holiday parking. In conjunction with the observed off-street parking facilities there are many on-street parking facilities along Old Lakeshore Road, Lakeshore Road, Pine Street, James Street, John Street, Brant Street, Martha Street, Elgin Street, and Ontario Street within walking distance to the site as shown in **Figure 7-3**. These on-street facilities operate at 3hr limits between 9am -6pm on weekdays and offer online payment options through City's HONK mobile app.

Figure 7-3: Off & On-Street Parking facilities within 10-minute walk from Subject Site



Source: City of Burlington: Downton Municipal Parking accessed April 2024

7.4.5 Precedent Development Parking Review

To further support the residential parking reduction, a review of the parking supply of other approved developments with a similar site context within the City of Burlington was conduced. **Table 7-6** provides a comparison of characteristics between the approved precedent developments while the location of each site is provided in **Figure 7-4.**

Table 7-6: comparison of Characteristics Between Proxy Site and Subject Site

Category	2107 Old Lakeshore Road & 2119 Lakeshore Road	374 Martha Street	2069 Lakeshore Road	535-551 Brant Street	2072 Lakeshore Road (Subject Site)
Land Use	Mixed Use Residential Condominium (150 Units)	Mixed-Use Residential Apartment (192 Units)	Mixed-Use Residential Condominium (280 Units)	Mixed-Use Residential Condominium (248 Units)	Mixed-Use Residential Condominium (165 Units)
Neighbourhood Context	Local bus service as well as commercial, retail, & residential uses.	Local bus service as well as commercial, retail, & residential uses.	Local bus service as well as commercial, retail, & residential uses.	Local bus service as well as commercial, retail, & residential uses.	Local bus service as well as commercial, retail, & residential uses
Transit Context	**Walk Score: 90** **Bike Score: 70** **Transit Score:** 47 **Local Bus Routes**:	**Walk Score: 93** **Bike Score:75** **Transit Score:** 54 **Local Bus Routes**:	**Walk Score: 95** **Bike Score: 69** **Transit Score:** 40 **Local Bus Routes**:	**Walk Score: 97** **Bike Score:75** **Transit Score:** 51	**Walk Score: 97** **Bike Score:75** **Transit Score:** 48 **Local Bus Routes**:

Category	2107 Old Lakeshore Road & 2119 Lakeshore Road	374 Martha Street	2069 Lakeshore Road	535-551 Brant Street	2072 Lakeshore Road (Subject Site)
	3, 4, 10, 11, 50, 52 **GO Transit** GO Bus 12/B **GO Station** 3.0km from site	3, 4, 10, 11, 50, 52 **GO Transit** GO Bus 12/B **GO Station** 3.0km from site	3, 4, 10, 11, 50, 52 **GO Transit** GO Bus 12/B **GO Station** 2.8km from site	**Local Bus Routes**: 2, 4, 10, 50, 52 **GO Transit** GO Bus 12/B **GO Station** 1.8km from site	3, 4, 10, 11, 50, 52 **GO Transit** GO Bus 12/B **GO Station** 3.0km from site

Figure 7-4: Proxy Site Location - City of Burlington



Source: Google Earth Pro accessed November 2024

The sites on average were within approximately 2.6 km of GO Transit service and within walking distance (10-minutes or less) to local bus services respectively. A summary of the approved parking rates compared to the proposed development parking rate are noted in **Table 7-7**.

Table 7-7: Precedent Development Site Statistic Summary

Address	Unit Supply	Retail Supply	Proposed Parking Supply	Proposed Parking Rate	Development Status
2107 Old Lakeshore Road & 2119 Lakeshore Road	150 Units	599m^2	155 spaces	1.03 sp./unit (residential & visitor)	Approved
374 Martha Street	192 Units	327m^2	196 spaces (including 4 small car spaces)	0.92 sp./unit (residential & visitor)	Approved
2069 Lakeshore Road	280 Units	675m^2	291 spaces	1.04 sp./unit (residential & visitor)	Approved
535-551 Brant Street	248 Units	1,068m^2	253 spaces	1.03 sp./unit (residential & visitor)	Approved
			Average	**1.01 sp./unit**	-
			Weighted Average	**1.03 sp./unit**	-
Proposed Development	**165 Units**	**588 m^2**	**162 spaces**	**0.98 sp./unit**	-

As show in **Table 7-7,** the proposed parking rate, consisting of 0.98 residential spaces/unit is in line with approved developments in the City of Burlington which have a weighted average parking rate of 1.03 spaces per unit. The approved precedent developments parking rates further confirms that within the surrounding neighbourhoods' residents are embracing limited provisions of vehicle parking. The proposed development aligns with these developments by ensuring that future residents who choose to live at 2072 Lakeshore Road can rely upon transit (local bus transit and regional transit services) and walking/cycling as their primary means of transportation.

7.4.6 Parking Justification Summary

Planning Context

From a transportation planning context, the proposed development aligns with the vision and policy direction from a provincial, regional, and municipal level. The development seeks to reduce the number of parking spaces available, thereby encouraging future residents to utilize different travel choices, reducing the development's carbon emissions footprint, and is in an area has access to active and public transportation. The proposed TDM strategies, as will be discussed in **Section 7**, will further support this shift.

Public Transit and Active Transportation Context

The proposed development is located in an area that is accessible to the existing public and active transportation networks. Within a 5-minute walk from the site there are excellent sidewalk and cycling facilities, and public transit capable of providing future residents with non-car options to travel.

Using the existing cycling network and available public transit routes future residents are also able to access higher order transit. From a travel perspective the proposed reduced parking supply does not pose limitations on future residents' ability to travel throughout the city and regionally.

Historical Vehicle Ownership Data

A review of historical vehicle ownership data has shown that during the periods between 2006 and 2011, non-vehicle ownership increased from 17%-18% at a time when planning policy as it relates to active transportation and public transit objectives were not as robust as it is currently. This data included the Downtown Burlington TTS zone where the subject site is located. The proposed reduced parking supply reflects this return to historical non-car ownership as public transit and active transportation options have become improved and are more accessible, providing non car owning residents with alternative options to travel.

Off & On-Street Parking Facilities

A review of the off an on-street parking facilities within a 10-minute walk shows that visitors/retail site users who choose to travel using a car have access to publicly available parking facilities. The proposed development's parking reduction should not be an issue and should also be considered acceptable as the public parking facilities has the ability to accommodate additional site parking demand.

Precedent Developments

A review of precedent developments near the subject site reveals that people are choosing to live in developments that are providing vehicle parking below the required By-law parking rates while at the same time choosing to live in developments that have access to local and regional transit and an excellent active transportation network. The proposed parking rate of 0.98 spaces per unit aligns with the weighted average parking rate of 1.03 spaces per unit and should be considered acceptable.

8 TRANSPORTATION DEMAND MANAGEMENT

The purpose of Transportation Demand Management (TDM) strategies is to promote the use of sustainable modes of transportation, thereby reducing reliance on private vehicles during weekday peak periods. This is done by using policies, programs, services, incentives, and small-scale infrastructure.

TDM strategies are an important part of both the Region of Halton's Transportation Master Plan and the City of Burlington's Integrated Mobility Plan which aims at increasing mode share use for transit, walking, cycling, and carpooling. Implementing TDM tools and techniques within the proposed development will ensure that individuals accessing the site are aware of the travel options available to them, understand how to use these options, and can help them maximize the use of new or existing sidewalks, trails, bike lanes, rapid bus transit lines, and commuter rail systems.

The sections below will detail strategies that can be incorporated into the proposed development and are ways the development can promote the use of active and public transportation while limiting car travel for commutes and errands. The proposed TDM strategies will further support the proposed development in providing a reduced parking supply and encouraging car-free households.

8.1 PEDESTRIAN-BASED STRATEGIES

Pedestrian Pathways and Landscaping/Public Realm Improvements

The proposed development will provide a permeable pedestrian network that conveniently links each building lobby to external public sidewalks and internal amenities such as proposed park space, community facilities, and retail spaces. This infrastructure will be coupled with an attractive public realm and landscaping to create a comfortable and desirable space for walking through the site to both internal and external destinations.

Mixed Land Uses

The site will include the provision of a significant retail presence within the development, providing a range of amenities and services that future residents can access without leaving the site. Overall, the proposed development will support an active frontage along Lakeshore Road, Pearl Street, and Old Lakeshore Road and will improve overall walkability through public realm improvements and the provision of mixed-uses to the area.

Building Entrances Oriented the Street with Direct Connections to Pedestrian Pathways

The proposed pedestrian entrances fronting onto Lakeshore Road and Old Lakeshore Road will connect to the sidewalks along all roadways in the study area and will also provide connections to transit service and cycling routes for transit users and cyclists. The pedestrian realm and landscaping will provide an overall comfortable and convenient pedestrian environment.

8.2 CYCLING-BASED STRATEGIES

Bicycle Parking Facilities and Amenities

In order to leverage access to the existing cycling network, it is recommended that the proposed development provide an array of end-of-trip cycling facilities including short and long-term bicycle parking to serve the needs of future residents, visitors, and retail customers. The proposed bicycle parking supply should exceed bicycle parking requirements outlined in the City of Burlington By-law 2020, which is being met and exceeded.

In addition, bicycle repair facilities should be located within the underground bicycle storage areas and on the ground floor level to ensure that all residents and visitors can easily undertake basic repairs and maintenance. A bicycle repair station is currently proposed within the bicycle parking room. Standard repair tools and a bike stand will be provided at each facility. These facilities will help eliminate one of the major barriers to cycling adoption that discourages users as each building will be well equipped to handle the daily needs of cyclists.

8.3 TRANSIT-BASED STRATEGIES

Pre-Loaded PRESTO Cards

To encourage future residents to use public transportation, it is recommended that pre-loaded PRESTO cards be provided for each residential unit upon occupancy. This measure would work in tandem with the recommended enhancements to the surface transit routes accessible to the subject site by the City. The cost per PRESTO card can be determined at subsequent development submissions in consultation with the City.

Transit Information Packages

Information packages have been recommended to be provided to future residents outlining available transit services in the area, including route map and schedule timetables.

Transit Mobile App

In addition to the Pre-Loaded PRESTO Cards, it is recommended that transit mobile apps be available to future residents. Transit mobile apps are an effective way of providing residents with real time information on the available bus routes near the site as well as allows costumers to track certain buses to notifying costumers on the next available bus, and or potential delays.

8.4 PARKING AND TRAVEL-BASED STRATEGIES

Unbundled Parking

Residential parking will be unbundled from the cost of purchasing/renting a unit, thereby ensuring that the cost of vehicle ownership is externalized and born by each resident who chooses to maintain a personal vehicle. This approach will help rationalize parking demand and limit vehicle ownership to residents who need a vehicle to accommodate daily or frequent travel patterns that can't be readily taken using transit or other travel alternatives.

Minimal Parking On-Site

As discussed in **Section7.1**, the parking supply is a reduction from the minimum By-law 2020 requirements. This is also in line with the latest policy direction supported by the both the Region and the City towards reducing car mode dependency in favour of public transit and active transportation. Reducing parking residential requirements also supports the Region's and City's objective of supporting sustainability and reducing greenhouse gas emissions.

By providing minimal on-site parking, the proposed development is representative of a shift away from an auto-oriented site context towards one that supports active transportation at-grade and public transportation in the area. The nature of the proposed development will encourage pedestrian activity, including for individuals connecting to transit or travelling by bike to nearby facilities on-street or within the nearby trail system.

9 LOADING AND FUNCTIONAL DESIGN REVIEW

The City of Burlington Zoning By-law 2020 was reviewed to determine the loading requirements for the proposed development which have been summarized in **Table 9-1**.

Table 9-1: Summary of Loading Requirements and Proposed Supply

City of Burlington Zoning By-law 2020			Proposed Supply
# of Buildings	Minimum Rate	Required Loading Spaces	
1	1.0 space/Building	1	1

Based on the Zoning By-law 2020 minimum loading requirements, the proposed development is required to provide at least 1 loading space. The proposed development is proposing 1 loading space that is 7.5m high x 6.0m wide x 18m long, which satisfies this requirement. The functional design review for the proposed development can be found in **Appendix H.**

10 CONCLUSION

- The proposed development will replace the existing building with a 20-storey mixed-use building, consisting of 165 residential units and 583 m^2 of retail GFA. The proposed mixed-use development will consist of 162 parking spaces across seven (7) levels of underground parking. Vehicular access to the site is proposed via a full-movement access along Old Lakeshore Road. Loading entrance to the site is proposed via a right-in access along Lakeshore Road and a right-out access along Old Lakeshore Road.
- The subject site is well serviced by public and active transportation, with bus service within walking distance of the site providing connections to local destinations and higher order transit at Burlington GO Station and Appleby GO Station. The existing active transportation infrastructure is also accessible to future residents and visitors as well and the area is highly walkable and bikeable.
- With the conservative approach, the proposed development is anticipated to generate 86 new two-way vehicle trips (27 inbound, 59 outbound) during the weekday AM peak hour and 100 new two-way vehicle trips (60 inbound, 40 outbound) during the weekday PM peak hour.
- Under existing and future total 2028 conditions, the signalized and unsignalized intersections are operating with acceptable LOS and are within capacity.
- The proposed parking supply of 162 vehicle parking spaces is a reduction from By-law 2020 minimum requirements. Specifically, a parking rate of 0.98 spaces per residential unit is proposed. Given the latest planning policy and the site's favourable transit and active transportation context, as well as historical vehicle ownership data and approvals for neighbouring sites, the proposed supply is considered to be appropriate for the subject site.
- The proposed development will supply 101 bicycle parking spaces, which meets and exceeds the requirements.
- The proposed development is proposing 1 loading space that is 7.5m high x 6.0m wide x 18m long, which satisfies this requirement.
- A robust set of TDM measures is recommended for the subject site to facilitate a change in travel behaviour sought for the area and reduce single-occupant vehicle trips generated by the proposed development. Recommended measures include bicycle parking facilities, pedestrian connections, connections to active transportation facilities, and the promotion of multi-modal travel alternatives. Furthermore, the transit stops adjacent to the site will give future residents and visitors an opportunity to shift their preferred mode choice to transit.

APPENDIX A

Terms of Reference

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

November 15, 2023

Reference Number: 23356/210

Smeeta Adiga, City of Burlington
Transportation Planning Technologist
Transportation Services Department
426 Brant Street
Burlington ON
L7R 3Z6

To: Ms. Adiga,

RE: Terms of Reference
Transportation Impact Study for Proposed Mixed-Use Development
2072 Old Lakeshore Road, City of Burlington

LEA Consulting Ltd. would like to confirm the following work plan for a Transportation Impact Study (TIS) for the proposed mixed-use development at 2072 Old Lakeshore Road in the City of Burlington. Based on the preliminary site plan, the existing commercial plaza is to be replaced by the proposed development consisting of a high-rise mixed-use building with 279 residential units, about 369 m^2 commercial retail GFA, and 209 residential parking spaces provided in underground levels. **Figure 1** below illustrates the subject site location.

Figure 1: Subject Site



Source: Google Maps (November 2023)

The TIS will be conducted following the *Halton Region Transportation Impact Study Guidelines*. The following outlines the proposed Terms of Reference for the TIS.

Study Area & Traffic Data

LEA will review the existing conditions of the surrounding area, including the existing road network (lane configuration and turning restrictions), pedestrian and cycling network, and transit network. The proposed study area includes the following intersections:

- Lakeshore Road and Pearl Street (Signalized);
- Lakeshore Road and Martha Street (Unsignalized);
- Old Lakeshore Road and Lakeshore Road (Unsignalized);
- Lakeshore Road and Site Access (Unsignalized); and
- Old Lakeshore Road and Site Access (Unsignalized).

LEA proposes to survey the intersections during the weekday AM and PM peak periods.

Traffic Assessment and Study Horizon Year

The TIS will assess traffic operations during weekday AM and PM peak hour for the study area intersections and conducting traffic capacity analysis using Highway Capacity Manual (HCM 6th edition) methods with the aid of Synchro 11 Software. A five (5) year horizon period to the year 2028 will be assessed as part of the study.

Background Traffic

General Corridor Growth Rate – Please provide the general corridor growth rate that would be applicable to this study, in particular along Lakeshore Road.

Road Network Improvements – LEA has not identified any road network improvements planned for the study area within the 2028 horizon. It is requested that City staff provide information should there be any planned infrastructure changes.

Background Development Traffic – Upon initial review of the City of Burlington Current Development Projects database, six background developments in the study area was identified as summarized in **Table 1.**

Table 1: Identified Background Developments in the Study Area

#	Address of Development	Description	Application Status
1	2020 Lakeshore Road	35-storey and 30-storey mixed-use buildings with 5-storey podiums (557 residential units, 122 hotel suites, 4,455m^2 commercial GFA, and 4,348m^2 office GFA)	Under OLT Appeal
2	2069-2079 Lakeshore Road 383-385 Pearl Street	29-storey mixed-use building (291 residential units, 482.1m^2 ground floor commercial GFA)	Approved by OLT
3	2093, 2097, 2101 Old Lakeshore Road 2096, 2100 Lakeshore Road	27-storey mixed-use building (310 residential units, 707.1m^2 ground floor commercial GFA)	Approved by OLT
4	2107 Old Lakeshore Road 2119 Lakeshore Road	27-storey mixed-use building (150 residential units, 598m^2 ground floor commercial GFA)	Approved by OLT
5	374 Martha Street	26-storey condominium building (240 residential units, 423m^2 commercial GFA)	Approved by LPAT
6	407 Martha Street	11-storey residential building (130 residential units)	Under OLT Appeal

It is requested that City staff identify and provide traffic studies for any additional developments which should be included in the TIS analysis.

Trip Generation, Distribution and Assignment

The trip generation of the proposed development will be based on site trips calculated from the 11th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual or historical proxy trip rates applied at similar developments in the vicinity of the study area during the weekday AM and PM peak periods.

The general trip distribution utilized will be based on a review of the latest 2016 Transportation Tomorrow Survey (TTS) data in the vicinity of the subject site. Trip assignment will be revised accordingly to reflect the configuration of the site access, turning restrictions and logical routings.

Future Traffic Scenarios

Future background and future total analysis for the intersections within the study area will be over the horizon year of 2028.

Parking & Loading

The City of Burlington Zoning By-law 2020 will be reviewed for parking and loading requirements. If a parking reduction is proposed, appropriate analyses and justification will be provided to demonstrate the adequacy of the proposed supply.

Sustainable Building and Development

Under the proposed land uses, the proposed development is subject to the City of Burlington Sustainable Building and Development Guidelines. The Guidelines will be reviewed to identify applicable requirements for the subject site and demonstrate the appropriate implementation of these measures.

Transportation Demand Management

A Transportation Demand Management (TDM) plan will be provided to recommend measures that will aid in reducing single occupancy vehicle trips and increasing the mode share of alternative modes of transportation.

Site Plan Review

A site plan review will be undertaken to ensure the vehicular movements can be accommodated at the proposed loading bay, parking lots, drive aisles, garage ramps, etc.

Should you have any comments with our assumptions or have any concerns, please do not hesitate to contact the undersigned.

Yours truly,

LEA CONSULTING LTD.



Andy Bilawejian, B.Eng., EIT

Project Coordinator, Transportation

Andy Bilawejian

From: Adiga, Smeeta <Smeeta.Adiga@burlington.ca>
Sent: November 27, 2023 12:44 PM
To: Andy Bilawejian
Subject: FW: 2072 Old lakeshore Road - Terms of Reference
Attachments: 23356 - 2072 Old Lakeshore Rd TIS Terms of Reference.pdf

External Sender

Hi Andy,

Thank you for providing the Terms- of- Reference (TOR) for 2072 Old Lakeshore Road, Burlington. Please ensure that any comments from the Region are taken into consideration.

The submitted TOR is acceptable. Please ensure that the approved Terms-of-Reference are included as appendices within the Transportation Impact Study (TIS).

Here are the relevant City contact and information for your reference:

a) For inquiries related to traffic signals, please reach out to Jack Ready at Jack.Ready@burlington.ca
b) For inquiries related to turning movement counts, please reach out to Florin Patrau at Florin.Patrau@burlington.ca
c) For inquiries related to transit, please reach out to Tony Zhuang at Tony.zhuang@burlington.ca
d) Background development information that is to be included in the study is found on the City website. https://www.burlington.ca/Modules/News/en/Development
e) Please incorporate a projected future growth rate of 1% for background traffic within the study, considering a 5-year horizon.

Please refer to Halton's Traffic Impact Study Guidelines. https://www.halton.ca/Repository/Transportation-Impact-Study-Guidelines

Thanks,

Smeeta Adiga
Transportation Planning Technologist
Transportation Services Department

P. 905 335 7600, ext 7691 | E. smeeta.adiga@burlington.ca
Address: 426 Brant Street P.O. Box 5013, Burlington, Ontario, L7R 3Z6

City of Burlington | www.burlington.ca

Our working hours may be different. You are not obligated to reply outside of your typical working hours.

City of Burlington | www.burlington.ca

From: Andy Bilawejian <ABilawejian@lea.ca>
Sent: Wednesday, November 15, 2023 11:17 AM
To: Adiga, Smeeta <Smeeta.Adiga@burlington.ca>
Subject: 2072 Old lakeshore Road - Terms of Reference

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning Smeeta,

It was a pleasure e-meeting you to discuss this project a few weeks ago!

As per the Pre-Con form, please see attached Terms of Reference for the 2072 Old Lakeshore Road project. Please let me know if you have any questions or comments!

Thanks,

Andy Bilawejian, B.Eng.
Project Coordinator (EIT)

LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor | Markham, ON | L3R 9R9
T: 905 470 0015 ext. 378 M: 416 358 2348 E: ABilawejian@lea.ca W: www.LEA.ca



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APPENDIX B

TMC Data & Signal Timing Plan

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

Intersection : Martha Street & Lakeshore Road
Survey Date : November 30, 2023
Project No. : 23356
Count ID : 23111

Turning Movement Count - Martha Street & Lakeshore Road

	Martha Street Southbound						Lakeshore Road Westbound						2096-2100 Lakeshore Road Driveway Northbound						Lakeshore Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	0	0	2	1	2	0	0	45	1	0	46	0	0	0	0	0	0	0	4	123	0	0	127	175
7:45	0	0	0	2	0	2	0	0	64	3	0	67	0	0	0	0	0	0	0	0	115	0	0	115	184
8:00	0	1	0	2	0	3	0	0	96	0	0	96	0	0	0	0	0	0	0	3	118	0	0	121	220
8:15	0	1	0	1	0	2	0	0	82	1	0	83	0	0	0	0	0	0	0	3	140	0	0	143	228
Hourly Total	0	2	0	7	1	9	0	0	287	5	0	292	0	0	0	0	0	0	0	10	496	0	0	506	807
8:30	0	3	0	1	1	4	0	0	97	3	0	100	0	0	0	0	0	0	0	2	141	0	0	143	247
8:45	0	1	0	2	0	3	0	0	101	6	0	107	0	0	0	0	0	0	0	8	124	0	0	132	242
9:00	0	0	0	2	5	2	0	0	91	3	0	94	0	1	1	0	0	2	0	4	108	0	0	112	210
9:15	0	1	0	1	3	2	0	0	85	4	0	89	0	0	1	0	0	1	0	6	121	0	0	127	219
Hourly Total	0	5	0	6	9	11	0	0	374	16	0	390	0	1	2	0	0	3	0	20	494	0	0	514	918
* Break *																									
16:00	0	0	0	5	0	5	0	0	152	10	1	162	0	0	0	0	2	0	0	7	117	0	0	124	291
16:15	0	2	0	3	0	5	0	0	69	9	0	78	0	1	0	0	1	1	0	6	118	0	0	124	208
16:30	0	2	0	4	1	6	0	0	89	21	0	110	0	0	0	0	1	0	0	9	114	0	1	123	239
16:45	0	1	0	2	1	3	0	0	98	17	0	115	0	0	0	0	2	0	0	10	129	0	1	139	257
Hourly Total	0	5	0	14	2	19	0	0	408	57	1	465	0	1	0	0	6	1	0	32	478	0	2	510	995
17:00	0	1	0	1	0	2	0	0	138	16	0	154	0	0	0	0	6	0	0	6	129	0	4	135	291
17:15	0	2	0	3	0	5	0	0	101	13	0	114	0	0	0	0	0	0	0	8	103	0	0	111	230
17:30	0	0	0	2	0	2	0	0	98	11	0	109	0	0	0	0	0	0	0	5	107	0	0	112	223
17:45	0	0	0	1	0	1	0	0	204	12	0	216	0	0	0	0	1	0	0	8	115	0	2	123	340
Hourly Total	0	3	0	7	0	10	0	0	541	52	0	593	0	0	0	0	7	0	0	27	454	0	6	481	1084
Grand Total	0	15	0	34	12	49	0	0	1610	130	1	1740	0	2	2	0	13	4	0	89	1923	0	8	2012	3805
Approach %	0.0%	30.6%	0.0%	69.4%	-	-	0.0%	0.0%	92.5%	7.5%	-	-	0.0%	50.0%	50.0%	0.0%	-	-	0.0%	4.4%	95.6%	0.0%	-	-	-
Total %	0.0%	0.4%	0.0%	0.9%	-	1.3%	0.0%	0.0%	42.3%	3.4%	-	45.7%	0.0%	0.1%	0.1%	0.0%	-	0.1%	0.0%	2.3%	50.5%	0.0%	-	52.9%	-
Lights	0	13	0	31	-	44	0	0	1568	125	-	1693	0	2	0	0	-	2	0	82	1876	0	-	1958	3697
% Lights	-	86.7%	-	91.2%	-	89.8%	-	-	97.4%	96.2%	-	97.3%	-	100.0%	0.0%	-	-	50.0%	-	92.1%	97.6%	-	-	97.3%	97.2%
Buses	-	0	0	0	-	0	-	0	23	1	-	24	-	0	0	0	-	0	-	0	21	0	-	21	45
% Buses	-	0.0%	-	0.0%	-	0.0%	-	-	1.4%	0.8%	-	1.4%	-	0.0%	0.0%	-	-	0.0%	-	0.0%	1.1%	-	-	1.0%	1.2%
Trucks	-	2	0	2	-	4	-	0	17	4	-	21	-	0	2	0	-	2	-	0	21	0	-	21	48
% Trucks	-	13.3%	-	-	-	8.2%	-	-	1.1%	3.1%	-	1.2%	-	0.0%	100.0%	-	-	50.0%	-	0.0%	1.1%	-	-	1.0%	1.3%
Bicycles	-	-	-	-	0	0	-	-	-	-	1	1	-	-	-	-	0	0	-	-	-	-	3	3	4
Pedestrians	-	-	-	-	12	-	-	-	-	-	1	-	-	-	-	-	13	-	-	-	-	-	8	-	34

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

Intersection : Martha Street & Lakeshore Road
Survey Date : November 30, 2023
Project No. : 23356
Count ID : 23111

AM Peak Hour - Martha Street & Lakeshore Road

	Martha Street Southbound						Lakeshore Road Westbound						2096-2100 Lakeshore Road Driveway Northbound						Lakeshore Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:00	0	1	0	2	0	3	0	0	96	0	0	96	0	0	0	0	0	0	0	3	118	0	0	121	220
8:15	0	1	0	1	0	2	0	0	82	1	0	83	0	0	0	0	0	0	0	3	140	0	0	143	228
8:30	0	3	0	1	1	4	0	0	97	3	0	100	0	0	0	0	0	0	0	2	141	0	0	143	247
8:45	0	1	0	2	0	3	0	0	101	6	0	107	0	0	0	0	0	0	0	8	124	0	0	132	242
Hourly Total	0	6	0	6	1	12	0	0	376	10	0	386	0	0	0	0	0	0	0	16	523	0	0	539	937
Approach %	0.0%	50.0%	0.0%	50.0%	-	-	0.0%	0.0%	97.4%	2.6%	-	-	-	-	-	-	-	-	0.0%	3.0%	97.0%	0.0%	-	-	-
Total %	0.0%	0.6%	0.0%	0.6%	-	1.3%	0.0%	0.0%	40.1%	1.1%	-	41.2%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	1.7%	55.8%	0.0%	-	57.5%	-
PHF	0	0.5	0	0.75	-	0.75	0	0	0.93	0.42	-	0.9	0	0	0	0	-	0	0	0.5	0.93	0	-	0.94	0.95
Lights	0	5	0	5	-	10	0	0	365	9	-	374	0	0	0	0	-	0	0	14	505	0	-	519	903
% Lights	-	83.3%	-	83.3%	-	83.3%	-	-	97.1%	90.0%	-	96.9%	-	-	-	-	-	-	-	87.5%	96.6%	-	-	96.3%	96.4%
Buses	-	0	0	0	-	0	-	0	8	0	-	8	-	0	0	0	-	0	-	0	8	0	-	8	16
% Buses	-	0.0%	-	0.0%	-	0.0%	-	-	2.1%	0.0%	-	2.1%	-	-	-	-	-	-	-	0.0%	1.5%	-	-	1.5%	1.7%
Trucks	-	1	0	1	-	2	-	0	3	1	-	4	-	0	0	0	-	0	-	2	10	0	-	12	18
% Trucks	-	16.7%	-	16.7%	-	16.7%	-	-	0.8%	10.0%	-	1.0%	-	-	-	-	-	-	-	12.5%	1.9%	-	-	2.2%	1.9%
Bicycles	-	-	-	-	0	0	-	-	-	-	1	1	-	-	-	-	0	0	-	-	-	-	0	0	1
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	8	-	16

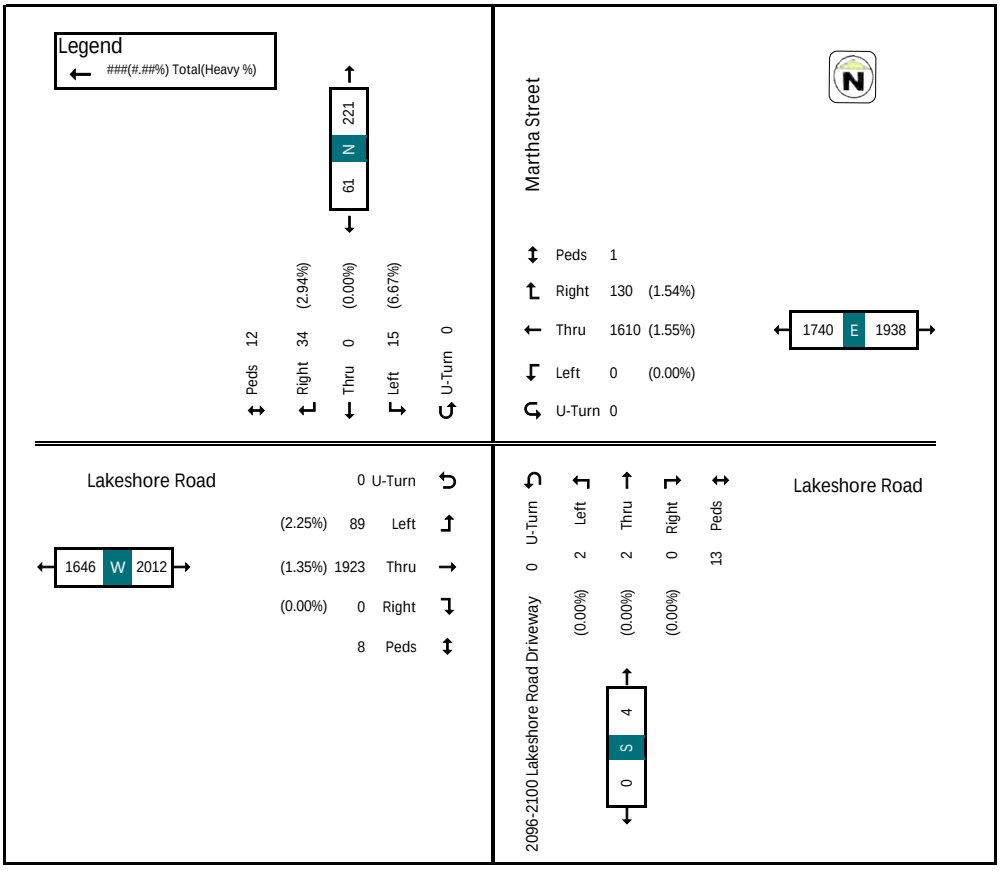
PM Peak Hour - Martha Street & Lakeshore Road

	Martha Street Southbound						Lakeshore Road Westbound						2096-2100 Lakeshore Road Driveway Northbound						Lakeshore Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
17:00	0	1	0	1	0	2	0	0	138	16	0	154	0	0	0	0	6	0	0	6	129	0	4	135	291
17:15	0	2	0	3	0	5	0	0	101	13	0	114	0	0	0	0	0	0	0	8	103	0	0	111	230
17:30	0	0	0	2	0	2	0	0	98	11	0	109	0	0	0	0	0	0	0	5	107	0	0	112	223
17:45	0	0	0	1	0	1	0	0	204	12	0	216	0	0	0	0	1	0	0	8	115	0	2	123	340
Hourly Total	0	3	0	7	0	10	0	0	541	52	0	593	0	0	0	0	7	0	0	27	454	0	6	481	1084
Approach %	0.0%	30.0%	0.0%	70.0%	-	-	0.0%	0.0%	91.2%	8.8%	-	-	-	-	-	-	-	-	0.0%	5.6%	94.4%	0.0%	-	-	-
Total %	0.0%	0.3%	0.0%	0.6%	-	0.9%	0.0%	0.0%	57.7%	4.8%	-	54.7%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	2.9%	48.5%	0.0%	-	44.4%	-
PHF	0	0.38	0	0.58	-	0.5	0	0	0.66	0.81	-	0.69	0	0	0	0	-	0	0	0.84	0.88	0	-	0.89	0.8
Lights	0	5	0	10	-	16	0	0	380	52	-	442	0	1	0	0	-	1	0	31	492	0	-	513	972
% Lights	-	200.0%	-	142.9%	-	160.0%	-	-	70.2%	119.2%	-	74.5%	-	-	-	-	-	-	-	114.8%	106.2%	-	-	106.7%	89.7%
Buses	-	0	0	0	-	0	-	0	7	1	-	8	-	0	0	0	-	0	-	0	5	0	-	5	13
% Buses	-	0.0%	-	0.0%	-	0.0%	-	-	1.3%	1.9%	-	1.3%	-	-	-	-	-	-	-	0.0%	1.1%	-	-	1.0%	1.2%
Trucks	-	0	0	0	-	0	-	0	7	0	-	7	-	0	0	0	-	0	-	0	3	0	-	3	10
% Trucks	-	0.0%	-	0.0%	-	0.0%	-	-	1.3%	0.0%	-	1.2%	-	-	-	-	-	-	-	0.0%	0.7%	-	-	0.6%	0.9%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	3	3	3
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	10	-	-	-	-	-	6	-	18

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

Intersection : Martha Street & Lakeshore Road
Survey Date : 2023-11-30
Project No. : 23356
Count ID : 23111

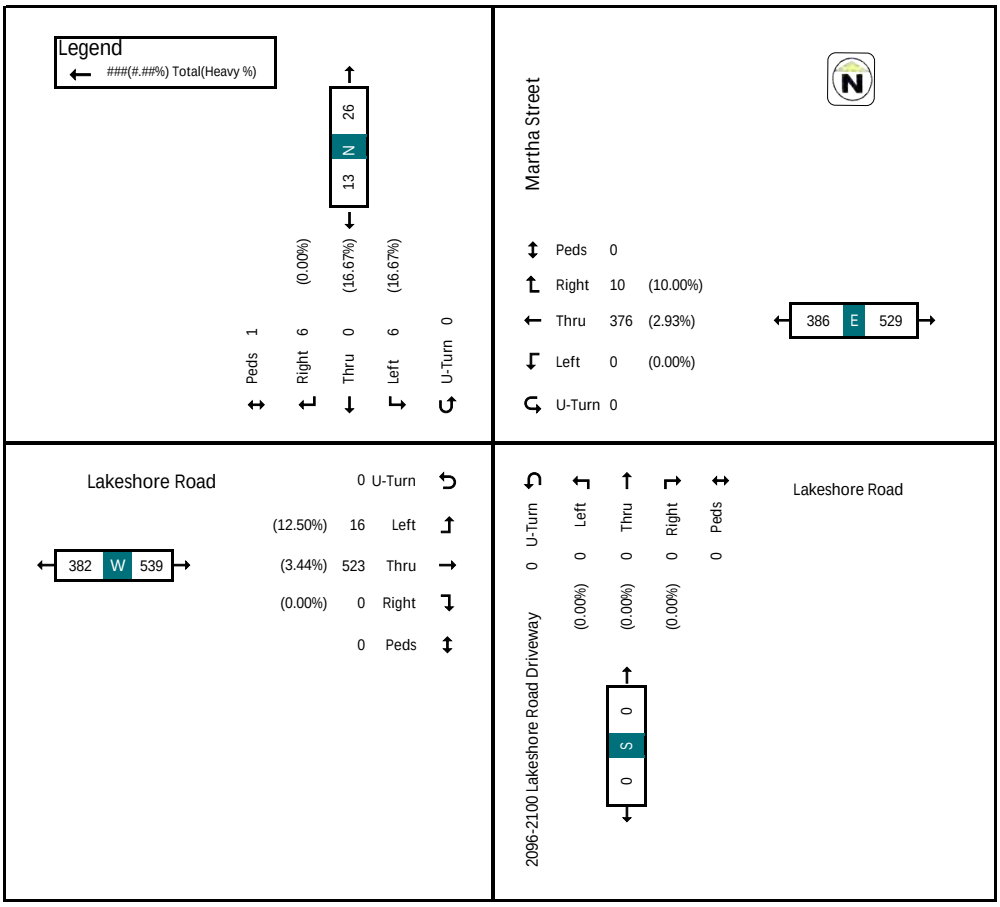
Turning Movement Count Plot - Total



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

Intersection : Martha Street & Lakeshore Road
Survey Date : November 30, 2023
Project No. : 23356
Surveyor(s) : 23111

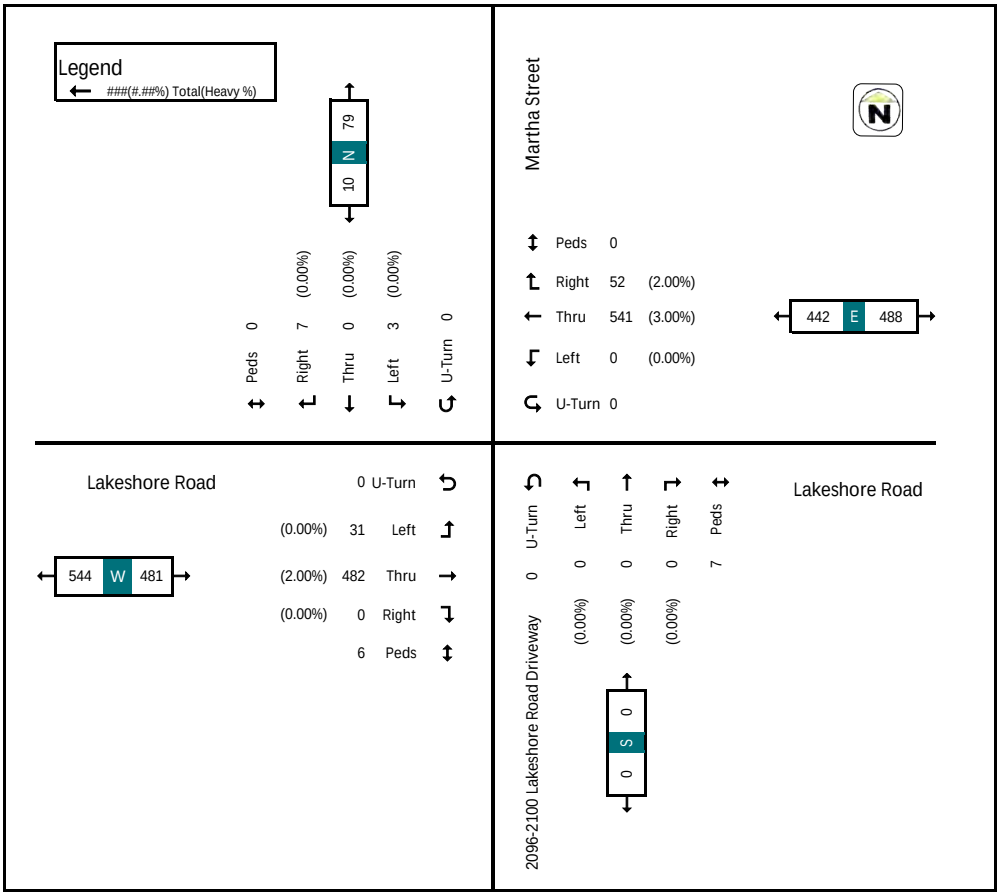
Turning Movement Count Plot - AM Peak Hour - 08:00-09:00



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

Intersection : Martha Street & Lakeshore Road
Survey Date : 2023-11-30
Project No. : 23356
Surveyor(s) : 23111

Turning Movement Count Plot - PM Peak Hour - 17:00-18:00



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

Intersection : Pearl Street & Lakeshore Road
Survey Date : November 30, 2023
Project No. : 23356
Count ID : 23112

Turning Movement Count - Pearl Street & Lakeshore Road

	Pearl Street Southbound						Lakeshore Road Westbound						Pearl Street Northbound						Lakeshore Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	1	1	2	0	4	0	0	47	0	0	47	0	7	0	0	0	7	0	5	121	4	0	130	188
7:45	0	1	2	7	0	10	0	0	64	2	0	66	0	15	2	0	0	17	0	10	110	17	0	137	230
8:00	0	1	1	5	1	7	0	0	93	3	0	96	0	1	0	0	0	1	0	13	121	3	0	137	241
8:15	0	2	0	7	0	9	0	1	76	4	0	81	0	0	0	0	0	0	0	15	141	2	0	158	248
Hourly Total	0	5	4	21	1	30	0	1	280	9	0	290	0	23	2	0	0	25	0	43	493	26	0	562	907
8:30	0	3	1	8	0	12	0	1	89	5	0	95	0	0	0	0	0	0	0	10	138	4	0	152	259
8:45	0	1	1	5	0	7	0	0	100	6	0	106	0	1	0	0	0	1	0	5	133	6	0	144	258
9:00	0	2	1	8	0	11	0	0	94	4	0	98	0	2	0	0	0	2	0	5	112	4	0	121	232
9:15	0	3	0	8	1	11	0	0	82	5	0	87	0	3	1	2	0	6	0	10	119	8	0	137	241
Hourly Total	0	9	3	29	1	41	0	1	365	20	0	386	0	6	1	2	0	9	0	30	502	22	0	554	990
* Break *																									
16:00	0	2	0	20	1	22	0	0	142	6	1	148	0	17	6	0	4	23	0	8	113	2	9	123	316
16:15	0	6	0	21	1	27	0	0	73	3	2	76	0	13	9	0	3	22	0	12	124	1	9	137	262
16:30	0	5	0	17	1	22	0	0	89	2	0	91	0	6	4	1	0	11	0	12	101	4	8	117	241
16:45	0	5	0	8	1	13	0	0	102	2	1	104	0	12	4	0	0	16	0	14	132	3	7	149	282
Hourly Total	0	18	0	66	4	84	0	0	406	13	4	419	0	48	23	1	7	72	0	46	470	10	33	526	1101
17:00	0	5	0	17	0	22	0	0	128	3	0	131	0	10	5	3	7	18	0	9	125	3	4	137	308
17:15	0	3	0	19	0	22	0	0	104	6	0	110	0	8	5	0	2	13	0	7	110	3	4	120	265
17:30	0	4	0	24	0	28	0	1	89	4	0	94	0	10	9	2	4	21	0	8	103	2	3	113	256
17:45	1	1	1	12	0	15	0	0	200	8	0	208	0	4	1	0	1	5	0	6	122	3	2	131	359
Hourly Total	1	13	1	72	0	87	0	1	521	21	0	543	0	32	20	5	14	57	0	30	460	11	13	501	1188
Grand Total	1	45	8	188	6	242	0	3	1572	63	4	1638	0	109	46	8	21	163	0	149	1925	69	46	2143	4186
Approach %	0.4%	18.6%	3.3%	77.7%	-	-	0.0%	0.2%	96.0%	3.8%	-	-	0.0%	66.9%	28.2%	4.9%	-	-	0.0%	7.0%	89.8%	3.2%	-	-	-
Total %	0.0%	1.1%	0.2%	4.5%	-	5.8%	0.0%	0.1%	37.6%	1.5%	-	39.1%	0.0%	2.6%	1.1%	0.2%	-	3.9%	0.0%	3.6%	46.0%	1.6%	-	51.2%	-
Lights	1	44	7	181	-	233	0	2	1530	62	-	1594	0	106	46	7	-	159	0	145	1873	67	-	2085	4071
% Lights	100.0%	97.8%	87.5%	96.3%	-	96.3%	-	66.7%	97.3%	98.4%	-	97.3%	-	97.2%	100.0%	87.5%	-	97.5%	-	97.3%	97.3%	97.1%	-	97.3%	97.3%
Buses	-	0	0	1	-	1	-	0	22	0	-	22	-	0	0	0	-	0	-	0	24	0	-	24	47
% Buses	-	0.0%	0.0%	0.5%	-	0.4%	-	0.0%	1.4%	0.0%	-	1.3%	-	0.0%	0.0%	0.0%	-	0.0%	-	0.0%	1.2%	0.0%	-	1.1%	1.1%
Trucks	-	1	1	6	-	8	-	1	20	1	-	22	-	3	0	1	-	4	-	4	28	2	-	34	68
% Trucks	-	2.2%	12.5%	3.2%	-	3.3%	-	33.3%	1.3%	1.6%	-	1.3%	-	2.8%	0.0%	12.5%	-	2.5%	-	2.7%	1.5%	2.9%	-	1.6%	1.6%
Bicycles	-	-	-	-	0	0	-	-	-	-	4	4	-	-	-	-	1	1	-	-	-	-	3	3	8
Pedestrians	-	-	-	-	6	-	-	-	-	-	4	-	-	-	-	-	21	-	-	-	-	-	46	-	77

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

Intersection : Pearl Street & Lakeshore Road
Survey Date : November 30, 2023
Project No. : 23356
Count ID : 23112

AM Peak Hour - Pearl Street & Lakeshore Road

	Pearl Street Southbound						Lakeshore Road Westbound						Pearl Street Northbound						Lakeshore Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:00	0	1	1	5	1	7	0	0	93	3	0	96	0	1	0	0	0	1	0	13	121	3	0	137	241
8:15	0	2	0	7	0	9	0	1	76	4	0	81	0	0	0	0	0	0	0	15	141	2	0	158	248
8:30	0	3	1	8	0	12	0	1	89	5	0	95	0	0	0	0	0	0	0	10	139	4	0	152	259
8:45	0	1	1	5	0	7	0	0	100	6	0	106	0	1	0	0	0	1	0	5	133	6	0	144	258
Hourly Total	0	7	3	25	1	35	0	2	358	18	0	378	0	2	0	0	0	2	0	43	533	15	0	591	1006
Approach %	0.0%	20.0%	8.6%	71.4%	-	-	0.0%	0.5%	94.7%	4.8%	-	-	0.0%	100.0%	0.0%	-	-	-	0.0%	7.3%	90.2%	2.5%	-	-	-
Total %	0.0%	0.7%	0.3%	2.5%	-	3.5%	0.0%	0.2%	35.6%	1.8%	-	37.6%	0.0%	0.2%	0.0%	0.0%	-	0.2%	0.0%	4.3%	53.0%	1.5%	-	58.7%	-
PHF	0	0.58	0.75	0.78	-	0.73	0	0.5	0.9	0.75	-	0.89	0	0.5	0	0	-	0.5	0	0.72	0.95	0.63	-	0.94	0.97
Lights	0	7	2	23	-	32	0	1	348	18	-	367	0	2	0	0	-	2	0	41	513	14	-	568	969
% Lights	-	100.0%	66.7%	92.0%	-	91.4%	-	50.0%	97.2%	100.0%	-	97.1%	-	100.0%	-	-	-	100.0%	-	95.3%	96.2%	93.3%	-	96.1%	96.3%
Buses	-	0	0	1	-	1	-	0	8	0	-	8	-	0	0	0	-	0	-	0	8	0	-	8	17
% Buses	-	0.0%	0.0%	4.0%	-	2.9%	-	0.0%	2.2%	0.0%	-	2.1%	-	0.0%	-	-	-	0.0%	-	0.0%	1.5%	0.0%	-	1.4%	1.7%
Trucks	-	0	1	1	-	2	-	1	2	0	-	3	-	0	0	0	-	0	-	2	12	1	-	15	20
% Trucks	-	0.0%	33.3%	4.0%	-	5.7%	-	50.0%	0.6%	0.0%	-	0.8%	-	0.0%	-	-	-	0.0%	-	4.7%	2.3%	6.7%	-	2.5%	2.0%
Bicycles	-	-	-	-	0	0	-	-	-	-	1	1	-	-	-	-	0	0	-	-	-	-	1	1	2
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	26	-	31

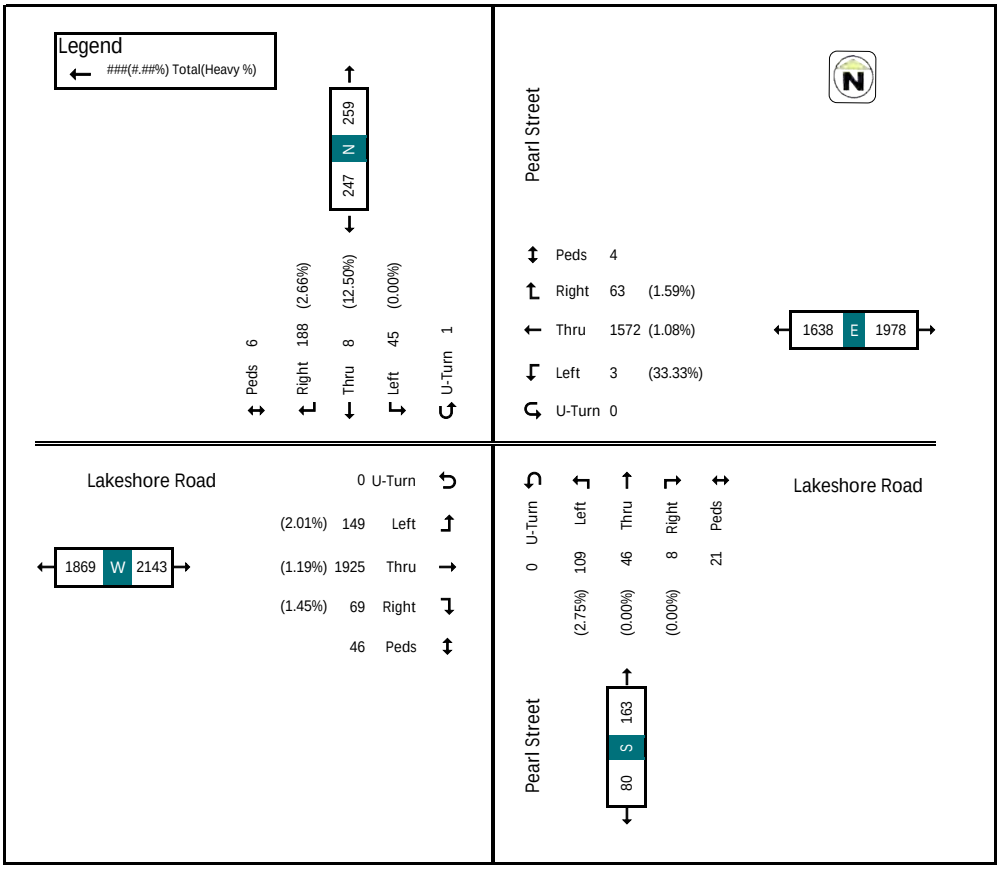
PM Peak Hour - Pearl Street & Lakeshore Road

	Pearl Street Southbound						Lakeshore Road Westbound						Pearl Street Northbound						Lakeshore Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
17:00	0	5	0	17	0	22	0	0	128	3	0	131	0	10	5	3	7	18	0	9	125	3	4	137	308
17:15	0	3	0	19	0	22	0	0	104	6	0	110	0	8	5	0	2	13	0	7	110	3	4	120	265
17:30	0	4	0	24	0	28	0	1	89	4	0	94	0	10	9	2	4	21	0	8	103	2	3	113	256
17:45	1	1	1	12	0	15	0	0	200	8	0	208	0	4	1	0	1	5	0	6	122	3	2	131	359
Hourly Total	1	13	1	72	0	87	0	1	521	21	0	543	0	32	20	5	14	57	0	30	460	11	13	501	1188
Approach %	1.1%	14.9%	1.1%	82.8%	-	-	0.0%	0.2%	95.9%	3.9%	-	-	0.0%	56.1%	35.1%	-	-	-	0.0%	6.0%	91.8%	2.2%	-	-	-
Total %	0.1%	1.1%	0.1%	6.1%	-	7.3%	0.0%	0.1%	51.8%	1.8%	-	45.7%	0.0%	3.2%	2.0%	0.5%	-	4.8%	0.0%	3.0%	45.7%	1.1%	-	42.2%	-
PHF	0.25	0.65	0.25	0.75	-	0.78	0	0.25	0.65	0.66	-	0.65	0	0.8	0.56	0.42	-	0.68	0	0.83	0.92	0.92	-	0.91	0.83
Lights	1	13	1	69	-	84	0	1	514	20	-	535	0	29	20	5	-	54	0	29	457	11	-	497	1170
% Lights	100.0%	100.0%	100.0%	95.8%	-	96.6%	-	100.0%	98.7%	95.2%	-	98.5%	-	90.6%	100.0%	100.0%	-	94.7%	-	96.7%	99.3%	100.0%	-	99.2%	98.5%
Buses	-	0	0	0	-	0	-	0	2	0	-	2	-	3	0	0	-	3	-	0	3	0	-	3	8
% Buses	#VALUE!	0.0%	0.0%	0.0%	-	0.0%	-	0.0%	0.4%	0.0%	-	0.4%	-	9.4%	0.0%	0.0%	-	5.3%	-	0.0%	0.7%	0.0%	-	0.6%	0.7%
Trucks	-	0	0	3	-	3	-	0	5	1	-	6	-	3	0	0	-	3	-	1	0	0	-	1	13
% Trucks	#VALUE!	0.0%	0.0%	4.2%	-	3.4%	-	0.0%	1.0%	4.8%	-	1.1%	-	9.4%	0.0%	0.0%	-	5.3%	-	3.3%	0.0%	0.0%	-	0.2%	1.1%
Bicycles	-	-	-	-	0	0	-	-	-	-	1	1	-	-	-	-	0	0	-	-	-	-	2	2	3
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	14	-	-	-	-	-	13	-	27

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

Intersection : Pearl Street & Lakeshore Road
Survey Date : 2023-11-30
Project No. : 23356
Count ID : 23112

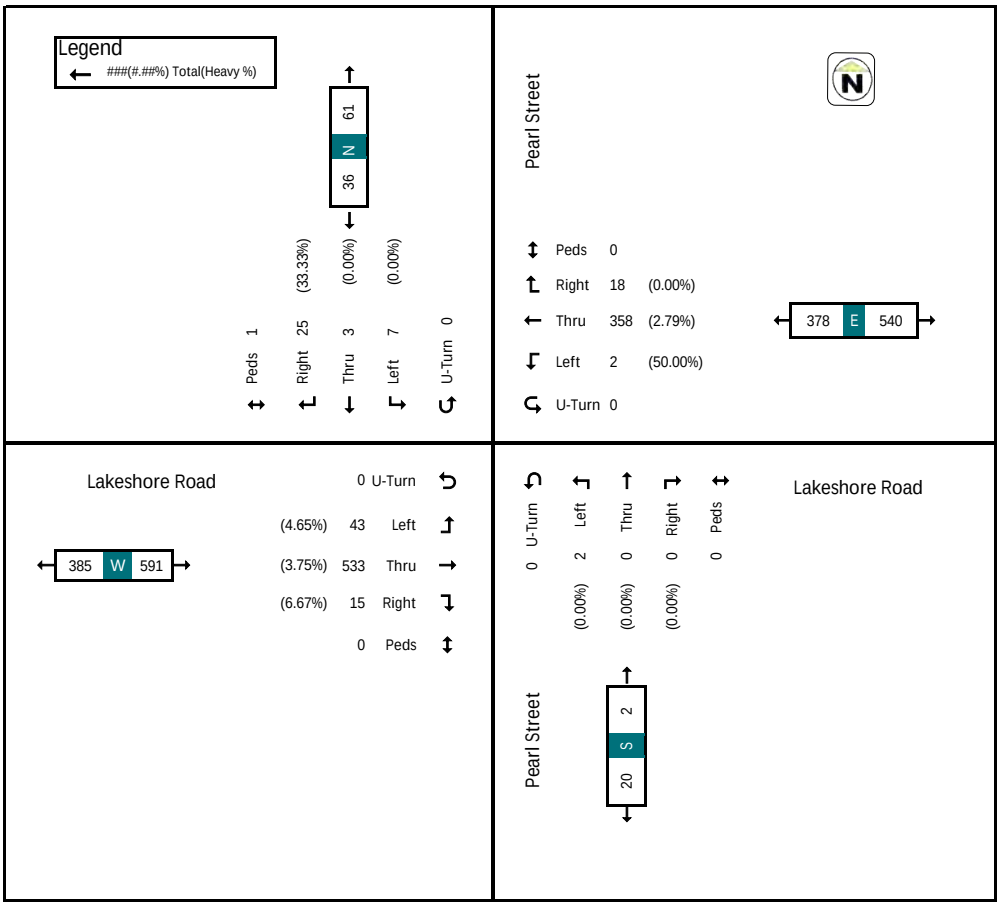
Turning Movement Count Plot - Total



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

Intersection : Pearl Street & Lakeshore Road
Survey Date : November 30, 2023
Project No. : 23356
Surveyor(s) : 23112

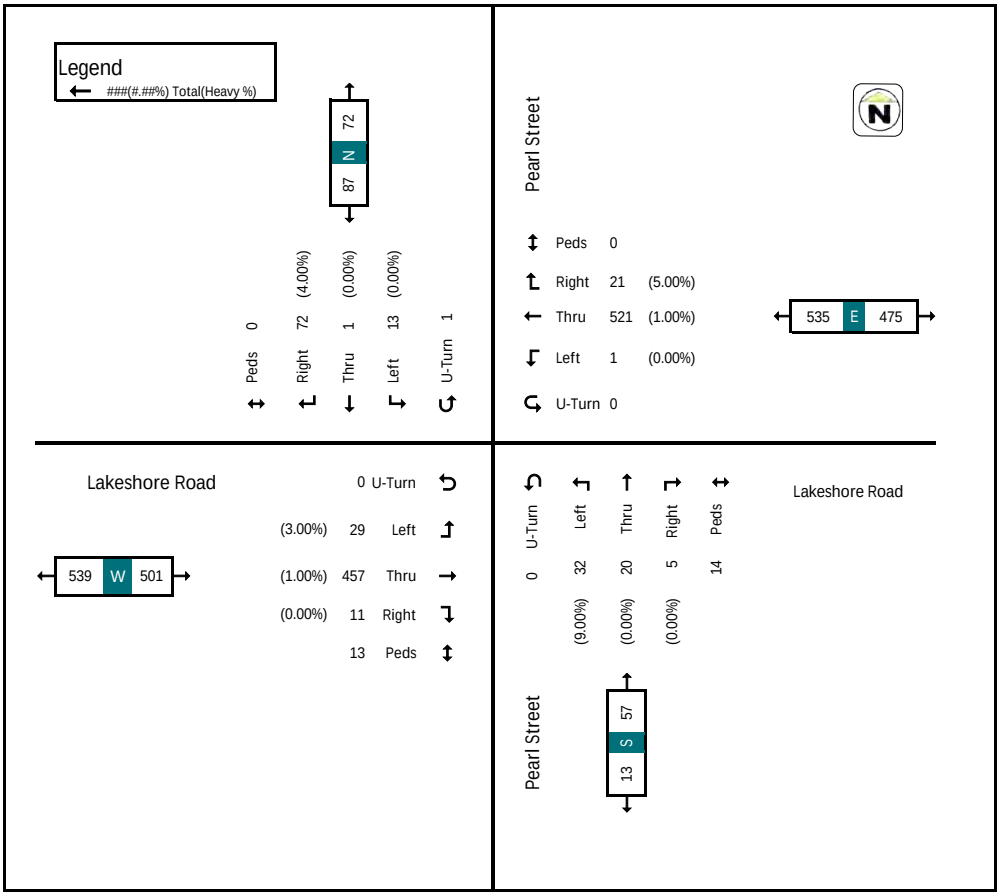
Turning Movement Count Plot - AM Peak Hour - 08:00-09:00



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

Intersection : Pearl Street & Lakeshore Road
Survey Date : 2023-11-30
Project No. : 23356
Surveyor(s) : 23112

Turning Movement Count Plot - PM Peak Hour - 17:00-18:00



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

Intersection : Old Lakeshore Road & Lakeshore Road
Survey Date : November 30, 2023
Project No. : 23356
Count ID : 23113

Turning Movement Count - Old Lakeshore Road & Lakeshore Road

	Old Lakeshore Road Southbound						Lakeshore Road Westbound						Old Lakeshore Road Northbound						Lakeshore Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	0	0	0	4	0	0	5	57	0	1	62	0	2	0	3	1	5	0	0	119	0	0	119	186
7:45	0	0	0	0	4	0	0	13	67	0	0	80	0	0	0	18	1	18	0	0	115	0	0	115	213
Hourly Total	0	0	0	0	8	0	0	18	124	0	1	142	0	2	0	21	2	23	0	0	234	0	0	234	399
8:00	0	0	0	0	2	0	0	0	93	0	0	93	0	1	0	3	1	4	0	0	117	0	0	117	214
8:15	0	0	0	0	2	0	0	2	80	0	0	82	0	2	0	2	0	4	0	0	142	0	0	142	228
8:30	0	0	0	0	6	0	0	3	102	0	0	105	0	0	0	1	1	1	0	0	143	0	0	143	249
8:45	0	0	0	0	4	0	0	4	102	0	0	106	0	1	0	2	0	3	0	0	123	0	0	123	232
Hourly Total	0	0	0	0	14	0	0	9	377	0	0	386	0	4	0	8	2	12	0	0	525	0	0	525	923
9:00	0	0	0	0	1	0	0	0	97	0	1	97	0	0	0	2	1	2	0	0	107	0	0	107	206
9:15	0	0	0	0	1	0	0	2	86	0	0	88	0	1	0	1	0	2	0	0	114	0	0	114	204
Hourly Total	0	0	0	0	2	0	0	2	183	0	1	185	0	1	0	3	1	4	0	0	221	0	0	221	410
* Break *																									
16:00	0	0	0	0	2	0	0	11	168	0	0	179	0	0	0	4	2	4	0	0	117	1	0	118	301
16:15	0	0	0	0	5	0	0	16	84	0	0	100	0	0	0	5	1	5	0	0	118	0	0	118	223
16:30	0	0	0	0	4	0	0	7	101	0	0	108	0	0	0	3	1	3	0	0	114	0	0	114	225
16:45	0	0	0	0	2	0	0	12	122	0	0	134	0	0	0	4	1	4	0	0	120	1	0	121	259
Hourly Total	0	0	0	0	13	0	0	46	475	0	0	521	0	0	0	16	5	16	0	0	469	2	0	471	1008
17:00	0	0	0	0	6	0	0	6	152	0	0	158	0	0	0	1	1	1	0	0	117	3	0	120	279
17:15	0	0	0	0	1	0	0	12	114	0	0	126	0	0	0	4	0	4	0	0	97	2	0	99	229
17:30	0	0	0	0	3	0	0	18	112	0	0	130	0	0	0	5	0	5	0	0	109	1	0	110	245
17:45	0	0	0	0	1	0	0	5	206	0	0	211	0	0	0	2	0	2	0	0	110	1	0	111	324
Hourly Total	0	0	0	0	11	0	0	41	584	0	0	625	0	0	0	12	1	12	0	0	433	7	0	440	1077
Grand Total	0	0	0	0	48	0	0	116	1743	0	2	1859	0	7	0	60	11	67	0	0	1882	9	0	1891	3817
Approach %	-	-	-	-	-	-	0.0%	6.2%	93.8%	0.0%	-	-	0.0%	10.4%	0.0%	89.6%	-	-	0.0%	0.0%	99.5%	0.5%	-	-	-
Total %	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	3.0%	45.7%	0.0%	-	48.7%	0.0%	0.2%	0.0%	1.6%	-	1.8%	0.0%	0.0%	49.3%	0.2%	-	49.5%	-
Lights	0	0	0	0	-	0	0	115	1702	0	-	1817	0	4	0	58	-	62	0	0	1840	7	-	1847	3726
% Lights	-	-	-	-	-	-	-	99.1%	97.6%	-	-	97.7%	-	57.1%	-	96.7%	-	92.5%	-	-	97.8%	77.8%	-	97.7%	97.6%
Buses	-	0	0	0	-	0	-	0	25	0	-	25	-	0	0	0	-	0	-	0	23	0	-	23	48
% Buses	-	-	-	-	-	-	-	0.0%	1.4%	-	-	1.3%	-	0.0%	-	0.0%	-	0.0%	-	-	1.2%	0.0%	-	1.2%	1.3%
Trucks	-	0	0	0	-	0	-	1	16	0	-	17	-	3	0	2	-	5	-	0	19	2	-	21	43
% Trucks	-	-	-	-	-	-	-	0.9%	0.9%	-	-	0.9%	-	42.9%	-	3.3%	-	7.5%	-	-	1.0%	22.2%	-	1.1%	1.1%
Bicycles	-	-	-	-	0	0	-	-	-	-	4	4	-	-	-	-	0	0	-	-	-	-	0	0	4
Pedestrians	-	-	-	-	48	-	-	-	-	-	1	-	-	-	-	-	11	-	-	-	-	-	0	-	60

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

Intersection : Old Lakeshore Road & Lakeshore Road
Survey Date : November 30, 2023
Project No. : 23356
Count ID : 23113

AM Peak Hour - Old Lakeshore Road & Lakeshore Road

	Old Lakeshore Road Southbound						Lakeshore Road Westbound						Old Lakeshore Road Northbound						Lakeshore Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:00	0	0	0	0	2	0	0	0	93	0	0	93	0	1	0	3	1	4	0	0	117	0	0	117	214
8:15	0	0	0	0	2	0	0	2	80	0	0	82	0	2	0	2	0	4	0	0	142	0	0	142	228
8:30	0	0	0	0	6	0	0	3	102	0	0	105	0	0	0	1	1	1	0	0	143	0	0	143	249
8:45	0	0	0	0	4	0	0	4	102	0	0	106	0	1	0	2	0	3	0	0	123	0	0	123	232
Hourly Total	0	0	0	0	14	0	0	9	377	0	0	386	0	4	0	8	2	12	0	0	525	0	0	525	923
Approach %	-	-	-	-	-	-	0.0%	2.3%	97.7%	0.0%	-	-	0.0%	33.3%	0.0%	-	-	-	0.0%	0.0%	100.0%	0.0%	-	-	-
Total %	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	1.0%	40.8%	0.0%	-	41.8%	0.0%	0.4%	0.0%	0.9%	-	1.3%	0.0%	0.0%	56.9%	0.0%	-	56.9%	-
PHF	0	0	0	0	-	0	0	0.56	0.92	0	-	0.91	0	0.5	0	0.67	-	0.75	0	0	0.92	0	-	0.92	0.93
Lights	0	0	0	0	-	0	0	9	367	0	-	376	0	3	0	7	-	10	0	0	505	0	-	505	891
% Lights	-	-	-	-	-	-	-	100.0%	97.3%	-	-	97.4%	-	75.0%	-	87.5%	-	83.3%	-	-	96.2%	-	-	96.2%	96.5%
Buses	-	0	0	0	-	0	-	0	8	0	-	8	-	0	0	0	-	0	-	0	8	0	-	8	16
% Buses	-	-	-	-	-	-	-	0.0%	2.1%	-	-	2.1%	-	0.0%	-	0.0%	-	0.0%	-	-	1.5%	-	-	1.5%	1.7%
Trucks	-	0	0	0	-	0	-	0	2	0	-	2	-	1	0	1	-	2	-	0	12	0	-	12	16
% Trucks	-	-	-	-	-	-	-	0.0%	0.5%	-	-	0.5%	-	25.0%	-	12.5%	-	16.7%	-	-	2.3%	-	-	2.3%	1.7%
Bicycles	-	-	-	-	0	0	-	-	-	-	1	1	-	-	-	-	0	0	-	-	-	-	0	0	1
Pedestrians	-	-	-	-	14	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	14

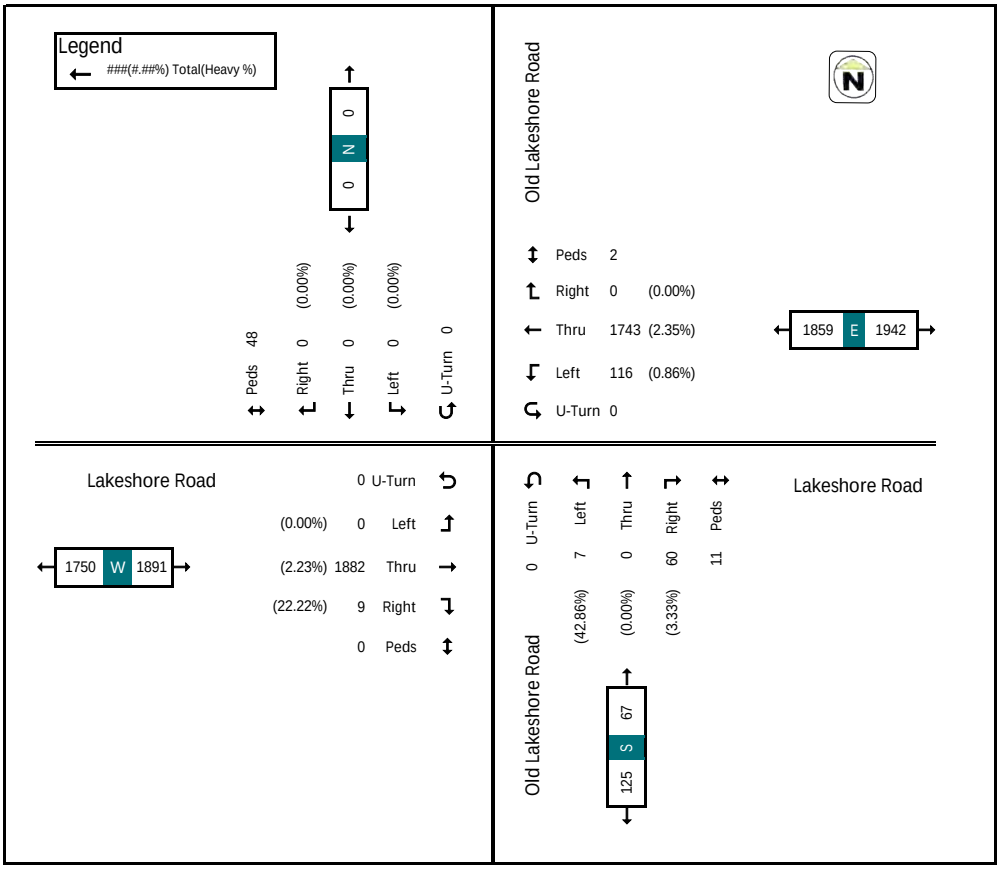
PM Peak Hour - Old Lakeshore Road & Lakeshore Road

	Old Lakeshore Road Southbound						Lakeshore Road Westbound						Old Lakeshore Road Northbound						Lakeshore Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
17:00	0	0	0	0	6	0	0	6	152	0	0	158	0	0	0	1	1	1	0	0	117	3	0	120	279
17:15	0	0	0	0	1	0	0	12	114	0	0	126	0	0	0	4	0	4	0	0	97	2	0	99	229
17:30	0	0	0	0	3	0	0	18	112	0	0	130	0	0	0	5	0	5	0	0	109	1	0	110	245
17:45	0	0	0	0	1	0	0	5	206	0	0	211	0	0	0	2	0	2	0	0	110	1	0	111	324
Hourly Total	0	0	0	0	11	0	0	41	584	0	0	625	0	0	0	12	1	12	0	0	433	7	0	440	1077
Approach %	-	-	-	-	-	-	0.0%	6.6%	93.4%	0.0%	-	-	0.0%	0.0%	0.0%	-	-	-	0.0%	0.0%	98.4%	1.6%	-	-	-
Total %	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	4.4%	63.3%	0.0%	-	58.0%	0.0%	0.0%	0.0%	1.3%	-	1.1%	0.0%	0.0%	46.9%	0.8%	-	40.9%	-
PHF	0	0	0	0	-	0	0	0.57	0.71	0	-	0.74	0	0	0	0.6	-	0.6	0	0	0.93	0.58	-	0.92	0.83
Lights	0	0	0	0	-	0	0	40	576	0	-	616	0	0	0	12	-	12	0	0	429	5	-	434	1062
% Lights	-	-	-	-	-	-	-	97.6%	98.6%	-	-	98.6%	-	-	-	100.0%	-	100.0%	-	-	99.1%	71.4%	-	98.6%	98.6%
Buses	-	0	0	0	-	0	-	0	3	0	-	3	-	0	0	0	-	0	-	0	3	0	-	3	6
% Buses	-	-	-	-	-	-	-	0.0%	0.5%	-	-	0.5%	-	-	-	0.0%	-	0.0%	-	-	0.7%	0.0%	-	0.7%	0.6%
Trucks	-	0	0	0	-	0	-	1	5	0	-	6	-	0	0	0	-	0	-	0	1	2	-	3	9
% Trucks	-	-	-	-	-	-	-	2.4%	0.9%	-	-	1.0%	-	-	-	0.0%	-	0.0%	-	-	0.2%	28.6%	-	0.7%	0.8%
Bicycles	-	-	-	-	0	0	-	-	-	-	1	1	-	-	-	-	0	0	-	-	-	-	0	0	1
Pedestrians	-	-	-	-	11	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	11

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

Intersection : Old Lakeshore Road & Lak
Survey Date : 2023-11-30
Project No. : 23356
Count ID : 23113

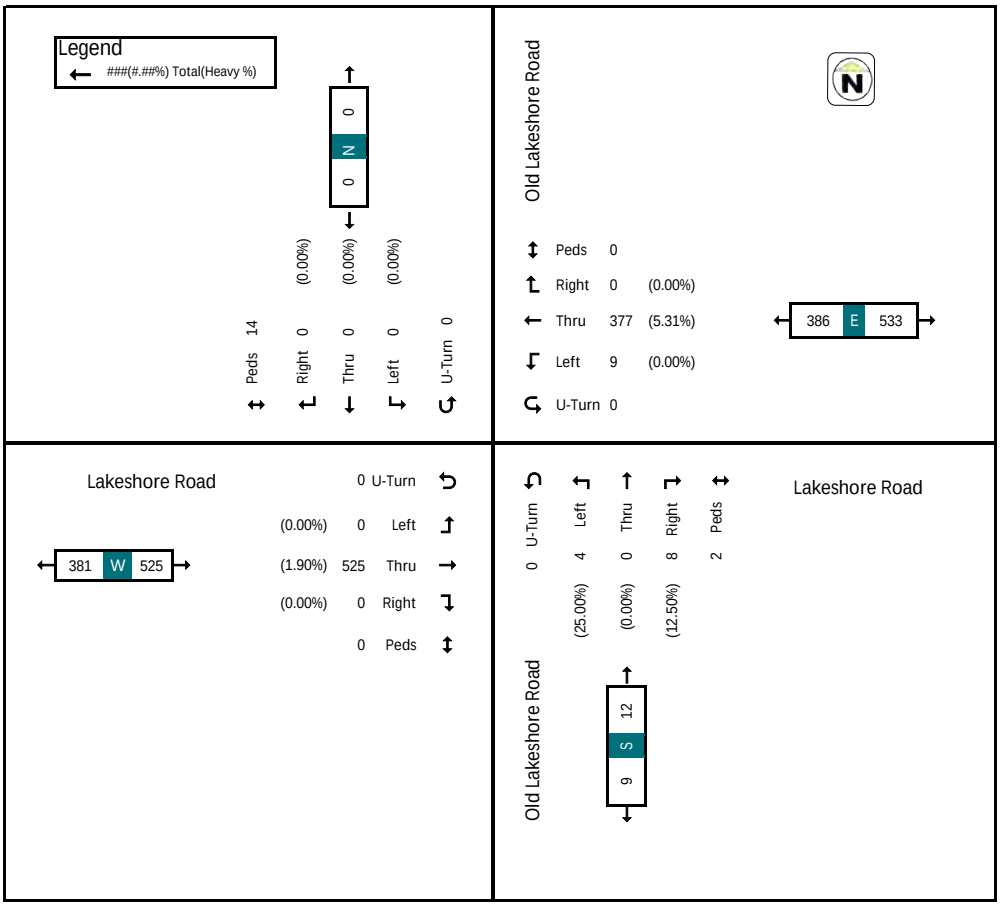
Turning Movement Count Plot - Total



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

Intersection : Old Lakeshore Road & Lakeshore Road
Survey Date : November 30, 2023
Project No. : 23356
Surveyor(s) : 23113

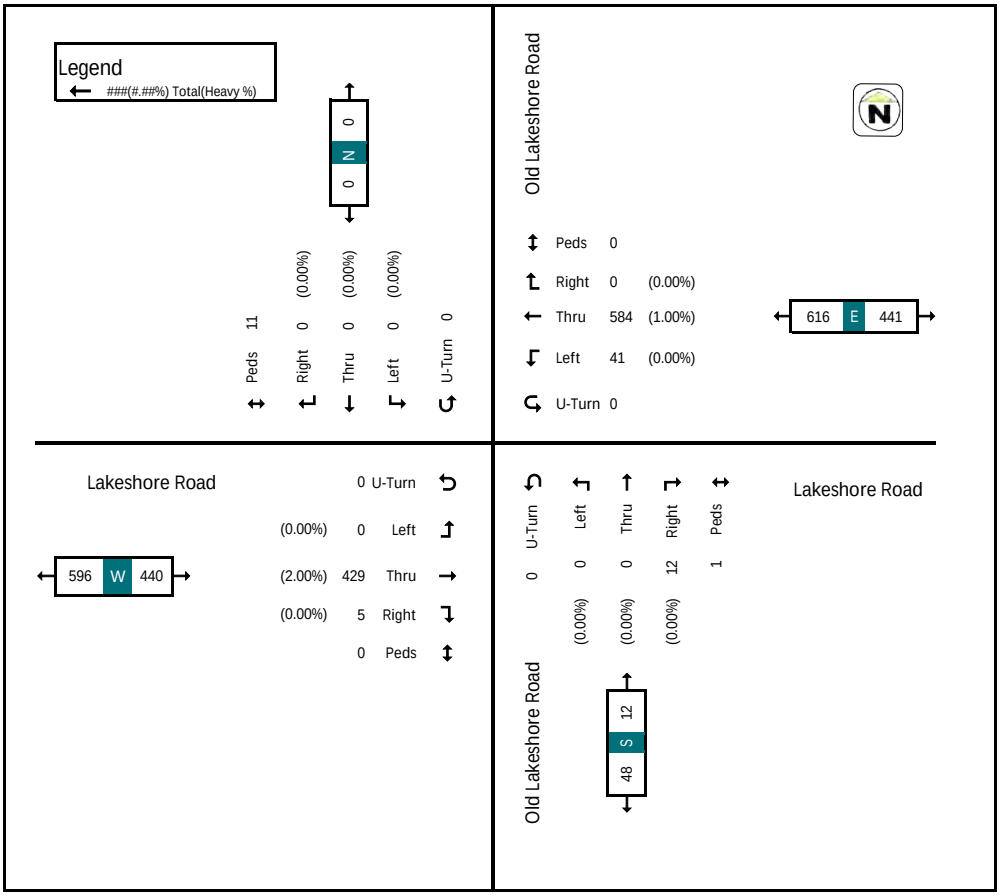
Turning Movement Count Plot - AM Peak Hour - 08:00-09:00



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

Intersection : Old Lakeshore Road & Lakeshore Road
Survey Date : 2023-11-30
Project No. : 23356
Surveyor(s) : 23113

Turning Movement Count Plot - PM Peak Hour - 17:00-18:00



Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Lakeshore Rd @ Pearl St	212	2	ACS/3	172.24.43.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

No	Date			Description	Prepared by
	Y	M	D		
12	2023	9	27	Implement LPI on side street	MA

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB - Lakeshore Rd	Ph6	WB - Lakeshore Rd
Ph3		Ph7	
Ph4	NB - Pearl St	Ph8	SB - Pearl St

*-Start from Main Menu

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use		X		X		X		X
Exclusive PED								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green		8		8		8		8
Delay Green				5				5
Walk		16		8		16		8
Ped. Clearance		17		17		17		17
Pedestrian Carry Over								
Vehicle Extension		3		3		3		3
MAX 1		35		25		35		25
MAX 2		35		25		35		25
Yellow Change		4		4		4		4
Red Clearance		3		3		3		3
Phase Minimum:	0	40	0	32	0	40	0	32

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector								
Vehicle Recall								
Pedestrian Recall		X				X		
MAX Recall		X				X		
Min Recall								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN													* - 3 - 2, - 3 - 3
Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)								
					1	2	3	4	5	6	7	8	
1	110	49	1	1		77		33		77		33	
2	100	44	1	2		67		33		67		33	
3	120	51	1	3		87		33		87		33	
4	90	88	1	4		57		33		57		33	
10	0	0	1	10		0		0		0		0	

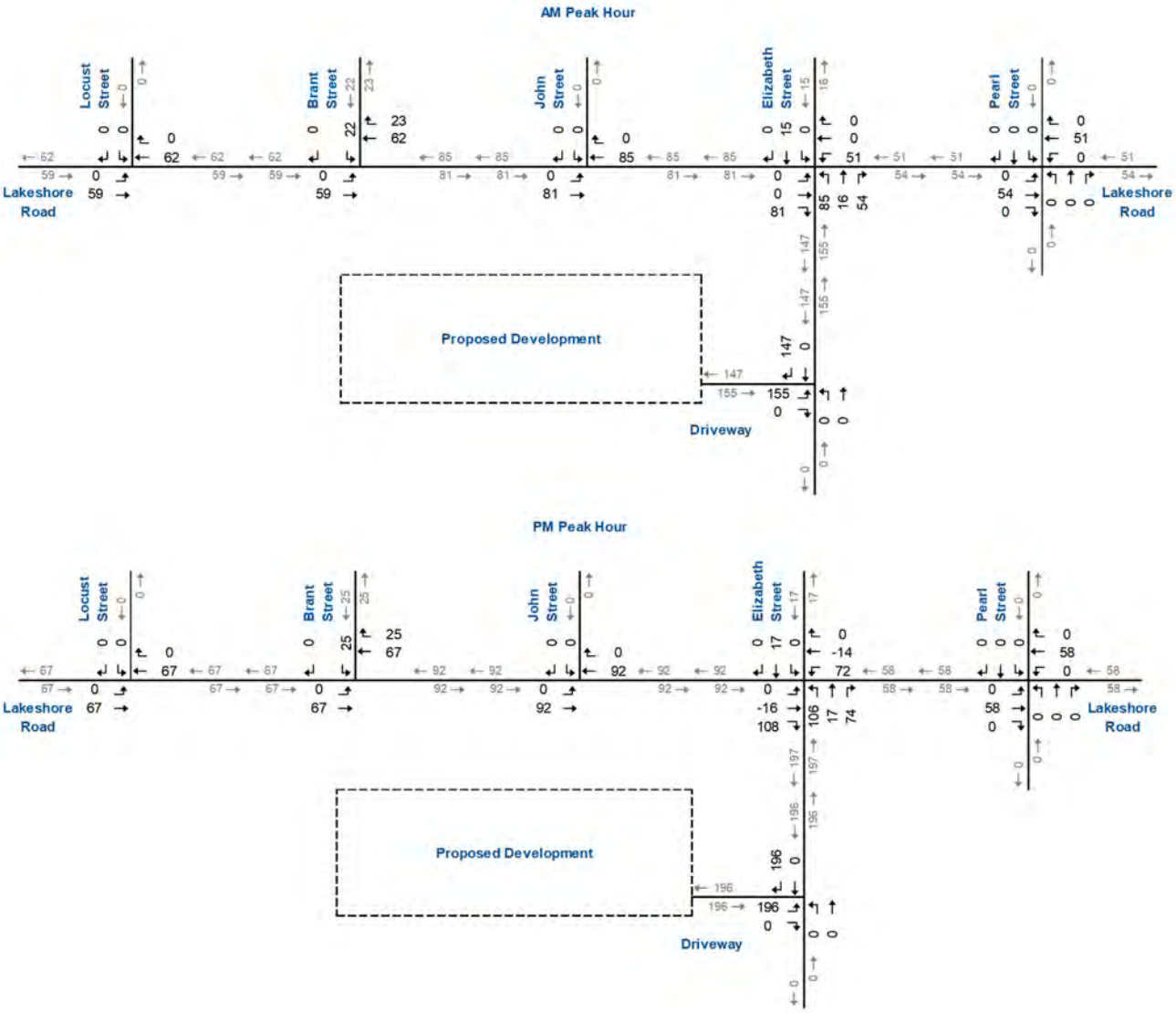
TIME BASE: ACTION PLAN, DAY PLAN						* - 5 - 2, - 5 - 3, -5 - 4
Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan	
1	1	4	06:30	4	1	
1	1	1	07:00	1	1	Schedule 1 = Day Plan 1
1	1	2	09:00	2	1	Schedule 2 = Day Plan 2
1	1	3	15:30	3	1	Schedule 3 = Day Plan 3
1	1	4	19:00	4	1	
1	1	10	20:30	254	1	Day Plan 1 (Weekday)
2	2	1	07:00	1	1	Day Plan 2 (Saturday)
2	2	10	20:30	254	1	Day Plan 3 (Sunday, Holidays)
3	3	1	8:30	1	1	
3	3	10	20:30	254	1	Action Plan 10 = free (254)

Special Programming:

TIME BASE DATA - TIME OF YEAR EVENTS							* - 5 - 5
Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan	
New Year's Day	1	Fixed	1	1	0	3	
Family Day	2	Float	2	2	3	3	
Good Friday	3	Float	4	7	0	3	
Victoria Day	4	Float	5	2	4	3	
Canada Day	5	Fixed	7	1	0	3	
Civic Day	6	Float	8	2	1	3	
Labour Day	7	Float	9	2	1	3	
Thanksgiving	8	Float	10	2	2	3	
Christmas Day	9	Fixed	12	25	0	3	

APPENDIX C

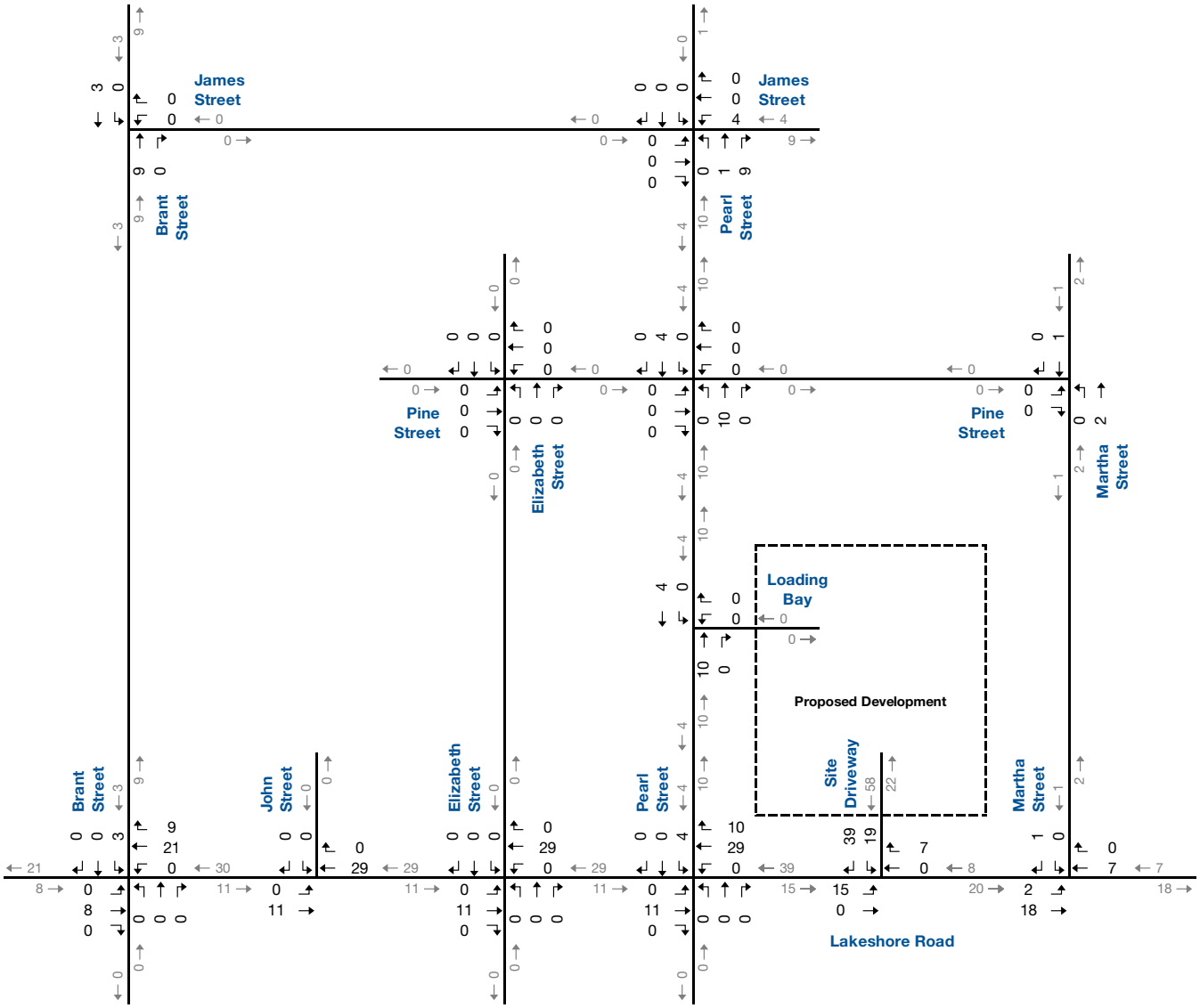
Background Developments



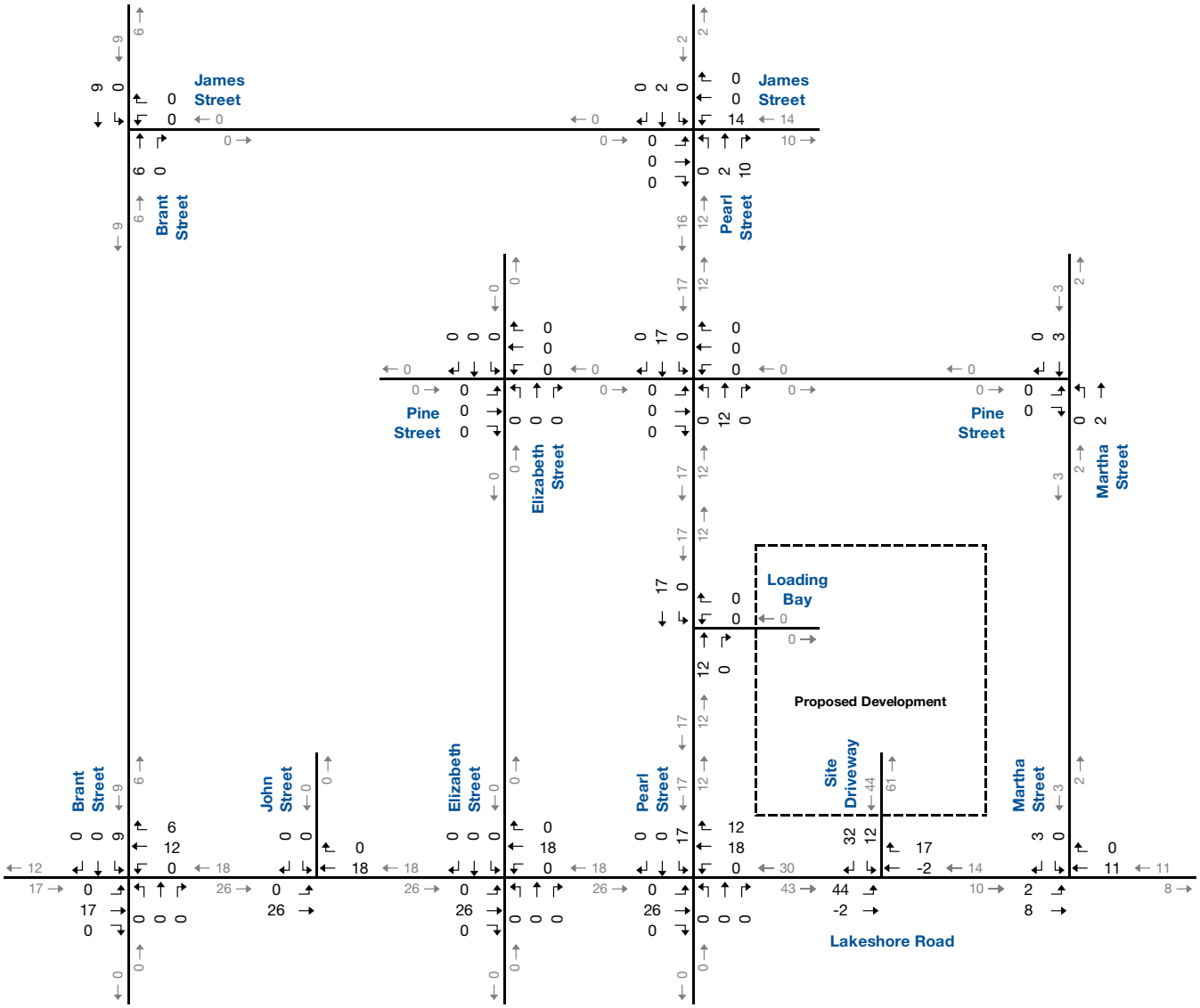
Site Generated Traffic Volumes

2020 Lakeshore Road, Burlington
210056

Figure 3.2

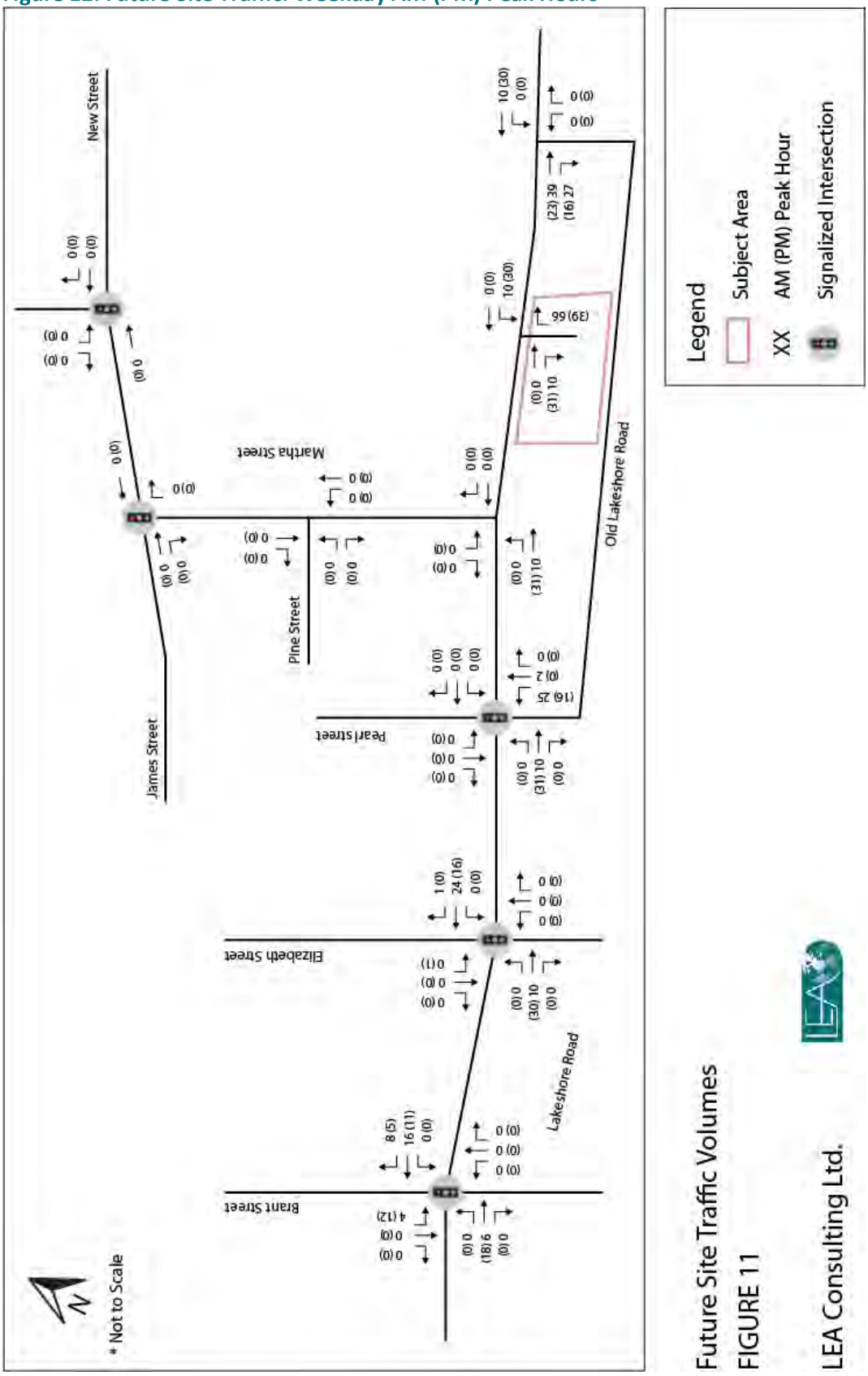


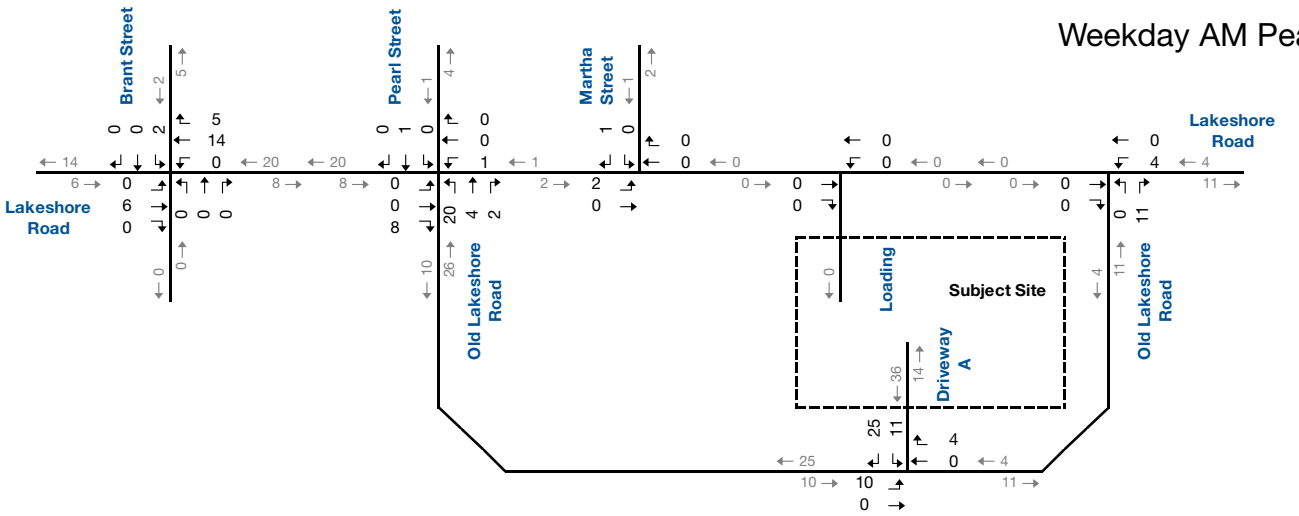
Site Generated Traffic Forecasts
AM Peak Hour

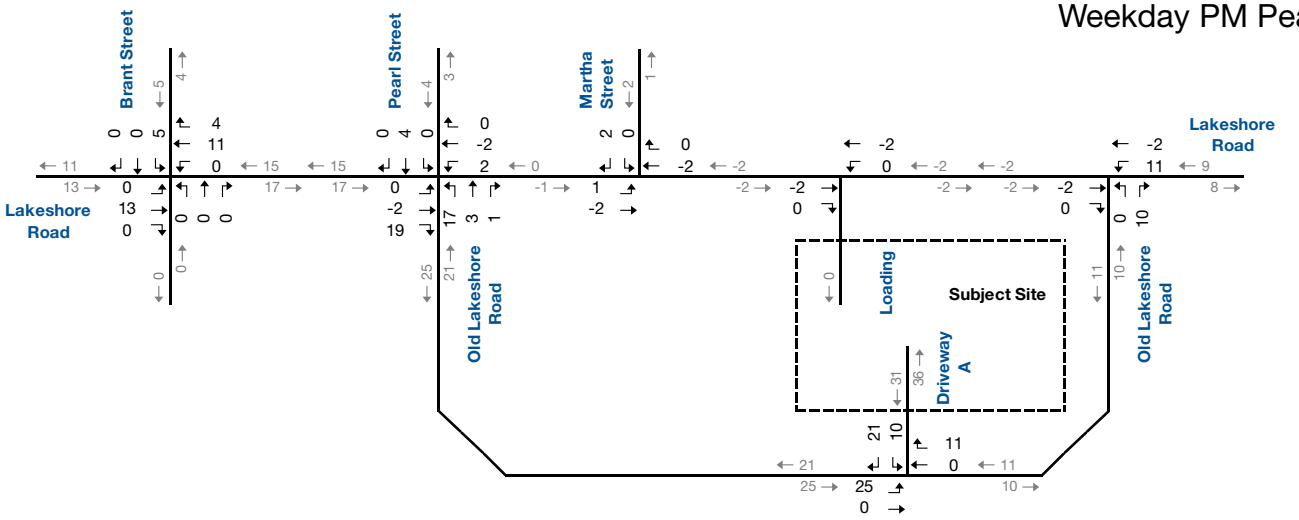


Site Generated Traffic Forecasts
PM Peak Hour

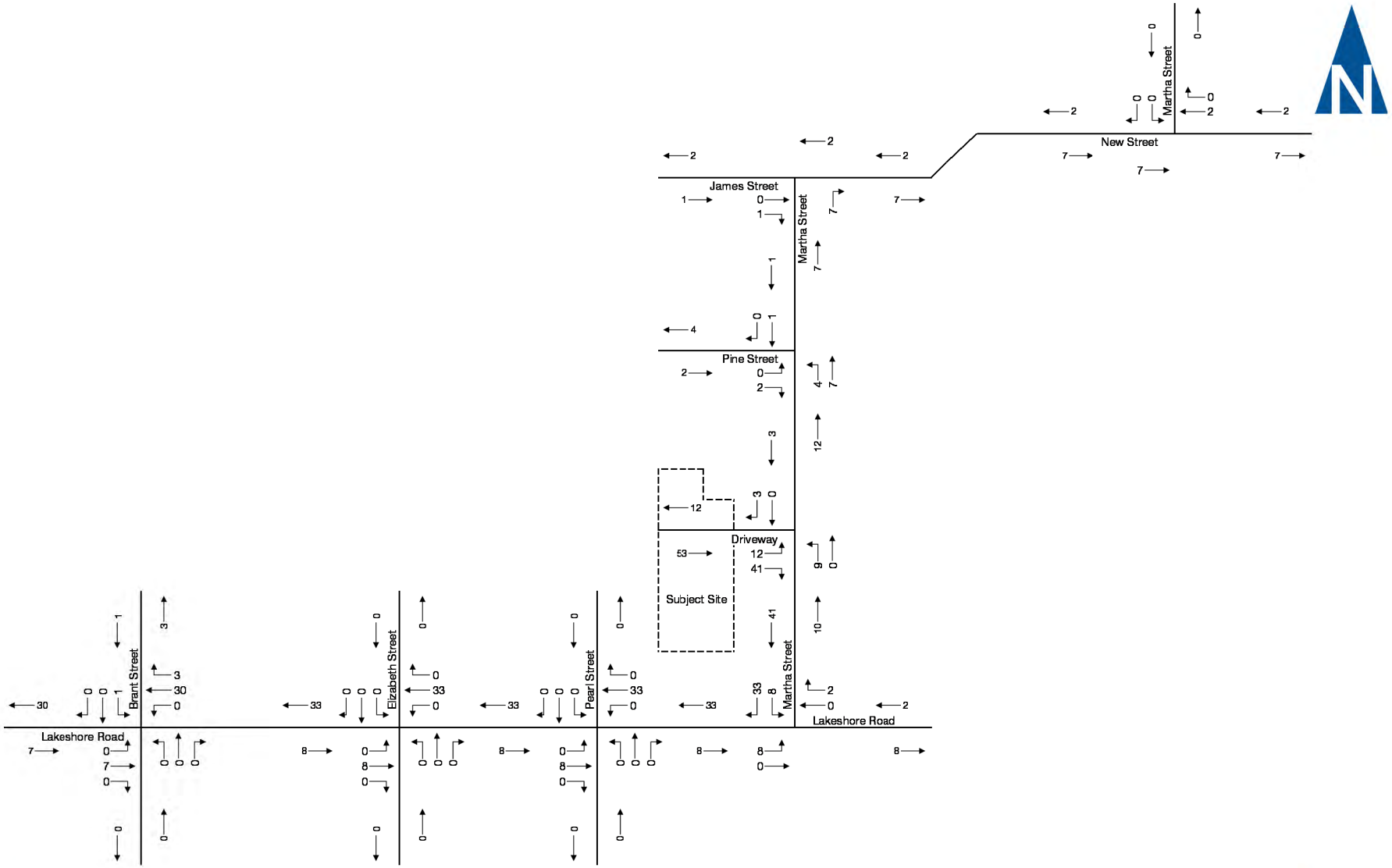
Figure 12: Future Site Traffic: Weekday AM (PM) Peak Hours



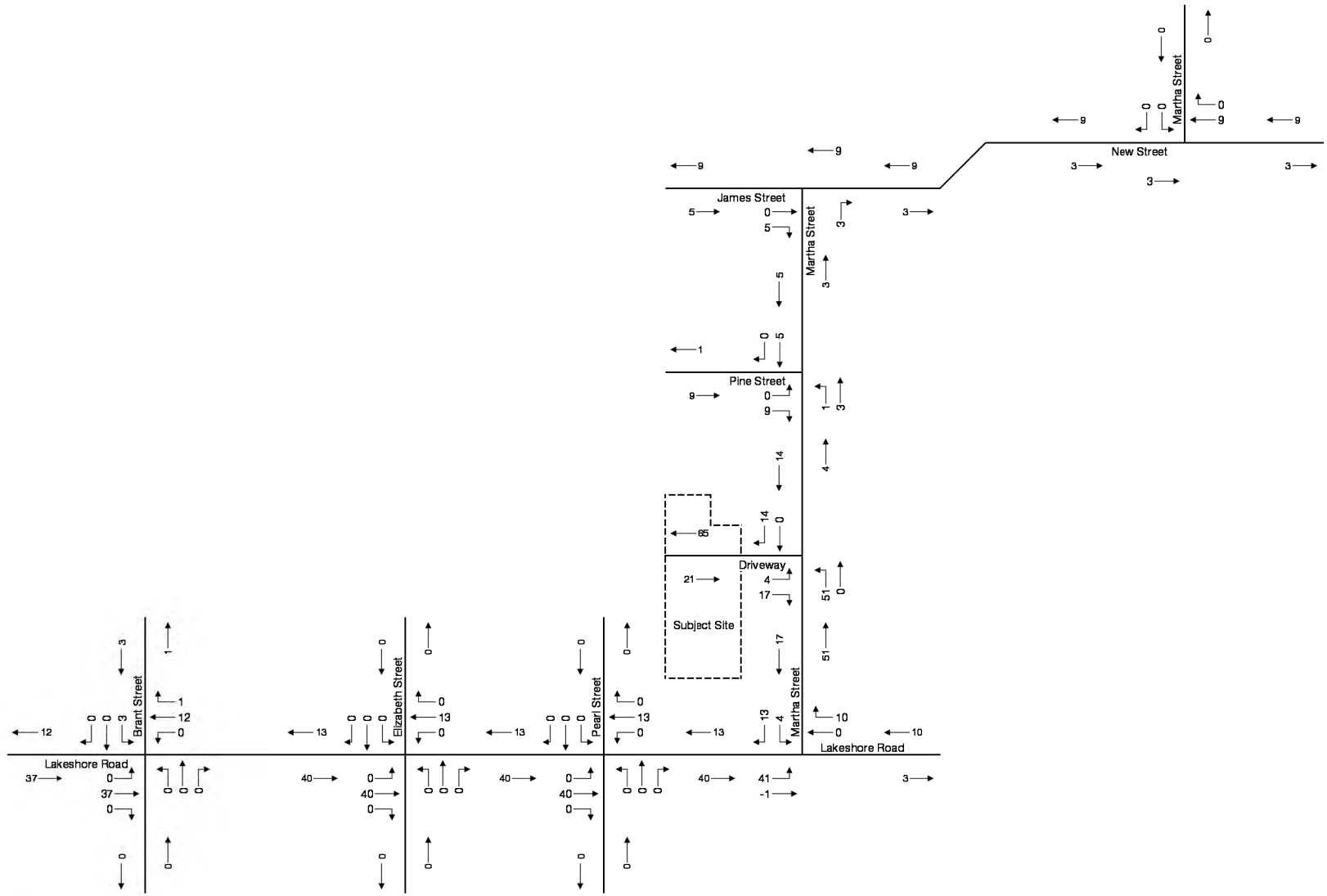




Site Generated
Weekday Peak Hour Traffic Forecast



Site Generate A.M. Peak Hour Traffic Volumes



Site Generate P.M. Peak Hour Traffic Volumes

22 King Street South, Suite 300
Waterloo, ON N2J 1N8
p: 519.896.3163
905.381.2229
f: 1.855.764.7349

www.ptsl.com

27 June 2016
Project: 140850

Lorraine Roberts
Project Manager – Land Development
Adi Development Group Inc.
4190 South Service Road, Suite 200
Burlington, ON L7L 4X5

Dear Ms. Roberts:

RE: 374/380 MARTHA STREET, BURLINGTON
TRAFFIC IMPACT STUDY AND PARKING STUDY OPINION LETTER

In September 2015, Paradigm Transportation Solutions Limited (Paradigm) prepared a Transportation Impact Study (TIS) and Parking Justification Study (PJS) for the property at 374 Martha Street, in Burlington Ontario.

In 2016, Adi Development Group Inc. acquired the lands municipally known as 380 Martha Street and have revised the site plan with a new development scheme that reflects the expansion of the overall land holdings. The latest site plan includes an increase the number of residential units and the commercial space provided, and an increase in the overall parking supply to maintain a 1.0 parking space per unit parking ratio. **Figure 1 (Enclosed)** outlines the revised site plan.

This opinion letter serves to assess the potential impacts from the increase in number of units and the overall changes to the parking and access arrangement from a design and supply perspective. The following modifications in terms of layout are noted:

- Separate area for loading and retail waste storage is proposed. By providing separate areas for loading to occur, conflicts within the parking garage are further reduced. This is an improvement.
- Maximum ramp slope proposed is 13.5%. This is an improvement as the previous 15% ramp slope was identified as a concern with the City of Burlington.
- Parking stall dimensions of 2.75 metres by 5.6 metres. This does not differ from the previous parking stall dimensions.
- Aisle widths within the parking structure are 6.0 metres, the effective width between structural columns is also noted to be 6.0 metres and does not differ from the previous aisle widths.

With the addition of the 380 Martha Street lands the overall development will consist of a multi-storey condominium building with an additional 48 units (240 units in total) and an additional 1,035 square feet of commercial space (4,555 square feet in total) being proposed. On-site parking will increase from 196 to 241 spaces to maintain a parking ratio of approximately 1.0 parking space per unit.

In terms of traffic increases, an additional 17 AM peak hour trips and 22 PM peak hour trips are expected to occur along the study area roadways. While the revised site plan generates more traffic than what was initially proposed, the impact to traffic operations is expected to be minimal and ultimately do not alter the previous conclusions and recommendations:

- The existing 15 metre eastbound left turn lane at the intersection of Lakeshore Road and Martha Street is projected to require an extension to accommodate 50 metres of storage as previously identified in the September 2015 TIS.
- The minor increase in traffic is not expected to meet the left turn lane warrant criteria for a northbound left turn lane at the developments driveway connection to Martha Street.
- Queues generated along Martha Street between Lakeshore Road and the development's driveway connection suggest queue spillback will not encroach within the functional area of either intersection.

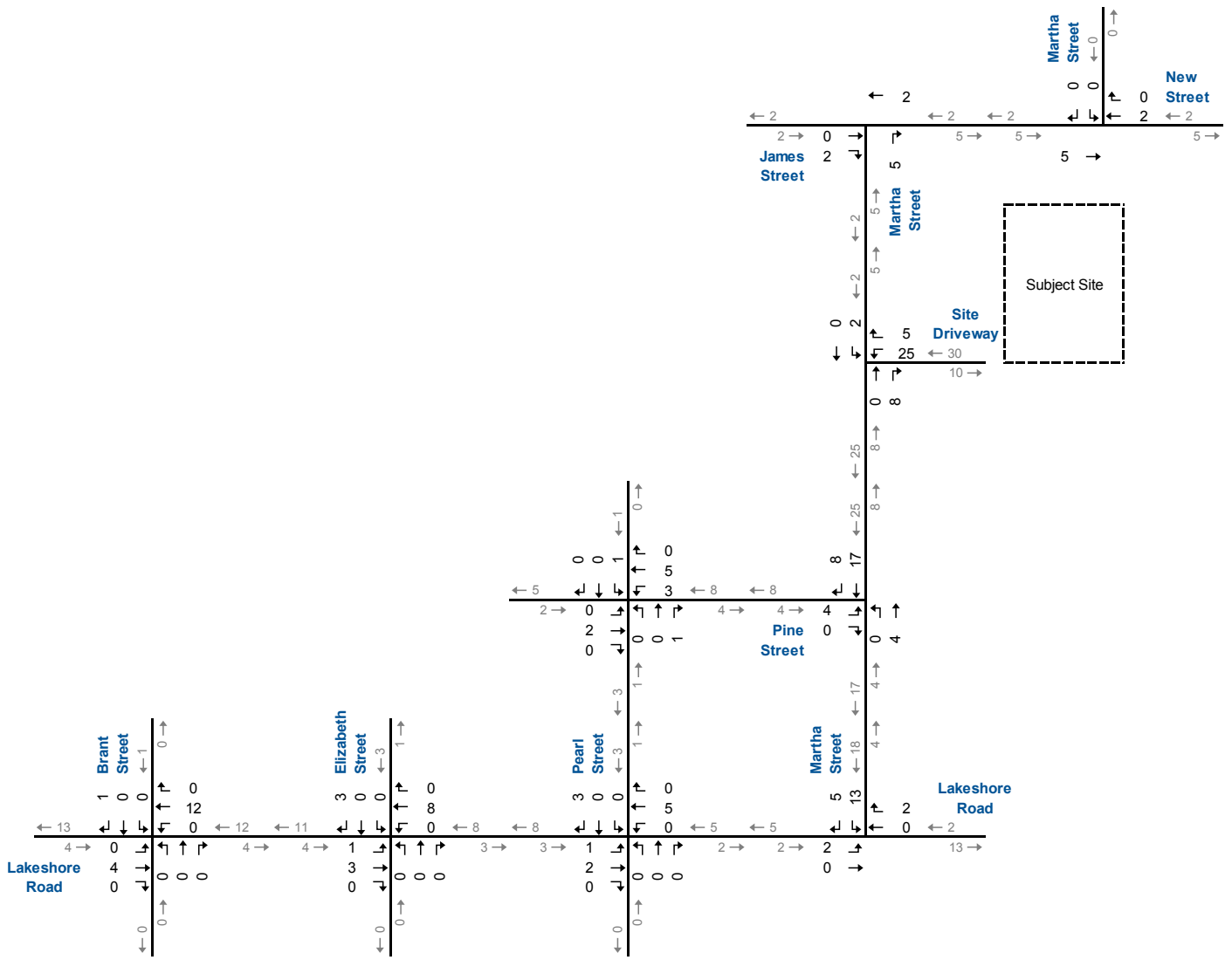
In terms of parking implications, the development is proposing to maintain a parking ratio of 1.0 parking space per unit. As the parking ratio remains the same, the conclusions and recommendations made within the September 2015 PJS remain valid.

Yours very truly,

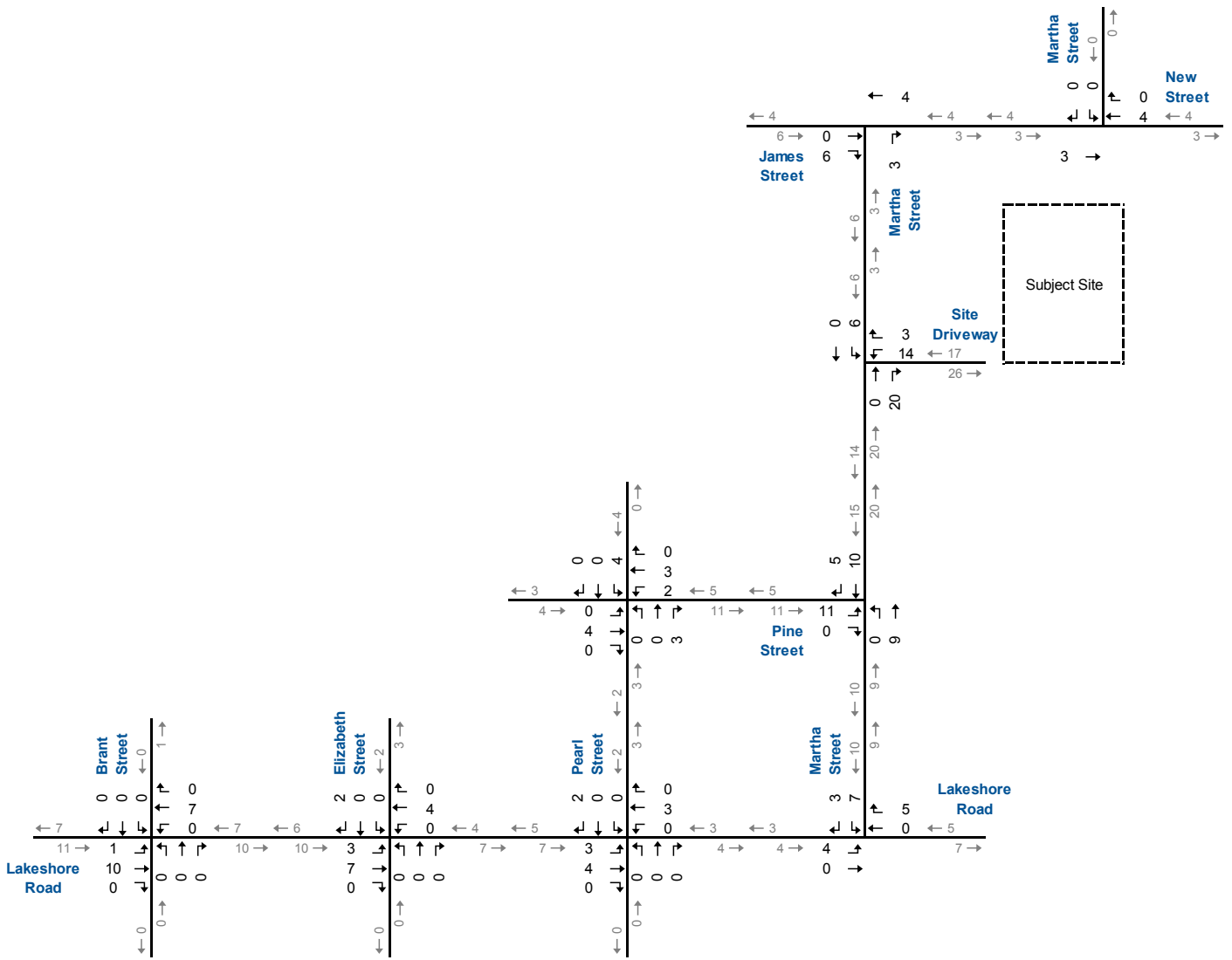
PARADIGM TRANSPORTATION SOLUTIONS LIMITED



Stew Elkins
B.E.S., MITE
Vice-President



Site Generated Traffic Forecasts
AM Peak Hour



Site Generated Traffic Forecasts
PM Peak Hour

APPENDIX D

Corridor Growth Rates

Wed Nov 08 2023 09:31:40 GMT-0500 (Eastern Standard Time) - Run Time: 2358ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone of household - gta06_hhld In 4060, 4057, 4059, 4061, 4062
and
Trip purpose - trip_purp In 1, 2)

Trip 2016
Table:

	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Joint GO rail and local transit	Motorcycle	Other	Auto passenger	School bus	Walk	
House	74	604	7176	189	317	25	27	821	350	1097	
Apartment	340	183	4518	158	71	0	0	528	0	596	
Townhouse	0	0	1826	167	70	0	0	200	33	61	
TOTAL	414	787	13520	514	458	25	27	1549	383	1754	19431

Residential			
Mode	Trips	%	% rounded
Auto	13545	69.8%	70%
Passenger	1549	8.0%	8%
Transit	1769	9.1%	9%
Ped	1754	9.0%	9%
Cycle	787	4.1%	4%
TOTAL	*19404*	*100%*	*100%*

Wed Nov 08 2023 10:12:10 GMT-0500 (Eastern Standard Time) - Run Time: 2478ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone of household - gta06_hhld In 4060, 4057, 4059, 4061, 4062
and
Trip purpose - trip_purp In 3)

Trip 2016
Table:

	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Joint GO rail and local transit	Motorcycle	Other	Auto passenger	Taxi passeng	Walk	
House	124	333	9883	55	11	0	0	2319	0	469	
Apartment	597	165	8560	0	56	62	92	1457	71	476	
Townhouse	31	0	2310	0	0	0	0	422	0	0	
TOTAL	752	498	20753	55	67	62	92	4198	71	945	27493

Retail				
Mode	Trips	%	% rounded	
Auto	20815	76.0%	76%	
Passenger	4198	15.3%	15%	
Transit	945	3.4%	*4%*	**balanced*
Ped	945	3.4%	3%	
Cycle	498	1.8%	2%	
TOTAL	*27401*	*100%*	*100%*	

APPENDIX E

Trip Generation and Distribution

Wed Nov 08 2023 16:16:46 GMT-0500 (Eastern Standard Time) - Run Time: 2629ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone of des 4057 4059 4061 4062
and
Trip purpose of destination - purp_dest In H
and
Start time of trip - start_time In 1500-1900
and
Primary travel mode o!M)

Trip 2016
Table:

Origin	Destination					Total Trips		Trip Assignment		
	4057	4059	4060	4061	4062	Trips	%	Assignment	Route Direction	Route
PD 1 of Toronto	46	23	64	0	0	133	1%	1%	W	QEW via Lakeshore
PD 7 of Toronto	0	22	0	0	0	22	0%	0%	W	QEW via Lakeshore
PD 8 of Toronto	19	0	17	18	0	54	1%	1%	W	QEW via Lakeshore
PD 9 of Toronto	39	0	0	0	0	39	0%	0%	W	QEW via Lakeshore
PD 10 of Toronto	0	0	0	26	0	26	0%	0%	W	QEW via Lakeshore
King	0	10	0	0	0	10	0%	0%	W	QEW via Lakeshore
Brampton	37	0	0	30	0	67	1%	1%	W	QEW via Lakeshore
Mississauga	161	99	111	74	41	486	5%	5%	W	QEW via Lakeshore
Halton Hills	14	0	0	0	0	14	0%	0%	E	Lakeshore Rd
Milton	53	20	36	0	93	202	2%	1%	E	Lakeshore Rd
								1%	W	QEW via Lakeshore
Oakville	338	280	306	18	158	1100	12%	12%	E	Lakeshore Rd
4051	0	34	0	24	0	58	1%	1%	W	Lakeshore Rd
4052	0	0	41	0	0	41	0%	0%	W	Lakeshore Rd
4053	68	62	39	0	0	169	2%	2%	W	Lakeshore Rd
4054	40	45	12	0	0	97	1%	1%	W	Lakeshore Rd
4055	0	0	10	0	0	10	0%	0%	W	Lakeshore Rd
4056	0	0	28	0	16	44	0%	0%	W	Lakeshore Rd
4057	214	38	65	111	57	485	5%	3%	W	Lakeshore Rd
								3%	N	Brant St
4058	78	12	0	0	45	135	1%	1%	N	Brant St
4059	188	163	275	114	39	779	9%	9%	N	Brant St
4060	83	62	35	0	0	180	2%	1%	N	Brant St
								1%	N	Pearl St
4061	51	70	88	48	33	290	3%	3%	E	Lakeshore Rd
4062	0	25	0	34	52	111	1%	1%	E	Lakeshore Rd
4063	202	10	109	97	77	495	5%	5%	E	Lakeshore Rd
4064	78	49	38	41	49	255	3%	3%	E	Lakeshore Rd
4065	0	13	18	0	15	46	1%	1%	E	Lakeshore Rd
4067	14	0	17	0	0	31	0%	0%	E	Lakeshore Rd
4068	78	96	38	28	32	272	3%	3%	E	Lakeshore Rd
4069	30	40	0	20	0	90	1%	1%	E	Lakeshore Rd
4076	95	0	31	0	59	185	2%	2%	E	Lakeshore Rd
4077	64	85	67	0	0	216	2%	1%	E	Lakeshore Rd
								1%	W	QEW via Lakeshore
4078	0	233	28	0	33	294	3%	2%	E	Lakeshore Rd
								1%	W	QEW via Lakeshore
4079	0	0	18	0	0	18	0%	0%	E	Lakeshore Rd
								0%	W	QEW via Lakeshore
4080	21	0	31	0	0	52	1%	1%	E	Lakeshore Rd
4081	76	11	24	0	0	111	1%	1%	E	Lakeshore Rd
								0%	W	QEW via Lakeshore
4082	115	0	82	73	157	427	5%	5%	E	Lakeshore Rd
4083	0	25	0	0	0	25	0%	0%	E	Lakeshore Rd
4084	0	0	35	0	13	48	1%	1%	E	Lakeshore Rd
4085	12	0	0	0	0	12	0%	0%	N	Brant St
4086	0	0	27	18	0	45	0%	0%	N	Brant St
4087	46	0	13	0	39	98	1%	1%	N	Brant St
4088	33	0	89	37	62	221	2%	2%	N	Brant St
4089	16	0	47	0	10	73	1%	1%	N	Brant St
4091	24	0	0	0	41	65	1%	0%	W	Lakeshore Rd
								0%	N	Brant St
4092	0	0	15	0	0	15	0%	0%	W	Lakeshore Rd
4097	0	28	0	0	0	28	0%	0%	N	Brant St
4189	0	39	0	0	0	39	0%	0%	E	Lakeshore Rd
Flamborough	84	0	43	0	69	196	2%	1%	W	QEW via Lakeshore
								1%	W	Lakeshore Rd
Dundas	24	0	0	0	0	24	0%	0%	W	QEW via Lakeshore
Ancaster	0	10	0	22	0	32	0%	0%	W	QEW via Lakeshore
Glanbrook	56	0	0	0	0	56	1%	1%	W	QEW via Lakeshore
Stoney Creek	21	31	0	0	0	52	1%	1%	W	QEW via Lakeshore
Hamilton	306	54	178	159	109	806	9%	9%	W	QEW via Lakeshore
St. Catharines	0	0	18	0	0	18	0%	0%	W	QEW via Lakeshore
Niagara Falls	0	0	0	0	29	29	0%	0%	W	QEW via Lakeshore
Fort Erie	19	0	0	0	0	19	0%	0%	W	QEW via Lakeshore
Kitchener	36	0	0	0	0	36	0%	0%	W	QEW via Lakeshore
Cambridge	0	0	0	0	41	41	0%	0%	W	QEW via Lakeshore
Oxford	0	0	35	0	0	35	0%	0%	W	QEW via Lakeshore
Brant	0	0	11	0	0	11	0%	0%	W	QEW via Lakeshore
Haldimand-Norfolk	0	8	0	0	0	8	0%	0%	W	QEW via Lakeshore
TOTAL	*2879*	*1697*	*2139*	*992*	*1369*	*9076*	*100%*	*100%*		

Residential In			
Direction	Route	%	% rounded
N	Brant St	19.23%	19%
	Pearl St	0.99%	1%
E	Lakeshore Rd	43.75%	44%
W	Lakeshore Rd	36.03%	36%
	TOTAL	*100%*	*100%*

Wed Nov 08 2023 16:13:57 GMT-0500 (Eastern Standard Time) - Run Time: 2587ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone of origin 4057 4059 4061 4062
and
Trip purpose of origin - purp_orig In H
and
Start time of trip - start_time In 0600-1000
and
Primary travel mode of tri M)

Trip 2016
Table:

Destination	Origin					Total Trips		Trip Assignment		
	4057	4059	4060	4061	4062	Trips	%	Assignment	Route Direction	Route
PD 1 of Toronto	35	0	74	0	14	123	1%	1%	W	QEW via Lakeshore
PD 3 of Toronto	0	0	16	0	0	16	0%	0%	W	QEW via Lakeshore
PD 5 of Toronto	0	0	0	16	0	16	0%	0%	W	QEW via Lakeshore
PD 8 of Toronto	19	0	0	19	0	38	0%	0%	W	QEW via Lakeshore
PD 9 of Toronto	23	11	0	0	0	34	0%	0%	W	QEW via Lakeshore
PD 11 of Toronto	19	0	0	0	0	19	0%	0%	E	Lakeshore Rd
King	0	10	0	0	0	10	0%	0%	W	QEW via Lakeshore
Caledon	0	18	0	0	0	18	0%	0%	W	QEW via Lakeshore
Brampton	100	0	0	30	0	130	1%	1%	W	QEW via Lakeshore
Mississauga	240	99	177	62	0	578	6%	6%	W	QEW via Lakeshore
Milton	53	9	29	0	93	184	2%	1%	E	Lakeshore Rd
								1%	W	QEW via Lakeshore
Oakville	343	290	242	95	148	1118	12%	12%	E	Lakeshore Rd
4051	40	0	12	0	0	52	1%	1%	W	Lakeshore Rd
4052	0	0	0	0	10	10	0%	0%	W	Lakeshore Rd
4053	0	0	69	0	0	69	1%	1%	W	Lakeshore Rd
4054	56	23	0	0	0	79	1%	1%	W	Lakeshore Rd
4055	0	18	0	0	0	18	0%	0%	W	Lakeshore Rd
4056	0	0	76	0	0	76	1%	1%	W	Lakeshore Rd
4057	93	36	45	74	0	248	3%	1%	W	Lakeshore Rd
								1%	N	Brant St
4058	0	32	25	0	45	102	1%	1%	N	Brant St
4059	221	175	169	23	31	619	7%	7%	N	Brant St
4060	83	45	63	0	0	191	2%	1%	N	Brant St
								1%	N	Pearl St
4061	32	96	48	99	19	294	3%	3%	E	Lakeshore Rd
4062	0	12	0	0	85	97	1%	1%	E	Lakeshore Rd
4063	246	22	37	58	56	419	5%	5%	E	Lakeshore Rd
4064	46	10	49	17	75	197	2%	2%	E	Lakeshore Rd
4065	0	13	18	0	0	31	0%	0%	E	Lakeshore Rd
4067	11	0	0	0	0	11	0%	0%	E	Lakeshore Rd
4068	33	53	69	28	32	215	2%	2%	E	Lakeshore Rd
4069	30	0	28	20	39	117	1%	1%	E	Lakeshore Rd
4070	0	11	0	0	0	11	0%	0%	E	Lakeshore Rd
4071	21	0	0	0	0	21	0%	0%	E	Lakeshore Rd
4074	78	0	0	0	0	78	1%	1%	E	Lakeshore Rd
4076	0	0	0	30	0	30	0%	0%	E	Lakeshore Rd
4077	96	110	67	19	0	292	3%	2%	E	Lakeshore Rd
								2%	W	QEW via Lakeshore
4078	113	221	44	41	33	452	5%	3%	E	Lakeshore Rd
								2%	W	QEW via Lakeshore
4079	0	0	18	37	0	55	1%	0%	E	Lakeshore Rd
								0%	W	QEW via Lakeshore
4080	0	0	31	16	0	47	1%	1%	E	Lakeshore Rd
4081	109	0	24	0	33	166	2%	1%	E	Lakeshore Rd
								1%	W	QEW via Lakeshore
4082	82	73	95	91	180	521	6%	6%	E	Lakeshore Rd
4083	38	0	0	0	27	65	1%	1%	E	Lakeshore Rd
4084	31	0	17	23	0	71	1%	1%	E	Lakeshore Rd
4085	0	0	30	0	0	30	0%	0%	N	Brant St
4086	0	0	11	18	0	29	0%	0%	N	Brant St
4088	14	23	24	0	30	91	1%	1%	N	Brant St
4089	18	0	0	0	10	28	0%	0%	N	Brant St
4090	0	0	13	0	0	13	0%	0%	N	Brant St
4091	61	14	0	0	21	96	1%	1%	W	Lakeshore Rd
								0%	N	Brant St
4093	0	0	11	0	0	11	0%	0%	N	Brant St
4094	0	36	0	0	0	36	0%	0%	E	Lakeshore Rd
4097	17	0	0	0	0	17	0%	0%	N	Brant St
4098	0	0	35	0	0	35	0%	0%	N	Brant St
4189	0	39	0	0	0	39	0%	0%	E	Lakeshore Rd
4190	0	33	15	37	32	117	1%	1%	E	Lakeshore Rd
Flamborough	52	0	54	0	49	155	2%	1%	W	QEW via Lakeshore
								1%	W	Lakeshore Rd
Dundas	24	0	0	0	0	24	0%	0%	W	QEW via Lakeshore
Ancaster	0	12	0	22	0	34	0%	0%	W	QEW via Lakeshore
Glanbrook	56	0	0	0	0	56	1%	1%	W	QEW via Lakeshore
Stoney Creek	41	30	0	0	0	71	1%	1%	W	QEW via Lakeshore
Hamilton	376	81	196	212	104	969	10%	10%	W	QEW via Lakeshore
Niagara-on-the-Lake	0	0	0	0	16	16	0%	0%	W	QEW via Lakeshore
St. Catharines	0	0	18	0	0	18	0%	0%	W	QEW via Lakeshore
Niagara Falls	30	25	0	0	29	84	1%	1%	W	QEW via Lakeshore
Fort Erie	19	0	29	0	0	48	1%	1%	W	QEW via Lakeshore
Kitchener	36	28	0	0	0	64	1%	1%	W	QEW via Lakeshore
Cambridge	0	0	0	0	63	63	1%	1%	W	QEW via Lakeshore
City of Guelph	48	0	0	0	0	48	1%	1%	W	QEW via Lakeshore
Guelph/Eramosa	0	0	0	0	22	22	0%	0%	N	Brant St
Muskoka	0	0	0	17	0	17	0%	0%	W	QEW via Lakeshore
Oxford	0	0	35	0	0	35	0%	0%	W	QEW via Lakeshore
Brantford	0	0	16	0	0	16	0%	0%	W	QEW via Lakeshore
External	0	0	12	0	0	12	0%	0%		
TOTAL	*3083*	*1708*	*2041*	*1104*	*1296*	*9232*	*100%*	*100%*		

Residential Out			
Direction	Route	%	% rounded
N	Brant St	13.52%	14%
	Pearl St	1.03%	1%
E	Lakeshore Rd	45.93%	46%
W	Lakeshore Rd	39.38%	39%
	TOTAL	*100%*	*100%*

Wed Nov 08 2023 16:20:16 GMT-0500 (Eastern Standard Time) - Run Time: 2584ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone o 4057 4059 4061 4062
and
Trip purpose of destination - purp_dest In M
and
Start time of trip - start_time In 1500-1900
and
Primary travel mo M)

Trip 2016
Table:

Origin	Destination					Total Trips		Trip Assignment		
	4057	4059	4060	4061	4062	Trips	%	Assignment	Route Direction	Route
Mississauga	19	0	9		0	28	1%	1%	W	QEW via Lakeshore
Milton	29	0	0		12	41	2%	1%	E	Lakeshore Rd
								1%	W	QEW via Lakeshore
Oakville	159	23	17		0	199	8%	8%	E	Lakeshore Rd
4050	93	0	0		0	93	4%	4%	W	Lakeshore Rd
4051	18	0	0		0	18	1%	1%	W	Lakeshore Rd
4053	64	0	0		0	64	2%	2%	W	Lakeshore Rd
4054	12	0	0		0	12	0%	0%	W	Lakeshore Rd
4055	0	55	42		0	97	4%	4%	W	Lakeshore Rd
4056	8	60	0		0	68	3%	3%	W	Lakeshore Rd
4057	65	173	0		0	238	9%	4%	W	Lakeshore Rd
								4%	N	Brant St
4058	12	0	0		0	12	0%	0%	N	Brant St
4059	53	0	0		99	152	6%	6%	N	Brant St
4060	26	82	13		0	121	5%	2%	N	Brant St
								2%	N	Pearl St
4061	12	18	0		0	30	1%	1%	E	Lakeshore Rd
4062	22	13	0		0	35	1%	1%	E	Lakeshore Rd
4063	29	18	0		50	97	4%	4%	E	Lakeshore Rd
4064	44	0	0		16	60	2%	2%	E	Lakeshore Rd
4067	0	13	0		0	13	0%	0%	E	Lakeshore Rd
4068	0	31	0		0	31	1%	1%	E	Lakeshore Rd
4069	0	28	18		0	46	2%	2%	E	Lakeshore Rd
4071	0	0	0		36	36	1%	1%	E	Lakeshore Rd
4078	0	101	0		0	101	4%	3%	E	Lakeshore Rd
								2%	W	QEW via Lakeshore
4079	20	11	0		0	31	1%	0%	E	Lakeshore Rd
								0%	W	QEW via Lakeshore
4082	0	18	0		0	18	1%	1%	E	Lakeshore Rd
4083	18	33	0		0	51	2%	2%	E	Lakeshore Rd
4084	21	18	0		0	39	1%	1%	E	Lakeshore Rd
4087	10	61	0		0	71	3%	3%	N	Brant St
4088	26	0	8		0	34	1%	1%	N	Brant St
4089	35	0	0		46	81	3%	3%	N	Brant St
4094	0	15	0		0	15	1%	1%	E	Lakeshore Rd
4098	5	0	0		0	5	0%	0%	N	Brant St
4189	110	0	0		0	110	4%	4%	E	Lakeshore Rd
4190	0	0	0		19	19	1%	1%	E	Lakeshore Rd
Flamborough	12	0	39		0	51	2%	1%	W	QEW via Lakeshore
								1%	W	Lakeshore Rd
Dundas	0	32	0		0	32	1%	1%	W	QEW via Lakeshore
Stoney Creek	22	0	0		0	22	1%	1%	W	QEW via Lakeshore
Hamilton	310	64	0		0	374	14%	14%	W	QEW via Lakeshore
Grimsby	8	0	0		0	8	0%	0%	W	QEW via Lakeshore
St. Catharines	36	0	0		0	36	1%	1%	W	QEW via Lakeshore
Niagara Falls	33	0	0		0	33	1%	1%	W	QEW via Lakeshore
Cambridge	25	0	0		0	25	1%	1%	W	QEW via Lakeshore
TOTAL	*1356*	*867*	*146*	*0*	*278*	*2647*	*100%*	*100%*		

Retail In			
Direction	Route	%	% rounded
N	Brant St	20.19%	20%
	Pearl St	2.29%	2%
E	Lakeshore Rd	34.62%	35%
W	Lakeshore Rd	43.16%	43%
	TOTAL	*100%*	*100%*

Wed Nov 08 2023 16:23:09 GMT-0500 (Eastern Standard Time) - Run Time: 2545ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone o 4057 4059 4061 4062
and
Trip purpose of origin - purp_orig In M
and
Start time of trip - start_time In 1500-1900
and
Primary travel mc M)

Trip 2016
Table:

Destination	Origin					Total Trips		Trip Assignment		
	4057	4059	4060	4061	4062	Trips	%	Assignment	Route Direction	Route
Milton	14	0	0	0	0	14	0%	0%	E	Lakeshore Rd
								0%	W	QEW via Lakeshore
Oakville	186	10	17	0	0	213	7%	7%	E	Lakeshore Rd
4050	22	0	0	0	0	22	1%	1%	W	Lakeshore Rd
4051	59	0	0	0	0	59	2%	2%	W	Lakeshore Rd
4052	48	13	0	0	0	61	2%	2%	W	Lakeshore Rd
4053	72	43	0	0	10	125	4%	4%	W	Lakeshore Rd
4054	17	0	0	0	0	17	1%	1%	W	Lakeshore Rd
4055	52	0	0	0	0	52	2%	2%	W	Lakeshore Rd
4056	0	18	0	0	0	18	1%	1%	W	Lakeshore Rd
4057	112	151	0	0	0	263	9%	4%	W	Lakeshore Rd
								4%	N	Brant St
4058	12	0	0	0	0	12	0%	0%	N	Brant St
4059	119	103	0	0	0	222	7%	7%	N	Brant St
4060	77	179	0	0	0	256	8%	4%	N	Brant St
								4%	N	Pearl St
4061	0	36	0	0	16	52	2%	2%	E	Lakeshore Rd
4062	37	13	0	0	0	50	2%	2%	E	Lakeshore Rd
4063	38	62	11	0	12	123	4%	4%	E	Lakeshore Rd
4064	33	23	0	0	0	56	2%	2%	E	Lakeshore Rd
4065	0	30	0	0	0	30	1%	1%	E	Lakeshore Rd
4066	0	0	0	0	14	14	0%	0%	E	Lakeshore Rd
4068	24	0	0	0	0	24	1%	1%	E	Lakeshore Rd
4069	17	0	0	0	0	17	1%	1%	E	Lakeshore Rd
4070	0	21	0	0	0	21	1%	1%	E	Lakeshore Rd
4073	0	0	24	0	0	24	1%	1%	E	Lakeshore Rd
4076	0	72	0	16	45	133	4%	4%	E	Lakeshore Rd
4079	0	11	0	0	23	34	1%	1%	E	Lakeshore Rd
								0%	W	QEW via Lakeshore
4080	23	33	8	0	0	64	2%	2%	E	Lakeshore Rd
4081	33	0	0	0	0	33	1%	1%	E	Lakeshore Rd
								0%	W	QEW via Lakeshore
4082	0	22	39	0	0	61	2%	2%	E	Lakeshore Rd
4083	0	48	0	0	0	48	2%	2%	E	Lakeshore Rd
4084	24	0	0	0	0	24	1%	1%	E	Lakeshore Rd
4086	0	0	0	0	12	12	0%	0%	N	Brant St
4087	0	0	0	0	11	11	0%	0%	N	Brant St
4088	36	0	8	0	0	44	1%	1%	N	Brant St
4089	83	21	9	0	0	113	4%	4%	N	Brant St
4090	15	0	0	0	19	34	1%	1%	N	Brant St
4091	0	13	0	0	0	13	0%	0%	W	Lakeshore Rd
								0%	N	Brant St
4092	21	0	0	0	0	21	1%	1%	W	Lakeshore Rd
4094	0	10	0	0	0	10	0%	0%	E	Lakeshore Rd
4098	16	0	0	0	0	16	1%	1%	N	Brant St
4189	95	0	0	0	0	95	3%	3%	E	Lakeshore Rd
4190	8	0	0	0	0	8	0%	0%	E	Lakeshore Rd
4191	14	0	0	0	0	14	0%	0%	N	Brant St
Flamborough	19	0	0	0	0	19	1%	0%	W	QEW via Lakeshore
								0%	W	Lakeshore Rd
Ancaster	0	33	0	0	0	33	1%	1%	W	QEW via Lakeshore
Glanbrook	39	0	0	0	0	39	1%	1%	W	QEW via Lakeshore
Stoney Creek	19	0	0	0	40	59	2%	2%	W	QEW via Lakeshore
Hamilton	97	0	0	0	0	97	3%	3%	W	QEW via Lakeshore
Grimsby	23	0	0	0	14	37	1%	1%	W	QEW via Lakeshore
Lincoln	17	0	0	0	0	17	1%	1%	W	QEW via Lakeshore
St. Catharines	52	0	0	0	0	52	2%	2%	W	QEW via Lakeshore
West Lincoln	12	0	0	0	0	12	0%	0%	W	QEW via Lakeshore
Cambridge	25	0	0	0	0	25	1%	1%	W	QEW via Lakeshore
City of Guelph	12	0	0	0	0	12	0%	0%	N	Brant St
Brant	13	0	0	0	0	13	0%	0%	W	QEW via Lakeshore
Brantford	73	0	0	0	0	73	2%	2%	W	QEW via Lakeshore
TOTAL	*1708*	*965*	*116*	*16*	*216*	*3021*	*100%*	*100%*		

Retail Out		
Direction	Route	%
N	Brant St	24.95%
	Pearl St	4.24%
E	Lakeshore Rd	37.03%
W	Lakeshore Rd	33.78%
	TOTAL	*100%*

% rounded
25%
4%
37%
34%
100%

APPENDIX F

Intersection Capacity Analysis

Existing Conditions

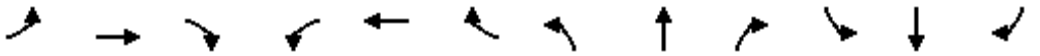
Lane Group	EBL	EBT	WBL	WBT	NBL	SBL	SBT	Ø3	Ø7
Lane Configurations									
Traffic Volume (vph)	43	533	2	358	2	7	3		
Future Volume (vph)	43	533	2	358	2	7	3		
Lane Group Flow (vph)	44	564	2	388	2	7	29		
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA		
Protected Phases		2		6			8	3	7
Permitted Phases	2		6		4	8			
Detector Phase	2	2	6	6	4	8	8		
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	2.0
Minimum Split (s)	40.0	40.0	40.0	40.0	27.0	27.0	27.0	5.0	5.0
Total Split (s)	77.0	77.0	77.0	77.0	28.0	28.0	28.0	5.0	5.0
Total Split (%)	70.0%	70.0%	70.0%	70.0%	25.5%	25.5%	25.5%	5%	5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Lead/Lag					Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	Max	Max
v/c Ratio	0.06	0.22	0.00	0.14	0.02	0.10	0.22		
Control Delay	3.5	3.3	3.5	3.0	47.5	51.1	23.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	3.5	3.3	3.5	3.0	47.5	51.1	23.6		
Queue Length 50th (m)	2.2	16.6	0.1	10.4	0.4	1.5	0.6		
Queue Length 95th (m)	5.1	22.6	0.7	15.0	3.0	6.4	10.1		
Internal Link Dist (m)		69.1		37.5			29.8		
Turn Bay Length (m)	44.0		19.0		8.0	7.0			
Base Capacity (vph)	711	2621	420	2783	338	175	301		
Starvation Cap Reductn	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.06	0.22	0.00	0.14	0.01	0.04	0.10		

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 1: Pearl St & Lakeshore Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	533	15	2	358	18	2	0	0	7	3	25
Future Volume (vph)	43	533	15	2	358	18	2	0	0	7	3	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0			7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00			1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00			1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95			0.95	1.00	
Satd. Flow (prot)	1603	3244		1123	3442		1685			1685	1471	
Flt Permitted	0.52	1.00		0.44	1.00		1.00			0.52	1.00	
Satd. Flow (perm)	881	3244		521	3442		1773			921	1471	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	44	549	15	2	369	19	2	0	0	7	3	26
RTOR Reduction (vph)	0	1	0	0	2	0	0	0	0	0	24	0
Lane Group Flow (vph)	44	563	0	2	386	0	2	0	0	7	5	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	5%	4%	7%	50%	3%	0%	0%	0%	0%	0%	33%	8%
Parking (#/hr)		0										
Turn Type	Perm	NA		Perm	NA		Perm			Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	83.3	83.3		83.3	83.3		1.7			7.7	7.7	
Effective Green, g (s)	83.3	83.3		83.3	83.3		1.7			7.7	7.7	
Actuated g/C Ratio	0.76	0.76		0.76	0.76		0.02			0.07	0.07	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0			7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	667	2456		394	2606		27			64	102	
v/s Ratio Prot		c0.17			0.11						0.00	
v/s Ratio Perm	0.05			0.00			0.00			c0.01		
v/c Ratio	0.07	0.23		0.01	0.15		0.07			0.11	0.05	
Uniform Delay, d1	3.4	3.9		3.3	3.6		53.4			47.9	47.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.0	0.1		1.2			0.8	0.2	
Delay (s)	3.6	4.1		3.3	3.8		54.5			48.7	47.9	
Level of Service	A	A		A	A		D			D	D	
Approach Delay (s)		4.1			3.8			54.5			48.1	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	523	376	10	6	6
Future Vol, veh/h	16	523	376	10	6	6
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	19	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	3	3	10	17	17
Mvmt Flow	17	551	396	11	6	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	408	0	-	0	988	403
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	585	-
Critical Hdwy	4.23	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.317	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1094	-	-	-	257	616
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	529	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1093	-	-	-	252	616
Mov Cap-2 Maneuver	-	-	-	-	376	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	528	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1093	-	-	-	467
HCM Lane V/C Ratio	0.015	-	-	-	0.027
HCM Control Delay (s)	8.3	-	-	-	12.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	525	0	9	377	4	8
Future Vol, veh/h	525	0	9	377	4	8
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	39	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	0	0	5	25	13
Mvmt Flow	565	0	10	405	4	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	567	0	992	567
Stage 1	-	-	-	-	567	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	-	-	4.1	-	6.65	6.33
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	-	-	2.2	-	3.725	3.417
Pot Cap-1 Maneuver	-	-	1015	-	247	503
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	613	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1014	-	244	502
Mov Cap-2 Maneuver	-	-	-	-	367	-
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	607	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	447	-	-	1014	-
HCM Lane V/C Ratio	0.029	-	-	0.01	-
HCM Control Delay (s)	13.3	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	539	0	0	378	0	0
Future Vol, veh/h	539	0	0	378	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	567	0	0	398	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	766	567
Stage 1	-	-	-	-	567	-
Stage 2	-	-	-	-	199	-
Critical Hdwy	-	-	-	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	0	-	358	527
Stage 1	-	-	0	-	572	-
Stage 2	-	-	0	-	821	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	358	527
Mov Cap-2 Maneuver	-	-	-	-	460	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	821	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	2	0	0	0
Future Vol, veh/h	0	20	2	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	21	2	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2	0	-	0	23	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	21	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1634	-	-	-	998	1088
Stage 1	-	-	-	-	1026	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1634	-	-	-	998	1088
Mov Cap-2 Maneuver	-	-	-	-	998	-
Stage 1	-	-	-	-	1026	-
Stage 2	-	-	-	-	1007	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1634	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

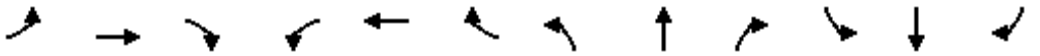
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø3	Ø7
Lane Configurations										
Traffic Volume (vph)	30	460	1	521	32	20	14	1		
Future Volume (vph)	30	460	1	521	32	20	14	1		
Lane Group Flow (vph)	36	567	1	653	39	30	17	88		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		2		6		4		8	3	7
Permitted Phases	2		6		4		8			
Detector Phase	2	2	6	6	4	4	8	8		
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	2.0
Minimum Split (s)	40.0	40.0	40.0	40.0	27.0	27.0	27.0	27.0	5.0	5.0
Total Split (s)	87.0	87.0	87.0	87.0	28.0	28.0	28.0	28.0	5.0	5.0
Total Split (%)	72.5%	72.5%	72.5%	72.5%	23.3%	23.3%	23.3%	23.3%	4%	4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Lead/Lag					Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	Max	Max
v/c Ratio	0.07	0.22	0.00	0.24	0.37	0.17	0.14	0.40		
Control Delay	5.4	4.9	5.0	4.9	59.0	41.9	49.4	15.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	5.4	4.9	5.0	4.9	59.0	41.9	49.4	15.3		
Queue Length 50th (m)	1.9	17.8	0.1	21.0	9.4	5.6	4.0	0.2		
Queue Length 95th (m)	6.2	30.8	0.6	35.3	17.8	13.0	9.7	12.4		
Internal Link Dist (m)		69.1		37.5		11.9		29.8		
Turn Bay Length (m)	44.0		19.0		8.0		7.0			
Base Capacity (vph)	537	2581	594	2705	195	323	229	332		
Starvation Cap Reductn	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.07	0.22	0.00	0.24	0.20	0.09	0.07	0.27		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 1: Pearl St & Lakeshore Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	460	11	1	521	21	32	20	5	14	1	72
Future Volume (vph)	30	460	11	1	521	21	32	20	5	14	1	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.97		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1636	3344		1665	3506		1514	1823		1685	1486	
Flt Permitted	0.40	1.00		0.44	1.00		0.70	1.00		0.74	1.00	
Satd. Flow (perm)	695	3344		770	3506		1115	1823		1308	1486	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	36	554	13	1	628	25	39	24	6	17	1	87
RTOR Reduction (vph)	0	1	0	0	2	0	0	6	0	0	80	0
Lane Group Flow (vph)	36	566	0	1	651	0	39	24	0	17	8	0
Confl. Peds. (#/hr)			14	14			13					13
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	3%	1%	0%	0%	1%	5%	9%	0%	0%	0%	0%	4%
Parking (#/hr)		0										
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	91.2	91.2		91.2	91.2		9.8	9.8		9.8	9.8	
Effective Green, g (s)	91.2	91.2		91.2	91.2		9.8	9.8		9.8	9.8	
Actuated g/C Ratio	0.76	0.76		0.76	0.76		0.08	0.08		0.08	0.08	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	528	2541		585	2664		91	148		106	121	
v/s Ratio Prot		0.17			c0.19			0.01			0.01	
v/s Ratio Perm	0.05			0.00			c0.03			0.01		
v/c Ratio	0.07	0.22		0.00	0.24		0.43	0.17		0.16	0.07	
Uniform Delay, d1	3.6	4.2		3.5	4.2		52.4	51.3		51.3	50.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.0	0.2		3.2	0.5		0.7	0.2	
Delay (s)	3.9	4.4		3.5	4.5		55.8	51.6		52.0	51.1	
Level of Service	A	A		A	A		E	D		D	D	
Approach Delay (s)		4.3			4.5			54.0			51.3	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	454	541	52	3	7
Future Vol, veh/h	27	454	541	52	3	7
Conflicting Peds, #/hr	0	0	0	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	19	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	2	3	2	0	0
Mvmt Flow	34	568	676	65	4	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	741	0	-	0	1345	715
Stage 1	-	-	-	-	709	-
Stage 2	-	-	-	-	636	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	875	-	-	-	169	434
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	531	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	875	-	-	-	162	432
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	531	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	875	-	-	-	383
HCM Lane V/C Ratio	0.039	-	-	-	0.033
HCM Control Delay (s)	9.3	-	-	-	14.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	433	7	41	584	0	12
Future Vol, veh/h	433	7	41	584	0	12
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	39	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	522	8	49	704	0	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	531	0	1329	527
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	802	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1047	-	173	555
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	445	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1046	-	165	555
Mov Cap-2 Maneuver	-	-	-	-	298	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	424	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	555	-	-	1046	-
HCM Lane V/C Ratio	0.026	-	-	0.047	-
HCM Control Delay (s)	11.7	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	481	0	0	543	0	0
Future Vol, veh/h	481	0	0	543	0	0
Conflicting Peds, #/hr	0	14	14	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	506	0	0	572	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	806	520
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	286	-
Critical Hdwy	-	-	-	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	0	-	339	560
Stage 1	-	-	0	-	601	-
Stage 2	-	-	0	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	336	554
Mov Cap-2 Maneuver	-	-	-	-	451	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	743	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	57	0	0	0
Future Vol, veh/h	0	13	57	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	14	60	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	60	0	-	0	74	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	14	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1556	-	-	-	935	1011
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1556	-	-	-	935	1011
Mov Cap-2 Maneuver	-	-	-	-	935	-
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	1014	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1556	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Future Background Conditions

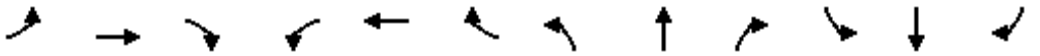
Lane Group	EBL	EBT	WBL	WBT	NBL	SBL	SBT	Ø3	Ø7
Lane Configurations									
Traffic Volume (vph)	44	626	2	473	2	7	3		
Future Volume (vph)	44	626	2	473	2	7	3		
Lane Group Flow (vph)	45	660	2	507	2	7	32		
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA		
Protected Phases		2		6			8	3	7
Permitted Phases	2		6		4	8			
Detector Phase	2	2	6	6	4	8	8		
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	2.0
Minimum Split (s)	40.0	40.0	40.0	40.0	27.0	27.0	27.0	5.0	5.0
Total Split (s)	77.0	77.0	77.0	77.0	28.0	28.0	28.0	5.0	5.0
Total Split (%)	70.0%	70.0%	70.0%	70.0%	25.5%	25.5%	25.5%	5%	5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Lead/Lag					Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	Max	Max
v/c Ratio	0.07	0.25	0.01	0.18	0.02	0.10	0.24		
Control Delay	3.6	3.5	3.5	3.2	47.5	51.0	23.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	3.6	3.5	3.5	3.2	47.5	51.0	23.1		
Queue Length 50th (m)	2.2	20.2	0.1	14.3	0.4	1.5	0.6		
Queue Length 95th (m)	5.4	27.2	0.7	19.9	3.0	6.4	10.5		
Internal Link Dist (m)		69.1		37.5			29.8		
Turn Bay Length (m)	44.0		19.0		8.0	7.0			
Base Capacity (vph)	634	2624	382	2784	338	175	304		
Starvation Cap Reductn	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.07	0.25	0.01	0.18	0.01	0.04	0.11		

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 1: Pearl St & Lakeshore Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	626	15	2	473	18	2	0	0	7	3	28
Future Volume (vph)	44	626	15	2	473	18	2	0	0	7	3	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0			7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00			1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00			1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95			0.95	1.00	
Satd. Flow (prot)	1603	3246		1123	3447		1685			1685	1471	
Flt Permitted	0.47	1.00		0.40	1.00		1.00			0.52	1.00	
Satd. Flow (perm)	785	3246		474	3447		1773			921	1471	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	45	645	15	2	488	19	2	0	0	7	3	29
RTOR Reduction (vph)	0	1	0	0	2	0	0	0	0	0	27	0
Lane Group Flow (vph)	45	659	0	2	505	0	2	0	0	7	5	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	5%	4%	7%	50%	3%	0%	0%	0%	0%	0%	33%	8%
Parking (#/hr)		0										
Turn Type	Perm	NA		Perm	NA		Perm			Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	83.3	83.3		83.3	83.3		1.7			7.7	7.7	
Effective Green, g (s)	83.3	83.3		83.3	83.3		1.7			7.7	7.7	
Actuated g/C Ratio	0.76	0.76		0.76	0.76		0.02			0.07	0.07	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0			7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	594	2458		358	2610		27			64	102	
v/s Ratio Prot		c0.20			0.15						0.00	
v/s Ratio Perm	0.06			0.00			0.00			c0.01		
v/c Ratio	0.08	0.27		0.01	0.19		0.07			0.11	0.05	
Uniform Delay, d1	3.4	4.1		3.3	3.8		53.4			47.9	47.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.0	0.2		1.2			0.8	0.2	
Delay (s)	3.7	4.3		3.3	4.0		54.5			48.7	47.9	
Level of Service	A	A		A	A		D			D	D	
Approach Delay (s)		4.3			4.0			54.5			48.1	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	604	446	15	29	52
Future Vol, veh/h	28	604	446	15	29	52
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	19	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	3	3	10	17	17
Mvmt Flow	29	636	469	16	31	55

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	486	0	-	0	1172	478
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	694	-
Critical Hdwy	4.23	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.317	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1022	-	-	-	198	558
Stage 1	-	-	-	-	594	-
Stage 2	-	-	-	-	469	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1021	-	-	-	192	558
Mov Cap-2 Maneuver	-	-	-	-	322	-
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	469	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1021	-	-	-	442
HCM Lane V/C Ratio	0.029	-	-	-	0.193
HCM Control Delay (s)	8.6	-	-	-	15.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	629	0	9	452	4	8
Future Vol, veh/h	629	0	9	452	4	8
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	39	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	0	0	5	25	13
Mvmt Flow	676	0	10	486	4	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	678	0	1184	678
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	506	-
Critical Hdwy	-	-	4.1	-	6.65	6.33
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	-	-	2.2	-	3.725	3.417
Pot Cap-1 Maneuver	-	-	923	-	188	434
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	561	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	922	-	186	433
Mov Cap-2 Maneuver	-	-	-	-	315	-
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	555	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	385	-	-	922	-
HCM Lane V/C Ratio	0.034	-	-	0.01	-
HCM Control Delay (s)	14.7	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	2	0	0	0
Future Vol, veh/h	0	20	2	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	21	2	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2	0	-	0	23	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	21	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1634	-	-	-	998	1088
Stage 1	-	-	-	-	1026	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1634	-	-	-	998	1088
Mov Cap-2 Maneuver	-	-	-	-	998	-
Stage 1	-	-	-	-	1026	-
Stage 2	-	-	-	-	1007	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1634	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

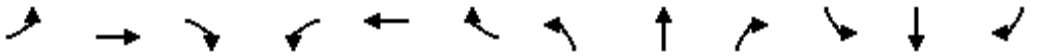
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø3	Ø7
Lane Configurations										
Traffic Volume (vph)	33	596	1	625	32	20	14	1		
Future Volume (vph)	33	596	1	625	32	20	14	1		
Lane Group Flow (vph)	40	731	1	778	39	30	17	90		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		2		6		4		8	3	7
Permitted Phases	2		6		4		8			
Detector Phase	2	2	6	6	4	4	8	8		
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	2.0
Minimum Split (s)	40.0	40.0	40.0	40.0	27.0	27.0	27.0	27.0	5.0	5.0
Total Split (s)	87.0	87.0	87.0	87.0	28.0	28.0	28.0	28.0	5.0	5.0
Total Split (%)	72.5%	72.5%	72.5%	72.5%	23.3%	23.3%	23.3%	23.3%	4%	4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Lead/Lag					Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	Max	Max
v/c Ratio	0.09	0.29	0.00	0.30	0.37	0.17	0.18	0.41		
Control Delay	5.7	5.7	5.0	5.7	59.0	41.9	51.6	15.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	5.7	5.7	5.0	5.7	59.0	41.9	51.6	15.3		
Queue Length 50th (m)	2.2	24.6	0.1	26.1	9.4	5.6	4.0	0.2		
Queue Length 95th (m)	6.9	41.0	0.6	43.2	17.8	13.0	9.8	12.2		
Internal Link Dist (m)		69.1		37.5		11.9		29.8		
Turn Bay Length (m)	44.0		19.0		8.0		7.0			
Base Capacity (vph)	445	2498	481	2621	194	323	175	333		
Starvation Cap Reductn	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.09	0.29	0.00	0.30	0.20	0.09	0.10	0.27		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 1: Pearl St & Lakeshore Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	596	11	1	625	21	32	20	5	14	1	74
Future Volume (vph)	33	596	11	1	625	21	32	20	5	14	1	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1636	3347		1670	3511		1514	1823		1685	1486	
Flt Permitted	0.35	1.00		0.37	1.00		0.70	1.00		0.56	1.00	
Satd. Flow (perm)	598	3347		645	3511		1113	1823		1001	1486	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	40	718	13	1	753	25	39	24	6	17	1	89
RTOR Reduction (vph)	0	1	0	0	2	0	0	6	0	0	80	0
Lane Group Flow (vph)	40	730	0	1	776	0	39	24	0	17	10	0
Confl. Peds. (#/hr)			14	14			13					13
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	3%	1%	0%	0%	1%	5%	9%	0%	0%	0%	0%	4%
Parking (#/hr)		0										
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	88.2	88.2		88.2	88.2		9.8	9.8		12.8	12.8	
Effective Green, g (s)	88.2	88.2		88.2	88.2		9.8	9.8		12.8	12.8	
Actuated g/C Ratio	0.74	0.74		0.74	0.74		0.08	0.08		0.11	0.11	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	439	2460		474	2580		90	148		106	158	
v/s Ratio Prot		0.22			c0.22			0.01			0.01	
v/s Ratio Perm	0.07			0.00			c0.04			c0.02		
v/c Ratio	0.09	0.30		0.00	0.30		0.43	0.17		0.16	0.07	
Uniform Delay, d1	4.5	5.4		4.2	5.4		52.5	51.3		48.7	48.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Incremental Delay, d2	0.4	0.3		0.0	0.3		3.3	0.5		0.7	0.2	
Delay (s)	4.9	5.7		4.2	5.7		55.9	51.5		49.4	48.4	
Level of Service	A	A		A	A		E	D		D	D	
Approach Delay (s)		5.7			5.7			54.0			48.6	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	78	534	627	65	16	26
Future Vol, veh/h	78	534	627	65	16	26
Conflicting Peds, #/hr	0	0	0	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	19	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	2	3	2	0	0
Mvmt Flow	98	668	784	81	20	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	865	0	-	0	1689	831
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	864	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	787	-	-	-	104	373
Stage 1	-	-	-	-	434	-
Stage 2	-	-	-	-	416	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	787	-	-	-	91	371
Mov Cap-2 Maneuver	-	-	-	-	223	-
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	416	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	787	-	-	-	296
HCM Lane V/C Ratio	0.124	-	-	-	0.177
HCM Control Delay (s)	10.2	-	-	-	19.8
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	0.6

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	525	7	41	690	0	12
Future Vol, veh/h	525	7	41	690	0	12
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	39	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	633	8	49	831	0	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	642	0	1567	638
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	929	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	952	-	124	480
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	388	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	951	-	117	480
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	368	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	480	-	-	951	-
HCM Lane V/C Ratio	0.03	-	-	0.052	-
HCM Control Delay (s)	12.7	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	57	0	0	0
Future Vol, veh/h	0	13	57	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	14	60	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	60	0	-	0	74	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	14	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1556	-	-	-	935	1011
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1556	-	-	-	935	1011
Mov Cap-2 Maneuver	-	-	-	-	935	-
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	1014	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1556	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Future Total Conditions

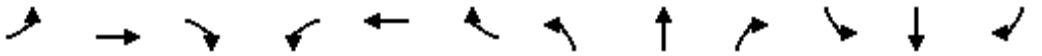
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø3	Ø7
Lane Configurations										
Traffic Volume (vph)	44	627	2	474	29	1	8	3		
Future Volume (vph)	44	627	2	474	29	1	8	3		
Lane Group Flow (vph)	45	673	2	509	30	1	8	32		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		2		6		4		8	3	7
Permitted Phases	2		6		4		8			
Detector Phase	2	2	6	6	4	4	8	8		
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	2.0
Minimum Split (s)	40.0	40.0	40.0	40.0	27.0	27.0	27.0	27.0	5.0	5.0
Total Split (s)	77.0	77.0	77.0	77.0	28.0	28.0	28.0	28.0	5.0	5.0
Total Split (%)	70.0%	70.0%	70.0%	70.0%	25.5%	25.5%	25.5%	25.5%	5%	5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Lead/Lag					Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	Max	Max
v/c Ratio	0.07	0.26	0.01	0.18	0.29	0.01	0.07	0.22		
Control Delay	4.0	3.8	4.0	3.5	54.3	45.0	47.4	21.8		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	4.0	3.8	4.0	3.5	54.3	45.0	47.4	21.8		
Queue Length 50th (m)	2.2	20.6	0.1	14.4	6.6	0.2	1.7	0.6		
Queue Length 95th (m)	6.0	31.0	0.8	22.3	16.2	1.9	6.8	10.3		
Internal Link Dist (m)		69.1		37.5		11.9		29.8		
Turn Bay Length (m)	44.0		19.0		8.0		7.0			
Base Capacity (vph)	628	2592	374	2761	249	358	256	304		
Starvation Cap Reductn	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.07	0.26	0.01	0.18	0.12	0.00	0.03	0.11		

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 1: Pearl St & Lakeshore Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	627	26	2	474	19	29	1	0	8	3	28
Future Volume (vph)	44	627	26	2	474	19	29	1	0	8	3	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1603	3235		1123	3446		1685	1879		1685	1471	
Flt Permitted	0.46	1.00		0.40	1.00		0.74	1.00		0.76	1.00	
Satd. Flow (perm)	784	3235		468	3446		1306	1879		1343	1471	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	45	646	27	2	489	20	30	1	0	8	3	29
RTOR Reduction (vph)	0	2	0	0	2	0	0	0	0	0	27	0
Lane Group Flow (vph)	45	671	0	2	507	0	30	1	0	8	5	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	5%	4%	7%	50%	3%	0%	0%	0%	0%	0%	33%	8%
Parking (#/hr)		0										
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	85.3	85.3		85.3	85.3		5.7	5.7		5.7	5.7	
Effective Green, g (s)	85.3	85.3		85.3	85.3		5.7	5.7		5.7	5.7	
Actuated g/C Ratio	0.78	0.78		0.78	0.78		0.05	0.05		0.05	0.05	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	607	2508		362	2672		67	97		69	76	
v/s Ratio Prot		c0.21			0.15			0.00			0.00	
v/s Ratio Perm	0.06			0.00			c0.02			0.01		
v/c Ratio	0.07	0.27		0.01	0.19		0.45	0.01		0.12	0.06	
Uniform Delay, d1	2.9	3.5		2.8	3.3		50.6	49.5		49.7	49.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.0	0.2		4.7	0.0		0.8	0.3	
Delay (s)	3.2	3.8		2.8	3.4		55.3	49.5		50.5	49.9	
Level of Service	A	A		A	A		E	D		D	D	
Approach Delay (s)		3.7			3.4			55.1			50.0	
Approach LOS		A			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	606	448	15	29	52
Future Vol, veh/h	28	606	448	15	29	52
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	19	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	3	3	10	17	17
Mvmt Flow	29	638	472	16	31	55

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	489	0	-	0	1177	481
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	696	-
Critical Hdwy	4.23	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.317	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1020	-	-	-	197	556
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	468	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1019	-	-	-	191	556
Mov Cap-2 Maneuver	-	-	-	-	321	-
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	468	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1019	-	-	-	441
HCM Lane V/C Ratio	0.029	-	-	-	0.193
HCM Control Delay (s)	8.6	-	-	-	15.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	631	0	17	454	4	32
Future Vol, veh/h	631	0	17	454	4	32
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	39	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	0	0	5	25	13
Mvmt Flow	678	0	18	488	4	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	680	0	1204	680
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	524	-
Critical Hdwy	-	-	4.1	-	6.65	6.33
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	-	-	2.2	-	3.725	3.417
Pot Cap-1 Maneuver	-	-	922	-	183	433
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	550	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	921	-	179	432
Mov Cap-2 Maneuver	-	-	-	-	308	-
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	539	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	414	-	-	921	-
HCM Lane V/C Ratio	0.094	-	-	0.02	-
HCM Control Delay (s)	14.6	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	634	0	0	496	0	0
Future Vol, veh/h	634	0	0	496	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	10	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	667	0	0	522	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	667	0	928	667
Stage 1	-	-	-	-	667	-
Stage 2	-	-	-	-	261	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	932	-	285	462
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	932	-	285	462
Mov Cap-2 Maneuver	-	-	-	-	402	-
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	765	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	932	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	20	2	8	24	28
Future Vol, veh/h	11	20	2	8	24	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	12	21	2	8	25	29

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	10	0	-	0	51	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1623	-	-	-	963	1083
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1623	-	-	-	956	1083
Mov Cap-2 Maneuver	-	-	-	-	956	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1623	-	-	-	1020
HCM Lane V/C Ratio	0.007	-	-	-	0.054
HCM Control Delay (s)	7.2	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

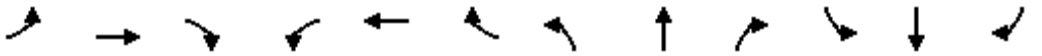
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø3	Ø7
Lane Configurations										
Traffic Volume (vph)	33	598	1	627	48	20	15	1		
Future Volume (vph)	33	598	1	627	48	20	15	1		
Lane Group Flow (vph)	40	766	1	783	58	30	18	90		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		2		6		4		8	3	7
Permitted Phases	2		6		4		8			
Detector Phase	2	2	6	6	4	4	8	8		
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	2.0
Minimum Split (s)	40.0	40.0	40.0	40.0	27.0	27.0	27.0	27.0	5.0	5.0
Total Split (s)	87.0	87.0	87.0	87.0	28.0	28.0	28.0	28.0	5.0	5.0
Total Split (%)	72.5%	72.5%	72.5%	72.5%	23.3%	23.3%	23.3%	23.3%	4%	4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Lead/Lag					Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	Max	Max
v/c Ratio	0.09	0.31	0.00	0.30	0.50	0.15	0.17	0.38		
Control Delay	6.1	6.1	6.0	6.0	64.1	41.1	50.0	14.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	6.1	6.1	6.0	6.0	64.1	41.1	50.0	14.4		
Queue Length 50th (m)	2.4	28.1	0.1	28.7	13.9	5.5	4.2	0.2		
Queue Length 95th (m)	6.9	42.8	0.6	43.5	24.3	13.0	10.1	12.2		
Internal Link Dist (m)		69.1		37.5		11.9		29.8		
Turn Bay Length (m)	44.0		19.0		8.0		7.0			
Base Capacity (vph)	436	2450	454	2588	194	323	179	333		
Starvation Cap Reductn	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.09	0.31	0.00	0.30	0.30	0.09	0.10	0.27		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 1: Pearl St & Lakeshore Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	598	38	1	627	23	48	20	5	15	1	74
Future Volume (vph)	33	598	38	1	627	23	48	20	5	15	1	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1636	3320		1670	3508		1514	1823		1685	1486	
Flt Permitted	0.34	1.00		0.35	1.00		0.70	1.00		0.58	1.00	
Satd. Flow (perm)	592	3320		617	3508		1113	1823		1026	1486	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	40	720	46	1	755	28	58	24	6	18	1	89
RTOR Reduction (vph)	0	3	0	0	2	0	0	5	0	0	79	0
Lane Group Flow (vph)	40	763	0	1	781	0	58	25	0	18	11	0
Confl. Peds. (#/hr)			14	14			13					13
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	3%	1%	0%	0%	1%	5%	9%	0%	0%	0%	0%	4%
Parking (#/hr)		0										
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	87.1	87.1		87.1	87.1		10.9	10.9		13.9	13.9	
Effective Green, g (s)	87.1	87.1		87.1	87.1		10.9	10.9		13.9	13.9	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.09	0.09		0.12	0.12	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	429	2409		447	2546		101	165		118	172	
v/s Ratio Prot		c0.23			0.22			0.01			0.01	
v/s Ratio Perm	0.07			0.00			c0.05			c0.02		
v/c Ratio	0.09	0.32		0.00	0.31		0.57	0.15		0.15	0.07	
Uniform Delay, d1	4.8	5.9		4.5	5.8		52.3	50.3		47.7	47.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.01		1.00	1.00	
Incremental Delay, d2	0.4	0.3		0.0	0.3		7.7	0.4		0.6	0.2	
Delay (s)	5.3	6.2		4.5	6.1		60.2	51.0		48.4	47.4	
Level of Service	A	A		A	A		E	D		D	D	
Approach Delay (s)		6.2			6.1			57.0			47.6	
Approach LOS		A			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	78	537	630	65	16	26
Future Vol, veh/h	78	537	630	65	16	26
Conflicting Peds, #/hr	0	0	0	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	19	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	2	3	2	0	0
Mvmt Flow	98	671	788	81	20	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	869	0	-	0	1696	835
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	867	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	784	-	-	-	103	371
Stage 1	-	-	-	-	432	-
Stage 2	-	-	-	-	415	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	784	-	-	-	90	369
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	415	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	784	-	-	-	295
HCM Lane V/C Ratio	0.124	-	-	-	0.178
HCM Control Delay (s)	10.2	-	-	-	19.8
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	0.6

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	528	7	63	693	0	26
Future Vol, veh/h	528	7	63	693	0	26
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	39	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	636	8	76	835	0	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	645	0	1628	641
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	987	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	950	-	113	478
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	364	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	949	-	104	478
Mov Cap-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	335	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	478	-	-	949	-
HCM Lane V/C Ratio	0.066	-	-	0.08	-
HCM Control Delay (s)	13.1	-	-	9.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	622	0	0	651	0	0
Future Vol, veh/h	622	0	0	651	0	0
Conflicting Peds, #/hr	0	14	14	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	10	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	655	0	0	685	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	669	0	1012	669
Stage 1	-	-	-	-	669	-
Stage 2	-	-	-	-	343	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	931	-	253	461
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	696	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	922	-	250	456
Mov Cap-2 Maneuver	-	-	-	-	377	-
Stage 1	-	-	-	-	508	-
Stage 2	-	-	-	-	696	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	922	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	13	57	22	14	16
Future Vol, veh/h	27	13	57	22	14	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	28	14	60	23	15	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	83	0	-	0	142	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	70	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1527	-	-	-	856	996
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	958	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1527	-	-	-	841	996
Mov Cap-2 Maneuver	-	-	-	-	841	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	958	-

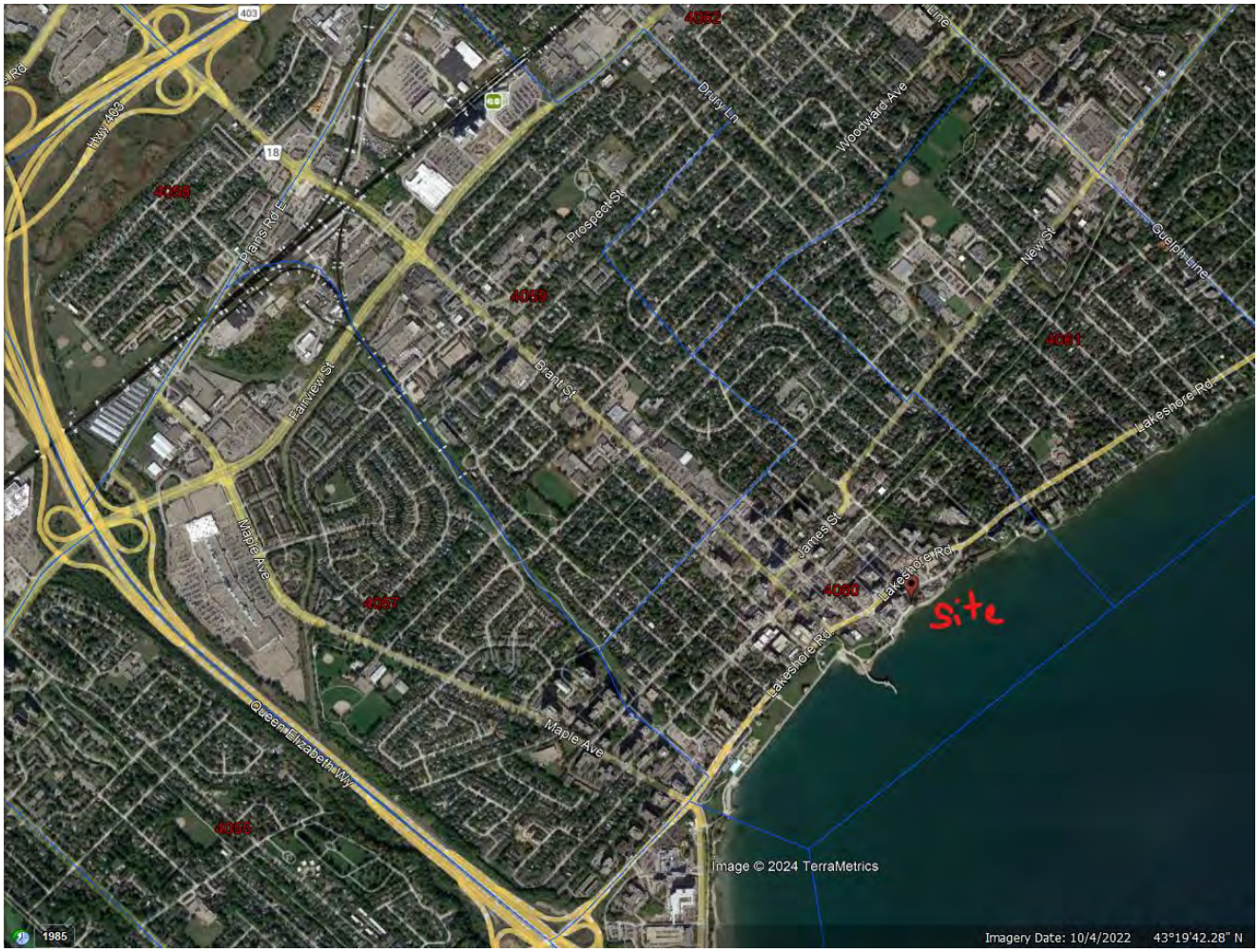
Approach	EB	WB	SB
HCM Control Delay, s	5	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1527	-	-	-	917
HCM Lane V/C Ratio	0.019	-	-	-	0.034
HCM Control Delay (s)	7.4	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

APPENDIX G

Vehicle Ownership TTS Data

TTS Zone	4060
Downtown Burlington Zones	4060, 4059, 4057 (half closer to lakeshore)



Number of Vehicles per Household, Sorted by Dwelling Type
Thu Mar 28 2024 11:35:47 GMT-0400 (Eastern Daylight Time) - Run Time: 603ms

Cross Tabulation Query Form - Household - 2006,2011,2016

Row: Type of dwelling unit - dwell_type
Column: No. of vehicles in household - n_vehicle

Filters:
2006 GTA zone of household - gta06_hhld In 4057, 4059, 4060

Household 2006
Table:

	0	1	2	3	4	5		**2006 Results - Apt Only**	
House	142	863	1440	318	88	18	2869	0 Cars	17%
%	5%	30%	50%	11%	3%	1%		1 Car	63%
Apartment	847	3165	951	18	52	0	5033	2 Cars	19%
%	17%	63%	19%	0%	1%	0%		3+ Cars	1%
Townhouse	34	379	243	17	0	0	673		100%
%	5%	56%	36%	3%	0%	0%			
Total #	1023	4407	2634	353	140	18	8575		
Total %	**12%**	**51%**	**31%**	**4%**	**2%**	**0%**			

Household 2011
Table:

	0	1	2	3	4	6		**2011 Results - Apt Only**	
House	94	677	1485	340	70	20	2686	0 Cars	18%
%	3%	25%	55%	13%	3%	1%		1 Car	61%
Apartment	911	3092	1003	53	19	0	5078	2 Cars	20%
%	18%	61%	20%	1%	0%	0%		3+ Cars	1%
Townhouse	112	517	286	38	0	0	953		100%
%	12%	54%	30%	4%	0%	0%			
Total #	1117	4286	2774	431	89	20	8717		
Total %	13%	49%	32%	5%	1%	0%			

Household 2016
Table:

	0	1	2	3	4	5		**2016 Results - Apt Only**	
House	51	563	1507	297	53	26	2497	0 Cars	11%
%	2%	23%	60%	12%	2%	1%		1 Car	67%
Apartment	686	3982	1197	71	35	0	5971	2 Cars	20%
%	11%	67%	20%	1%	1%	0%		3+ Cars	2%
Townhouse	0	327	535	131	85	0	1078		100%
%	0%	30%	50%	12%	8%	0%			
Total #	737	4872	3239	499	173	26	9546		
Total %	8%	51%	34%	5%	2%	0%			

Number of Drivers (i.e. Licenses) per Household, Sorted by Dwelling Type
Thu Mar 28 2024 11:38:37 GMT-0400 (Eastern Daylight Time) - Run Time: 540ms

Cross Tabulation Query Form - Household - 2006,2011,2016

Row: Type of dwelling unit - dwell_type
Column: No. of drivers in household - n_licence

Filters:
2006 GTA zone of household - gta06_hhld In 4057, 4059, 4060

Household 2006
Table:

	0	1	2	3	4	5		**2006 Results - Apt Only**	
House	106	633	1606	401	106	18	2870	0 Drivers	15%
%	4%	22%	56%	14%	4%	1%		1 Driver	49%
Apartment	740	2448	1739	71	36	0	5034	2 Drivers	35%
%	15%	49%	35%	1%	1%	0%		3+ Drivers	2%
Townhouse	17	206	417	34	0	0	674		100%
%	3%	31%	62%	5%	0%	0%			
Total #	863	3287	3762	506	142	18	8578		
Total %	10%	38%	44%	6%	2%	0%			

Household 2011
Table:

	0	1	2	3	4			**2011 Results - Apt Only**	
House	94	422	1669	410	91		2686	0 Drivers	13%
%	3%	16%	62%	15%	3%			1 Driver	52%
Apartment	653	2643	1722	60	0		5078	2 Drivers	34%
%	13%	52%	34%	1%	0%			3+ Drivers	1%
Townhouse	81	377	450	45	0		953		100%
%	8%	40%	47%	5%	0%				
Total #	828	3442	3841	515	91	0	8717		
Total %	9%	39%	44%	6%	1%	0%			

Household 2016
Table:

	0	1	2	3	4	5		**2016 Results - Apt Only**	
House	13	468	1326	529	110	25	2471	0 Drivers	8%
%	1%	19%	54%	21%	4%	1%		1 Driver	60%
Apartment	484	3471	1737	67	56	0	5815	2 Drivers	30%
%	8%	60%	30%	1%	1%	0%		3+ Drivers	2%
Townhouse	0	332	623	93	0	0	1048		100%
%	0%	32%	59%	9%	0%	0%			
Total #	497	4271	3686	689	166	25	9334		
Total %	5%	46%	39%	7%	2%	0%			

Main Mode of Travel for Home-Based Trips, Sorted by Dwelling Type
Thu Mar 28 2024 13:15:28 GMT-0400 (Eastern Daylight Time) - Run Time: 2064ms

Cross Tabulation Query Form - Trip - 2006,2011,2016

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

Filters:
2006 GTA zone of household - gta06_hhld In 4057, 4059, 4060
and
Trip purpose - trip_purp In 1, 2, 3,

Trip 2006
Table:

	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Joint GO rail and local transit	Motorcycle	Other	Auto passenger	School bus	Taxi passenger	Walk		**2006 Results**	**Overall**	**Apt Only**
House	229	177	10556	158	130	0	69	2636	228	53	1237	15473	Auto	68%	67%
%	1%	1%	68%	1%	1%	0%	0%	17%	1%	0%	8%		Active	7%	4%
Apartment	965	0	9281	108	208	36	0	2495	103	139	516	13851	Transit	6%	9%
%	7%	0%	67%	1%	2%	0%	0%	18%	1%	1%	4%		Passenger	19%	20%
Townhouse	103	0	2008	69	36	0	0	453	34	0	240	2943		100%	100%
%	3%	0%	68%	2%	1%	0%	0%	15%	1%	0%	8%				
Total #	1297	177	21845	335	374	36	69	5584	365	192	1993	32267			
Total %	4%	1%	68%	1%	1%	0%	0%	17%	1%	1%	6%				

Trip 2011
Table:

	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Joint GO rail and local transit	Motorcycle	Auto passenger	School bus	Taxi passenger	Walk		**2011 Results**	**Overall**	**Apt Only**
House	49	163	10275	285	261	92	2014	122	34	703	13998	Auto	68%	63%
%	0%	1%	73%	2%	2%	1%	14%	1%	0%	5%		Active	7%	7%
Apartment	1368	169	9528	208	277	0	2590	39	143	846	15168	Transit	8%	12%
%	9%	1%	63%	1%	2%	0%	17%	0%	1%	6%		Passenger	17%	18%
Townhouse	61	27	2201	61	0	0	500	0	0	241	3091		100%	100%
%	2%	1%	71%	2%	0%	0%	16%	0%	0%	8%				
Total #	1478	359	22004	554	538	92	5104	161	177	1790	32257			
Total %	5%	1%	68%	2%	2%	0%	16%	0%	1%	6%				

Trip 2016
Table:

	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Joint GO rail and local transit	Motorcycle	Other	Auto passenger	School bus	Taxi passenger	Walk		**2016 Results**	**Overall**	**Apt Only**
House	129	270	10152	173	181	0	0	1935	227	0	1034	14101	Auto	75%	75%
%	1%	2%	72%	1%	1%	0%	0%	14%	2%	0%	7%		Active	8%	8%
Apartment	581	348	11683	109	127	62	92	1589	0	71	932	15594	Transit	4%	5%
%	4%	2%	75%	1%	1%	0%	1%	10%	0%	0%	6%		Passenger	13%	11%
Townhouse	0	0	3551	86	43	0	0	623	33	0	61	4397		100%	99%
%	0%	0%	81%	2%	1%	0%	0%	14%	1%	0%	1%				
Total #	710	618	25386	368	351	62	92	4147	260	71	2027	34092			
Total %	2%	2%	74%	1%	1%	0%	0%	12%	1%	0%	6%				

Appt only

Vehicle ownership	number of households	number of vehicles
0	686	0
1	3982	3982
2	1197	2394
3	71	213
4	35	140
5	0	0
Total	5971	6729
Average	**1.126947**	
		11%

All households

Vehicle ownership	number of households	number of vehicles
0	737	0
1	4872	4872
2	3239	6478
3	499	1497
4	173	692
5	26	130
Total	9546	13669
Average	1.431909	

Appt only

Vehicle ownership	number of households	number of vehicles
0	484	0
1	3471	3471
2	1737	3474
3	67	201
4	56	224
5	0	0
Total	5815	7370
Average	1.267412	

All households

Vehicle ownership	number of households	number of vehicles
0	497	0
1	4271	4271
2	3686	7372
3	689	2067
4	166	664
5	25	125
Total	9334	14499
Average	1.553353	

APPENDIX H

Functional Design Review



DRAWN BY: C.T. PLOT DATE: December 09, 2024

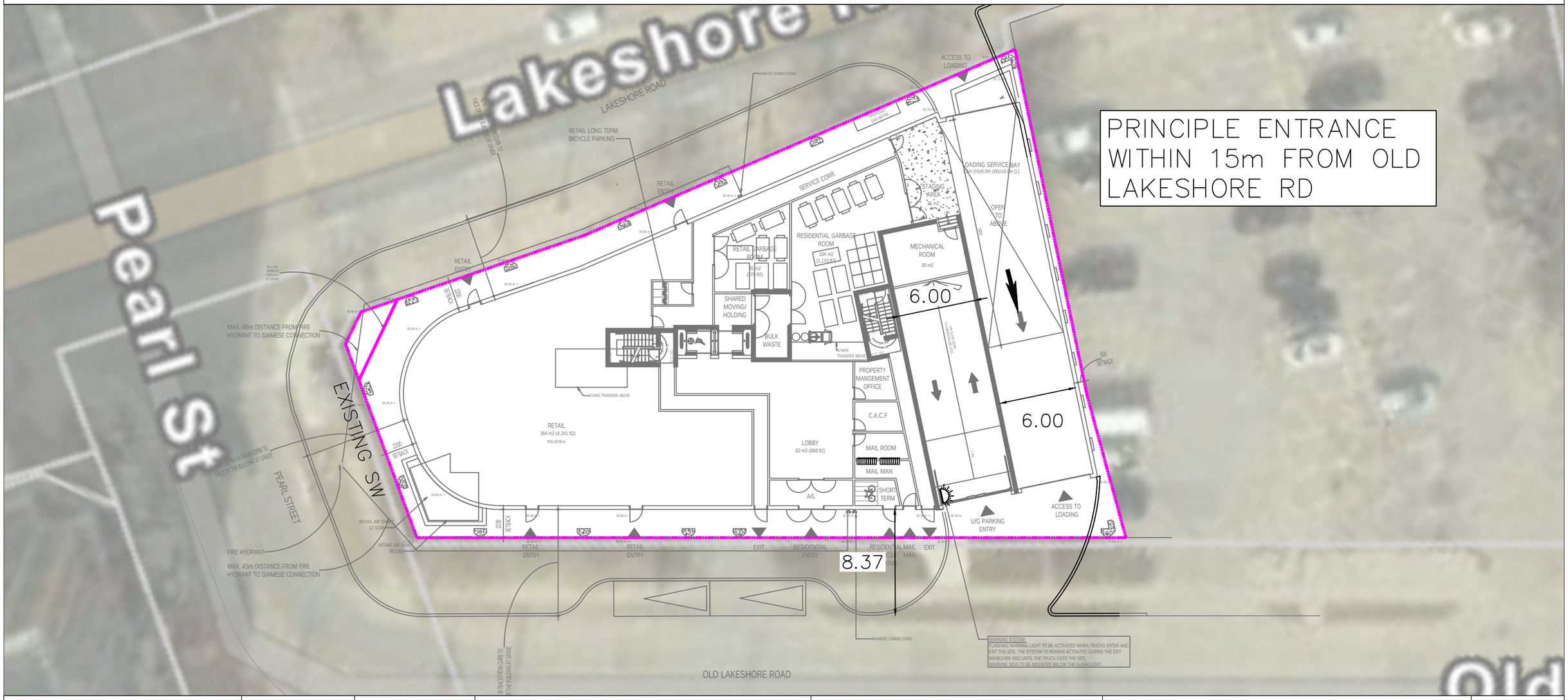
LEA Consulting Ltd. Consulting Engineers and Planners www.LEA.ca	N	Project No. 23356 Date DEC 09, 2024		2072 LAKESHORE RD BURLINGTON ONTARIO 3 0 3 6 9m 1:300	ACCESS DESIGN REVIEW Drawing No. 001

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg

NOTES:

AS PER THE ONTARIO BUILDING CODE 3.2.5

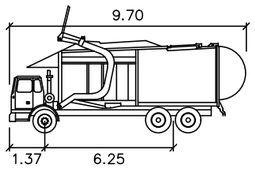
1. 5.5 LOCATION OF ACCESS ROUTES – ACCESS ROUTES SHALL BE LOCATED SO THAT THE PRINCIPAL ENTRANCE AND EVERY ACCESS OPENING ARE LOCATED NOT LESS THAN 3m AND NOT MORE THAN 15m FROM THE CLOSEST PORTION OF THE ACCESS ROUTE
2. 6.1 ACCESS ROUTE DESIGN – A PORTION OF A ROADWAY PROVIDED AS A REQUIRED ACCESS ROUTE FOR FIRE DEPARTMENT USE SHALL:
   - 2.1. 6.1.a HAVE A CLEAR WIDTH NOT LESS THAN 6m
   - 2.2. 6.1.b HAVE A CENTRELINE RADIUS NOT LESS THAN 12m
   - 2.3. 6.1.c HAVE AN OH CLEARANCE OF NOT LESS THAN 5m
   - 2.4. 6.1.f HAVE TURNAROUND FACILITIES FOR ANY DEAD–END PORTION OF THE ACCESS ROUTE MORE THAN 90m LONG
   - 2.5. 6.1.g BE CONNECTED WITH A PUBLIC THOROUGHFARE



LEA Consulting Ltd. Consulting Engineers and Planners www.LEA.ca	N	Project No. 23356 Date DEC 09, 2024		2072 LAKESHORE RD BURLINGTON ONTARIO 3 0 3 6 9m 1: 300	FIRE ROUTE REVIEW Drawing No. 002

DRAWN BY: C.T. PLOT DATE: December 09, 2024

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg



Garbage Front ~~meters~~ Halton

Width	: 2.70
Track	: 2.70
Lock to Lock Time	: 6.0
Steering Angle	: 28.5

FORWARD IN
FORWARD OUT

NOTES: HALTON REGION DEVELOPMENT DESIGN GUIDELINES FOR SOURCE SEPARATION OF SOLID WASTE:

1.10 PRIVATE ROAD REQUIRMENTS

1.10.1.4 ALL TURNS SHALL HAVE A MINIMUM TURNING RADIUS FROM THE CENTRE LINE OF 13 METRES TO THE SATISFACTION OF THE REGION

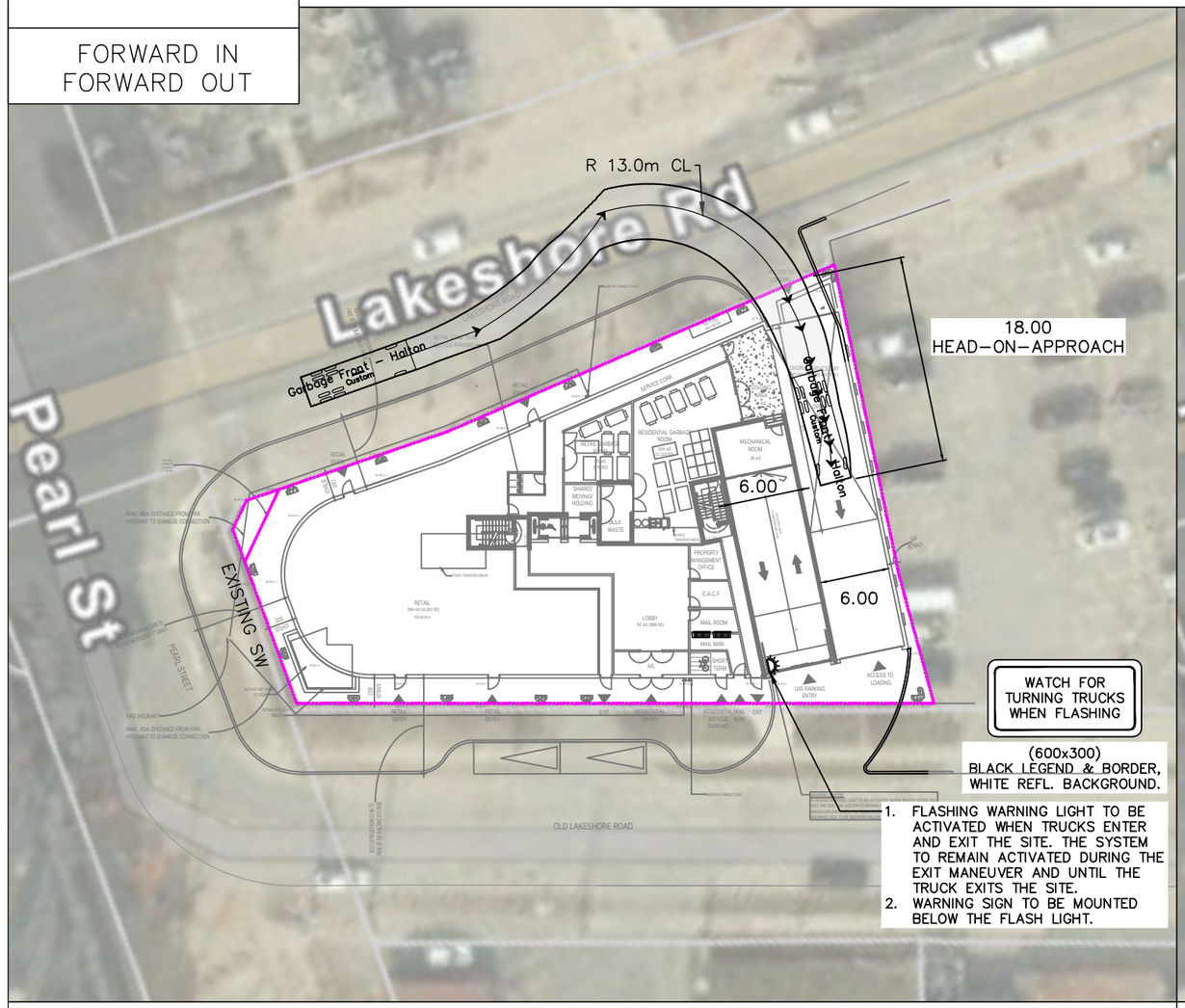
1.10.1.5 OVERHEAD CLEARANCE THROUGHOUT THE PRIVATE ROAD MUST BE A MINIMUM OF 7.5 METRES AND BE FREE FROM OBSTRUCTIONS

2.3 MULTI-RESIDENTIAL APARTMENT BUILDINGS

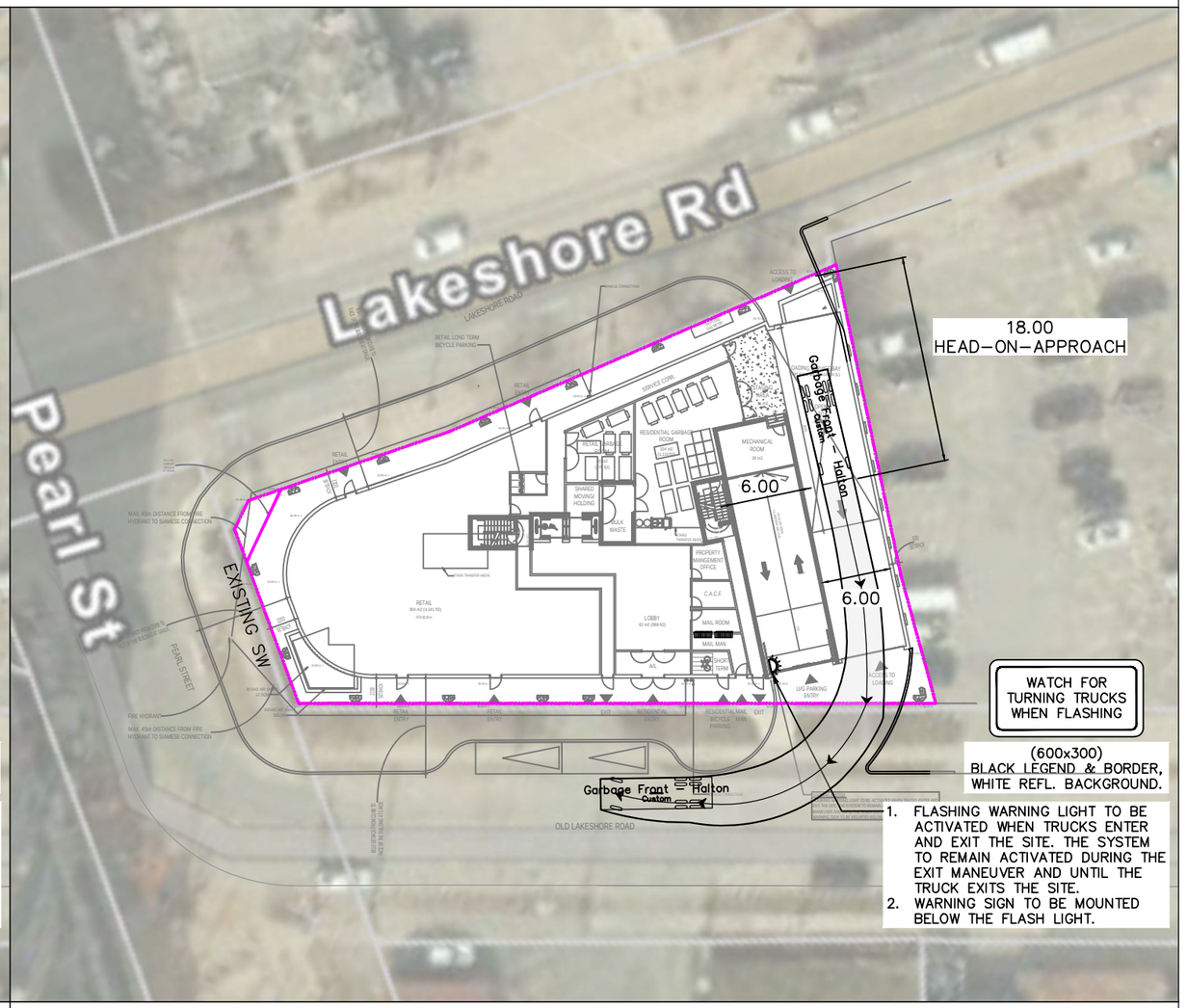
2.3.1.4 A MIN. OF 18m STRAIGHT HEAD-ON APPROACH TO COLLECTION POINT IS REQUIRED.

APPENDIX 1 COLLECTION VEHICLE DIMENSIONS AND MINIMUM TURNING RADII REQUIRED FOR SPA

FRONT END - TURNING RADIUS = 11.50m



ENTRY PATH



EXIT PATH

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Date DEC 09, 2024

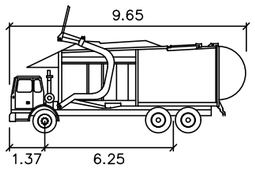
2072 LAKESHORE RD
BURLINGTON ONTARIO

5 0 5 10 15m
1:500

LOADING REVIEW
FRONT-END GARBAGE TRUCK

Drawing No. 003

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg



RECYCLING HALTON

	Meters
Width	: 2.44
Track	: 2.44
Lock to Lock Time	: 6.0
Steering Angle	: 28.7

FORWARD IN
FORWARD OUT

NOTES: HALTON REGION DEVELOPMENT DESIGN GUIDELINES FOR SOURCE SEPARATION OF SOLID WASTE:

1.10 PRIVATE ROAD REQUIRMENTS

1.10.1.4 ALL TURNS SHALL HAVE A MINIMUM TURNING RADIUS FROM THE CENTRE LINE OF 13 METRES TO THE SATISFACTION OF THE REGION

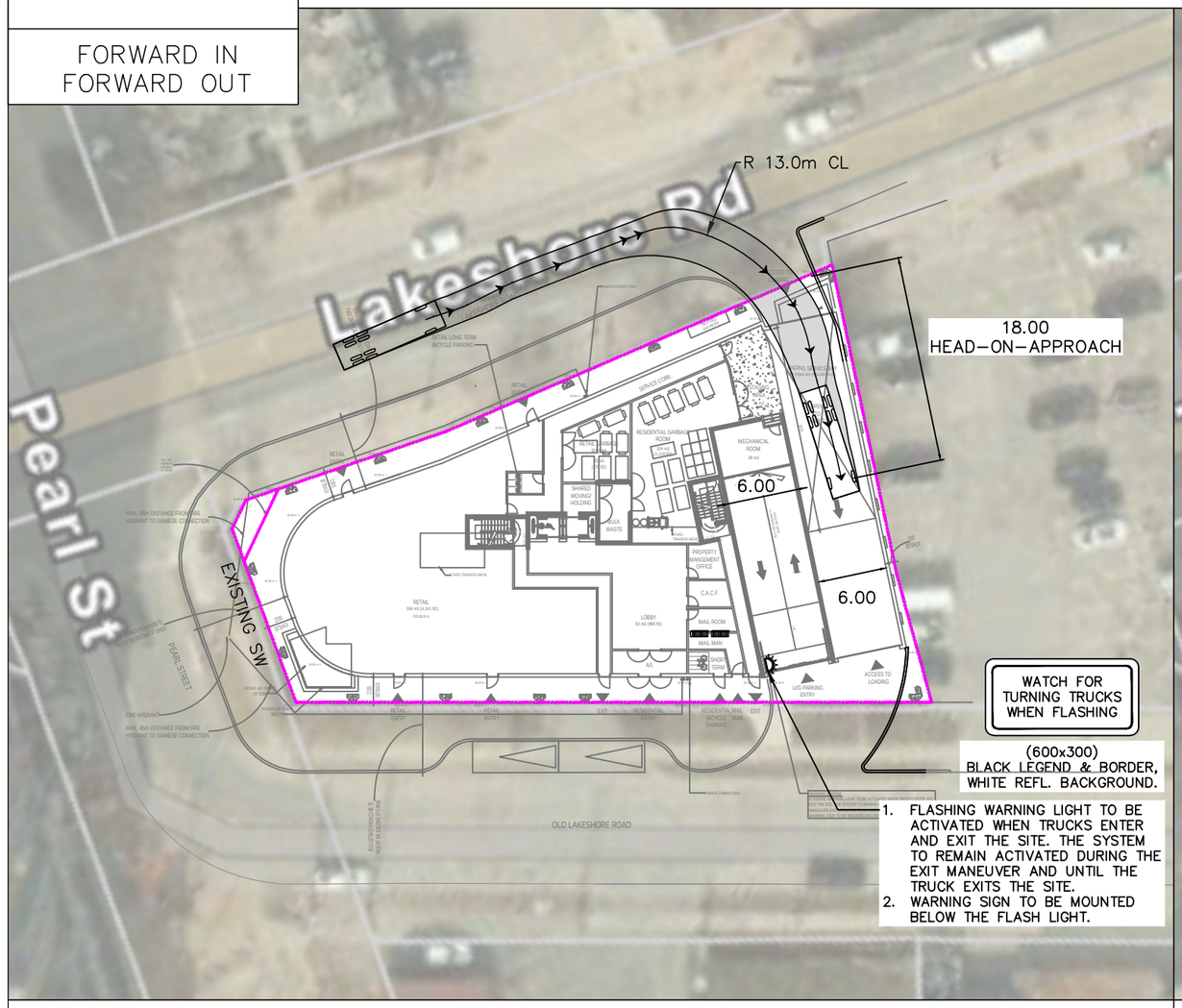
1.10.1.5 OVERHEAD CLEARANCE THROUGHOUT THE PRIVATE ROAD MUST BE A MINIMUM OF 7.5 METRES AND BE FREE FROM OBSTRUCTIONS

2.3 MULTI-RESIDENTIAL APARTMENT BUILDINGS

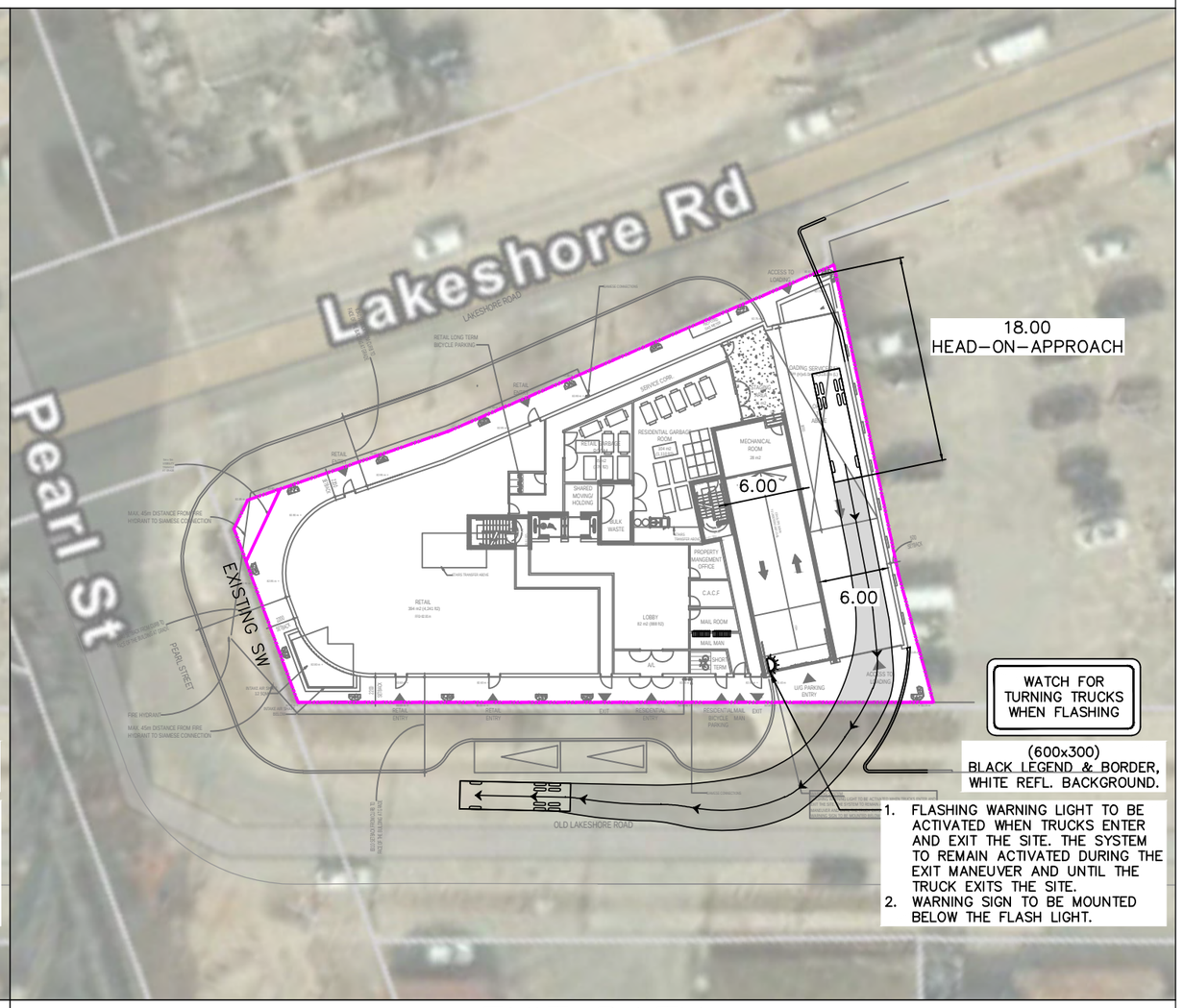
2.3.1.4 A MIN. OF 18m STRAIGHT HEAD-ON APPROACH TO COLLECTION POINT IS REQUIRED.

APPENDIX 1 COLLECTION VEHICLE DIMENSIONS AND MINIMUM TURNING RADII REQUIRED FOR SPA

FRONT END - TURNING RADIUS = 11.50m



ENTRY PATH



EXIT PATH

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Date DEC 09, 2024

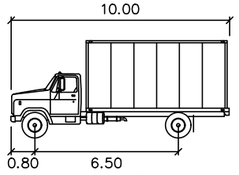
2072 LAKESHORE RD
BURLINGTON ONTARIO

5 0 5 10 15m
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LOADING REVIEW
FRONT-END RECYCLING TRUCK

Drawing No. 004

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg

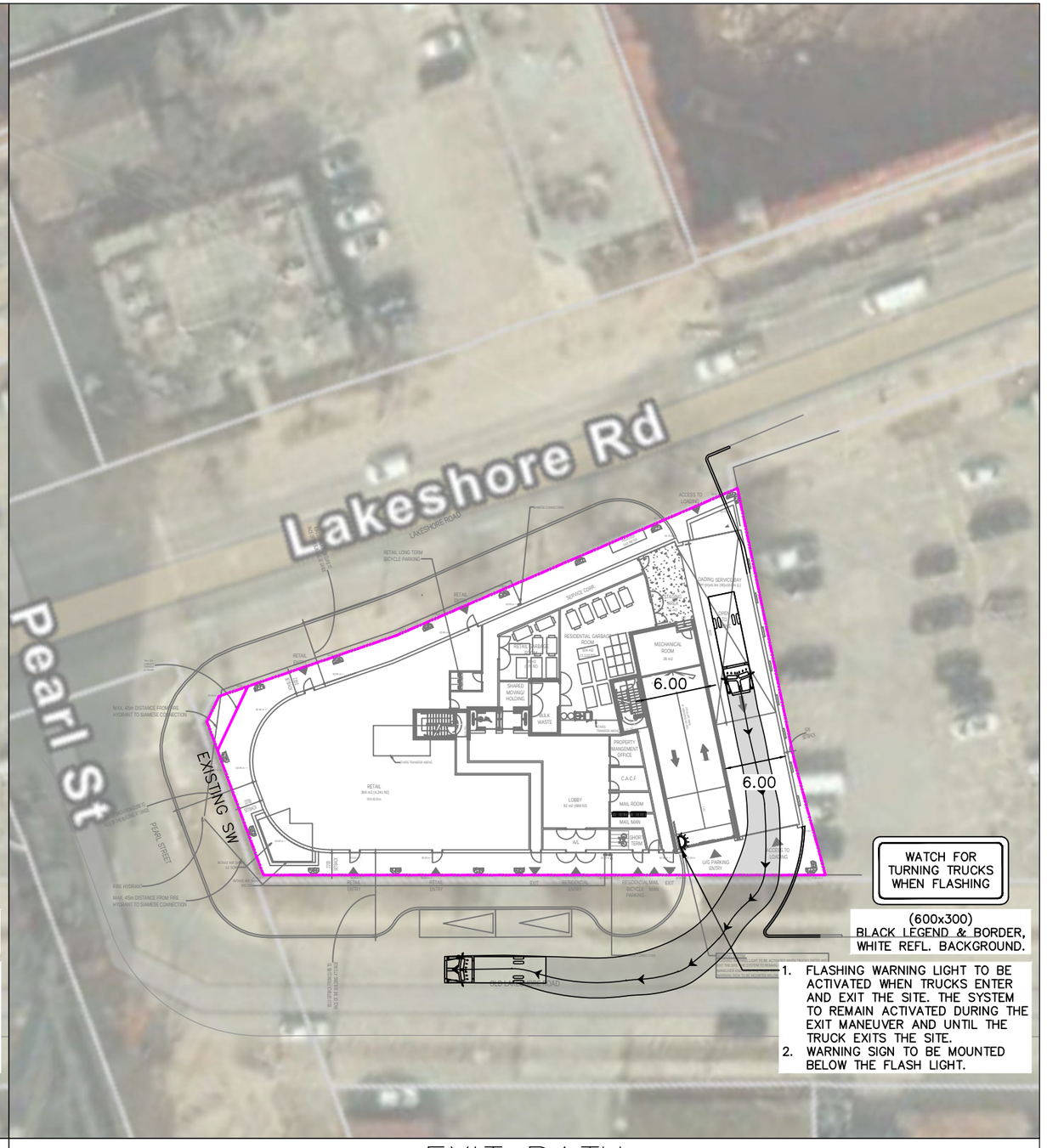


MSU

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

FORWARD IN
FORWARD OUT

ENTRY PATH



EXIT PATH

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Date DEC 09, 2024

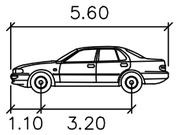
2072 LAKESHORE RD
BURLINGTON ONTARIO

5 0 5 10 15m
1:500

LOADING TYPE 'B' REVIEW
MOVING/DELIVERY VEHICLE – MSU

Drawing No. 005

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg



P

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

NOTES: CITY OF BURLINGTON SITE PLAN GUIDELINES

1. PAGE 11: MAIN DRIVEWAYS FOR RESIDENTIAL PROJECTS SHOULD BE MINIMUM OF 6.0m WIDE (INSIDE CURB DIMENSIONS)



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Date DEC 09, 2024

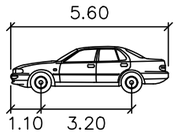
2072 LAKESHORE RD
BURLINGTON ONTARIO

4 0 4 8 12m
1:400

GROUND FLOOR
PTAC PATHS

Drawing No. 006

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg



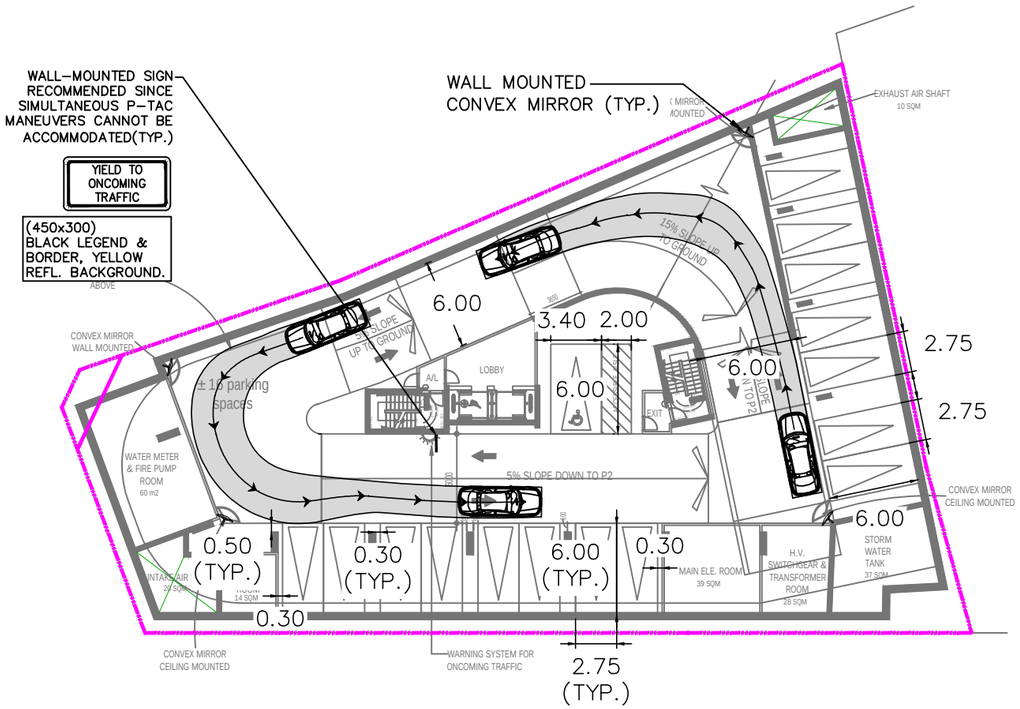
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Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

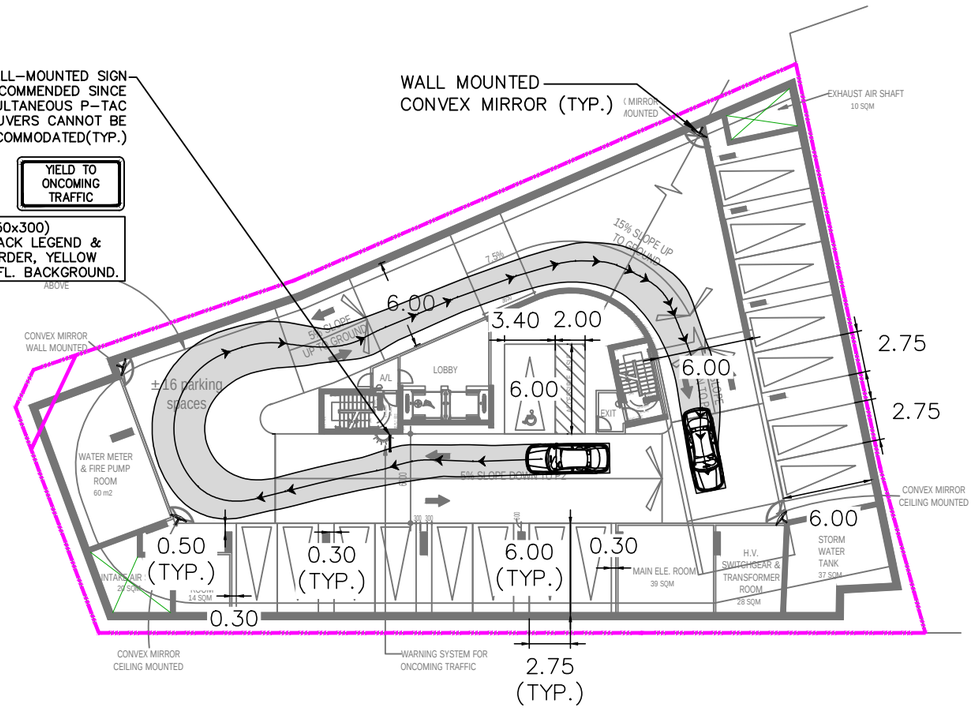
NOTES: CITY OF BURLINGTON

THE UNDERGROUND PARKING RAMP MUST SATISFY ALL THE FOLLOWING CRITERIA:
1. MAXIMUM SLOPE OF A COVERED OR HEATED RAMP SHALL BE 15% AND THE MAXIMUM SLOPED FLOOR FOR DIRECT ACCESS TO PARKING AREAS SHALL BE 5%.
2. MINIMUM WIDTH OF A CLEAR STRAIGHT TWO-WAY DRIVEWAY SHALL BE 3.0m PER LANE.
3. FOR A RAMP SLOPE CHANGES OF 7.5% OR GREATER, A TRANSITION AREA WITH A MINIMUM LENGTH OF 3.65m (MEASURES PARALLEL TO THE DIRECTION OF TRAVEL ON THE RAMP) MUST BE PROVIDED. THE SLOPE OF THE TRANSITION AREA SHALL BE HALF THE SUM OF THE FIRST SLOPE OF THE RAMP OR DRIVEWAY AND THE SECOND SLOPE OF THE RAMP OR DRIVEWAY.

UNDERGROUND PARKING MUST SATISFY ALL THE FOLLOWING CRITERIA:
4. UNDERGROUND PARKING STALLS SHALL BE A MIN. 16.5 m^2 IN AREA, WITH MIN. WIDTH 2.75m BY MIN. LENGTH 6.0m
5. WHERE THE USE OF A PARKING SPACE IS LIMITED ON ONE OR BOTH SIDES BY A WALL OR COLUMN, INCREASE STALL WIDTH BY 0.3m FOR EACH OBSTRUCTED SIDE
6. STRUCTURAL COLUMNS TO BE SET BACK 0.5m ON BOTH SIDES OF THE DRIVING AISLE TO PROVIDE FOR 7.0M CLEAR (FACE OF COLUMN TO FACE OF COLUMN)
7. AISLES ARE TO BE A MINIMUM OF 6M WIDE



ENTRY PATH



EXIT PATH

PLOT DATE: December 09, 2024

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Project No. 23356

Date DEC 09, 2024

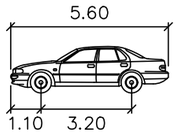
2072 LAKESHORE RD
BURLINGTON ONTARIO

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PARKING REVIEW– LEVEL P1
ENTRY & EXIT PATH

Drawing No. 007

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg



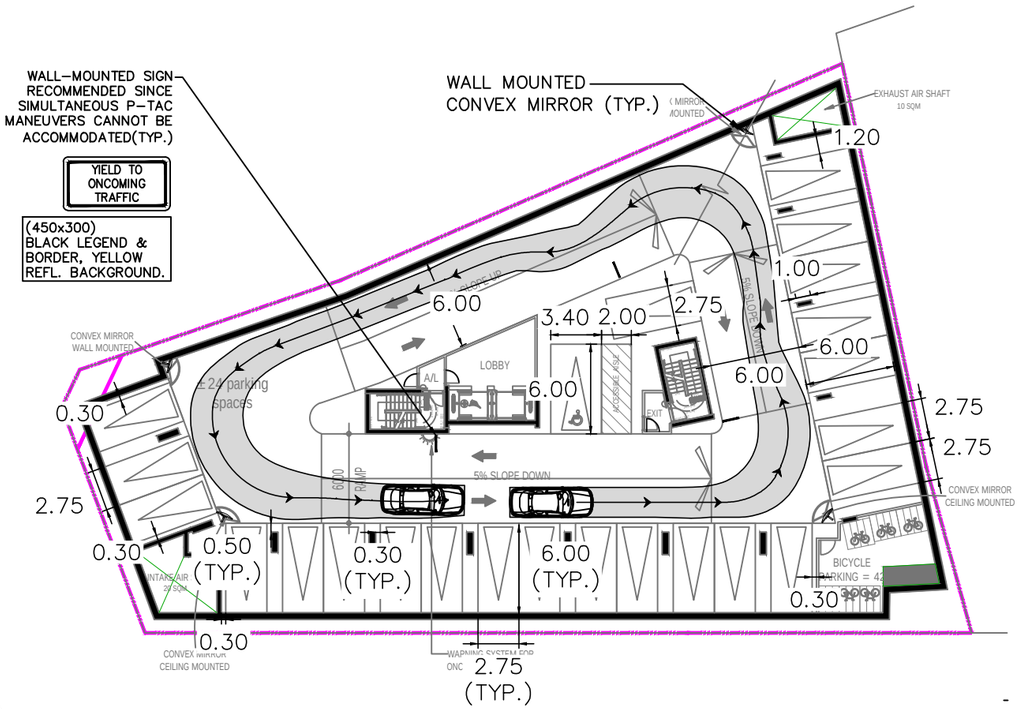
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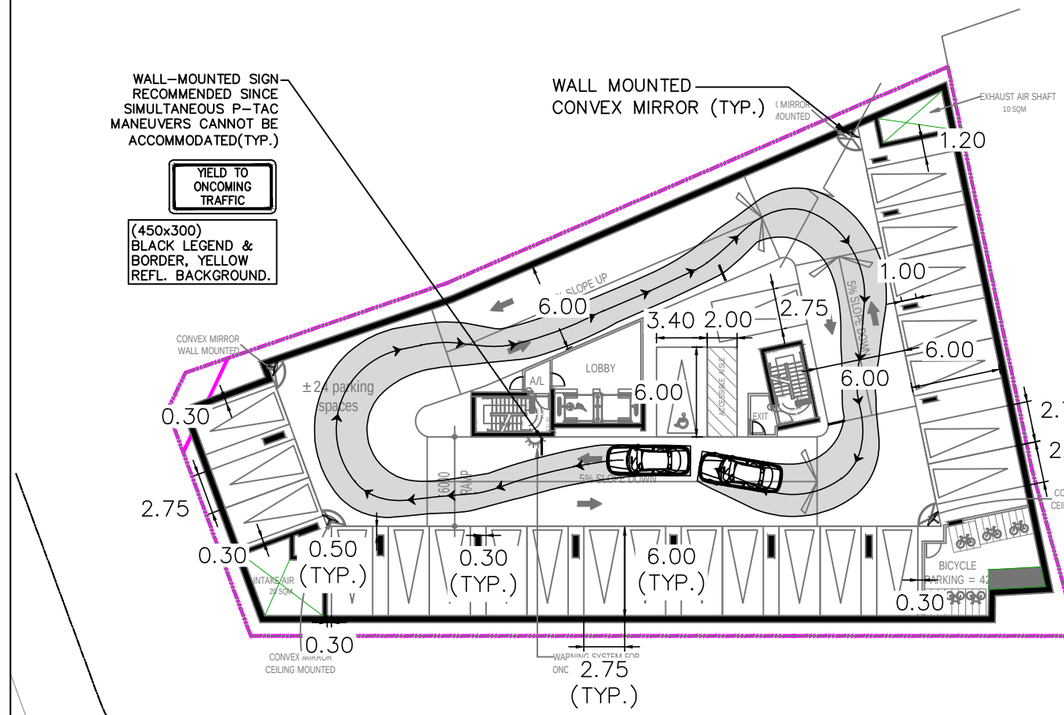
	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

NOTES: CITY OF BURLINGTON

THE UNDERGROUND PARKING RAMP MUST SATISFY ALL THE FOLLOWING CRITERIA:
1. MAXIMUM SLOPE OF A COVERED OR HEATED RAMP SHALL BE 15% AND THE MAXIMUM SLOPED FLOOR FOR DIRECT ACCESS TO PARKING AREAS SHALL BE 5%.
2. MINIMUM WIDTH OF A CLEAR STRAIGHT TWO-WAY DRIVEWAY SHALL BE 3.0m PER LANE.
3. FOR A RAMP SLOPE CHANGES OF 7.5% OR GREATER, A TRANSITION AREA WITH A MINIMUM LENGTH OF 3.65m (MEASURES PARALLEL TO THE DIRECTION OF TRAVEL ON THE RAMP) MUST BE PROVIDED. THE SLOPE OF THE TRANSITION AREA SHALL BE HALF THE SUM OF THE FIRST SLOPE OF THE RAMP OR DRIVEWAY AND THE SECOND SLOPE OF THE RAMP OR DRIVEWAY.

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7. AISLES ARE TO BE A MINIMUM OF 6M WIDE





ENTRY PATH

EXIT PATH

PLOT DATE: December 09, 2024

DRAWN BY: C.T.

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Date DEC 09, 2024

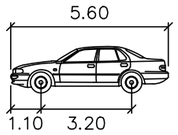
2072 LAKESHORE RD
BURLINGTON ONTARIO

4 0 4 8 12m
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PARKING REVIEW- LEVEL P2 TO P6
ENTRY & EXIT PATH

Drawing No. 008

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg



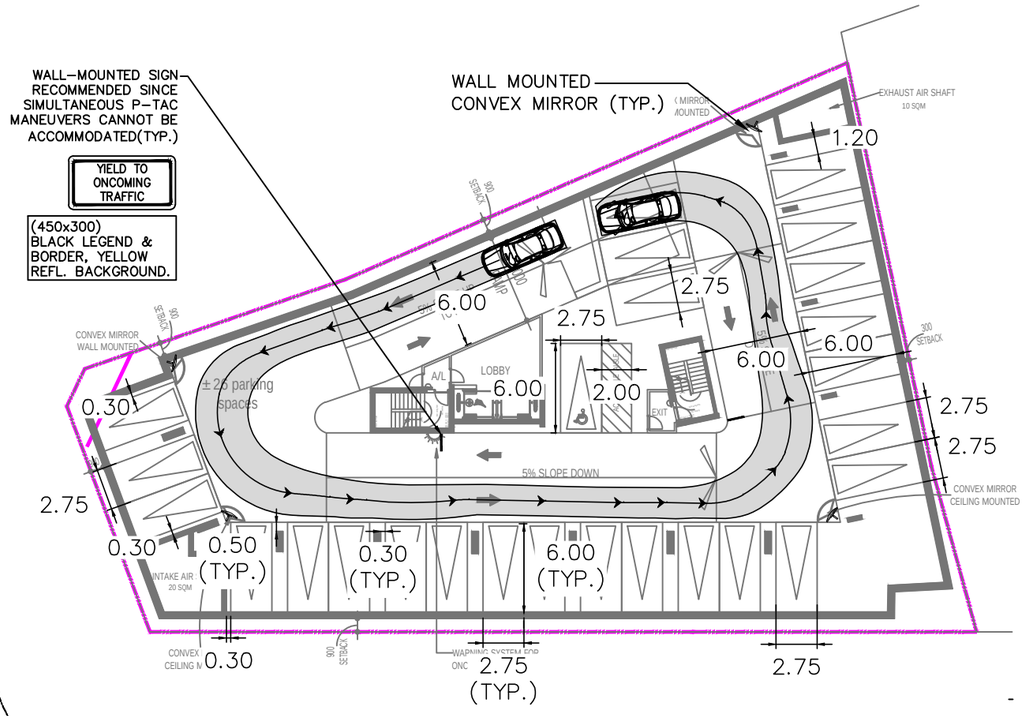
P

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

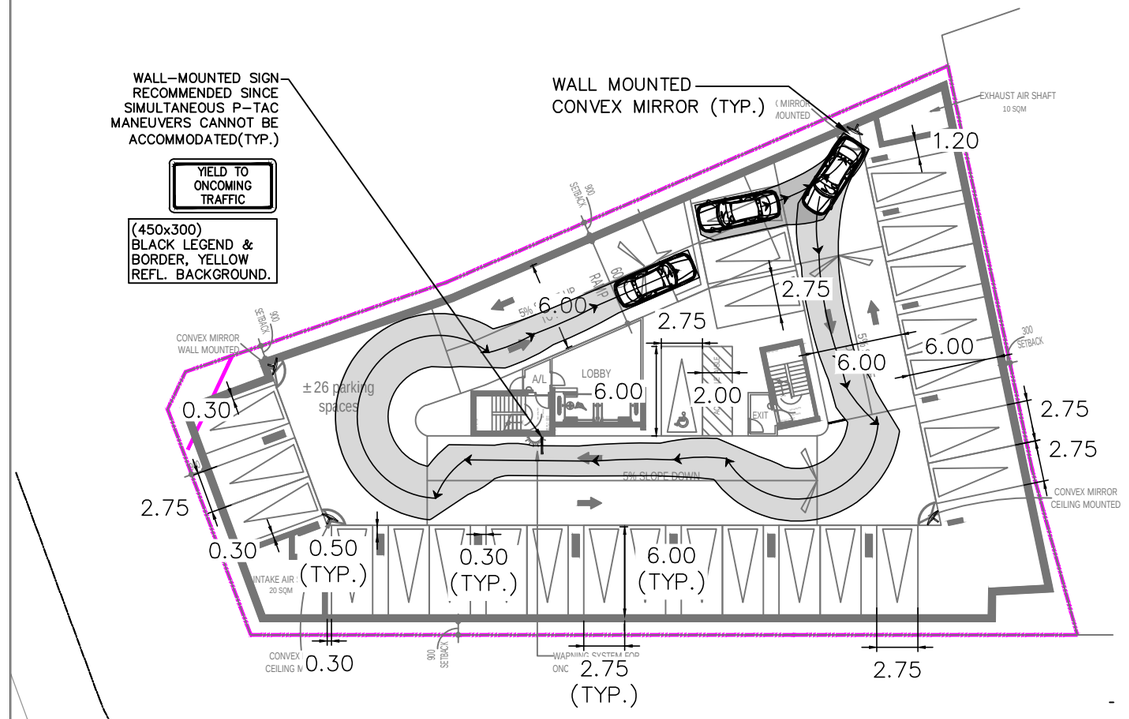
NOTES: CITY OF BURLINGTON

THE UNDERGROUND PARKING RAMP MUST SATISFY ALL THE FOLLOWING CRITERIA:
1. MAXIMUM SLOPE OF A COVERED OR HEATED RAMP SHALL BE 15% AND THE MAXIMUM SLOPED FLOOR FOR DIRECT ACCESS TO PARKING AREAS SHALL BE 5%.
2. MINIMUM WIDTH OF A CLEAR STRAIGHT TWO-WAY DRIVEWAY SHALL BE 3.0m PER LANE.
3. FOR A RAMP SLOPE CHANGES OF 7.5% OR GREATER, A TRANSITION AREA WITH A MINIMUM LENGTH OF 3.65m (MEASURES PARALLEL TO THE DIRECTION OF TRAVEL ON THE RAMP) MUST BE PROVIDED. THE SLOPE OF THE TRANSITION AREA SHALL BE HALF THE SUM OF THE FIRST SLOPE OF THE RAMP OR DRIVEWAY AND THE SECOND SLOPE OF THE RAMP OR DRIVEWAY.

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7. AISLES ARE TO BE A MINIMUM OF 6M WIDE



ENTRY PATH



EXIT PATH

PLOT DATE: December 09, 2024

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Date DEC 09, 2024

2072 LAKESHORE RD
BURLINGTON ONTARIO

4 0 4 8 12m
1:400

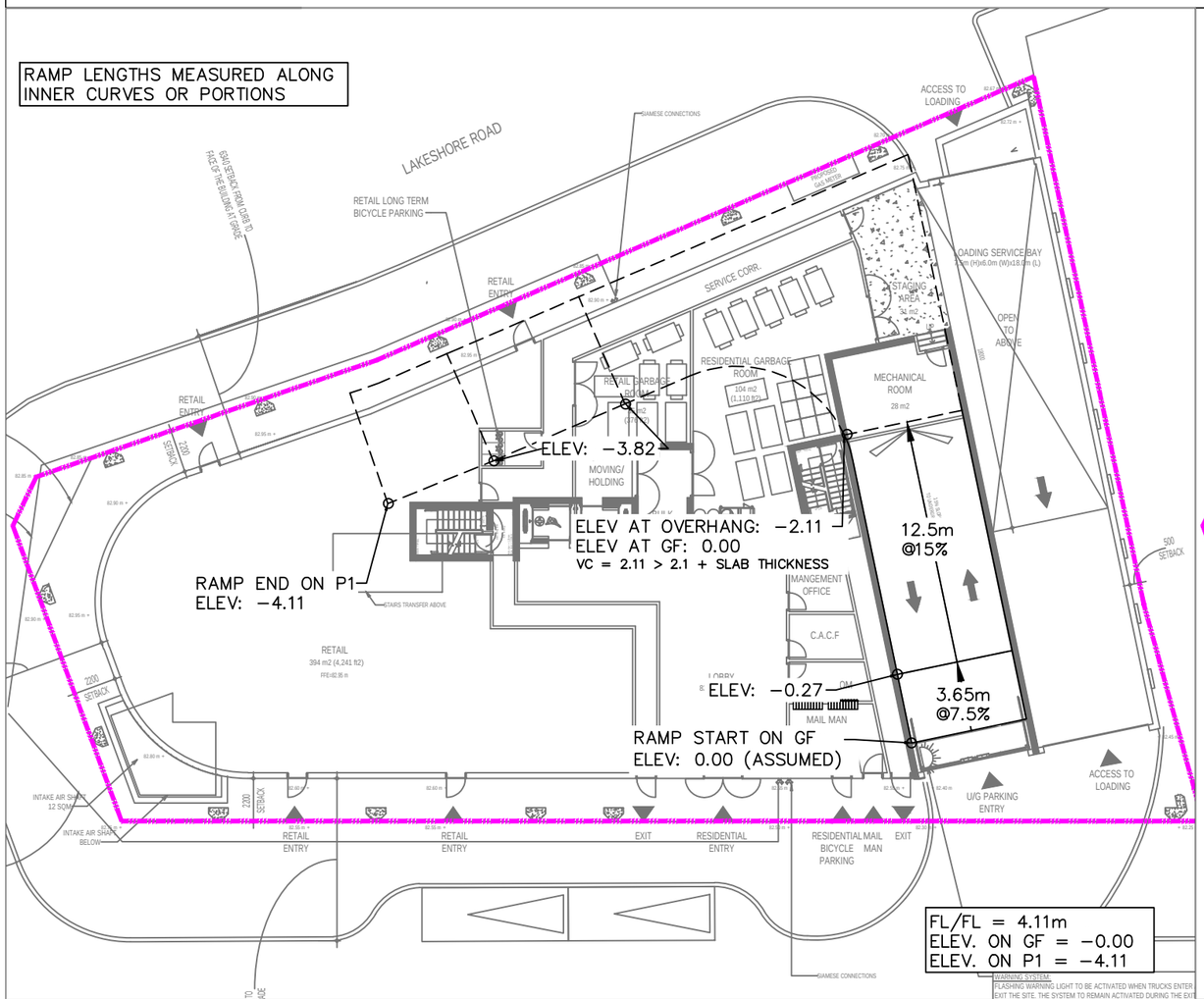
PARKING REVIEW- LEVEL P7
ENTRY & EXIT PATH

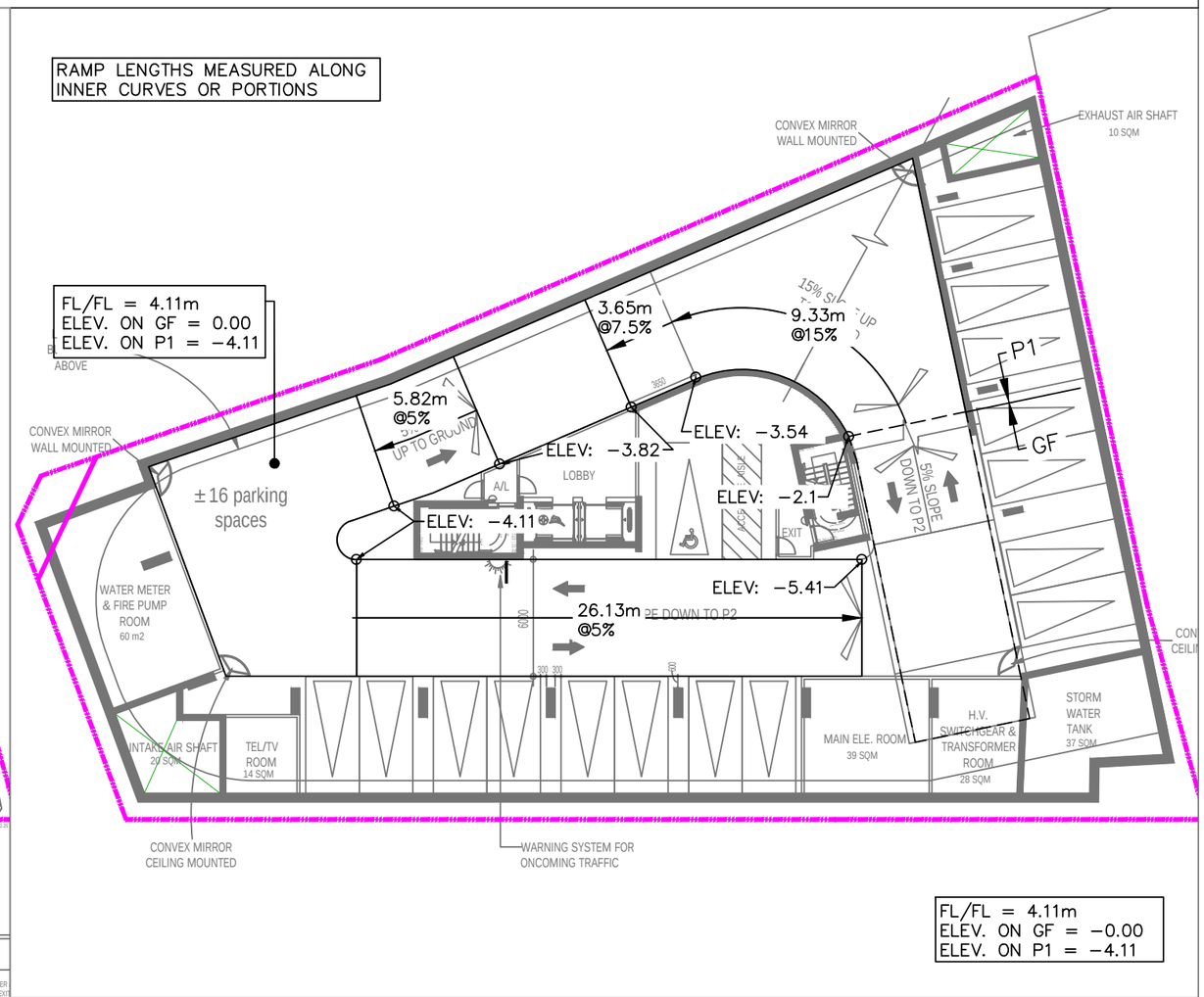
Drawing No. 009

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg

NOTES: CITY OF BURLINGTON THE UNDERGROUND PARKING RAMP MUST SATISFY ALL THE FOLLOWING CRITERIA:

1. MAXIMUM SLOPE OF A COVERED OR HEATED RAMP SHALL BE 15% AND THE MAXIMUM SLOPED FLOOR FOR DIRECT ACCESS TO PARKING AREAS SHALL BE 5%.
2. MINIMUM WIDTH OF A CLEAR STRAIGHT TWO-WAY DRIVEWAY SHALL BE 3.0m PER LANE.
3. FOR A RAMP SLOPE CHANGES OF 7.5% OR GREATER, A TRANSITION AREA WITH A MINIMUM LENGTH OF 3.65m (MEASURES PARALLEL TO THE DIRECTION OF TRAVEL ON THE RAMP) MUST BE PROVIDED. THE SLOPE OF THE TRANSITION AREA SHALL BE HALF THE SUM OF THE FIRST SLOPE OF THE RAMP OR DRIVEWAY AND THE SECOND SLOPE OF THE RAMP OR DRIVEWAY.





GROUND FLOOR

LEVEL P1

PLOT DATE: December 09, 2024

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Date DEC 09, 2024

2072 LAKESHORE RD
BURLINGTON ONTARIO

3 0 3 6 9m
1: 300

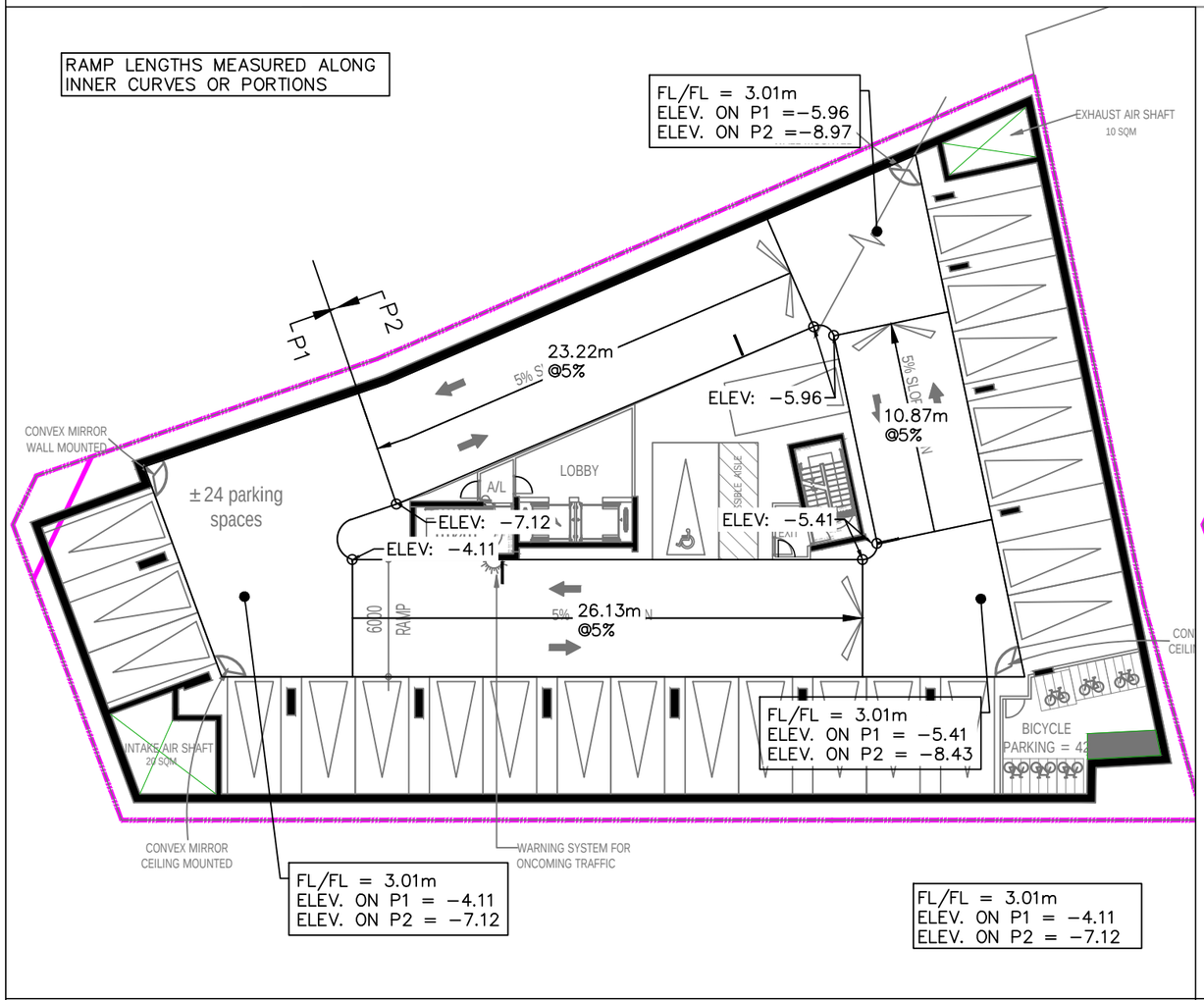
RAMP GRADING REVIEW
GROUND FLOOR & LEVEL P1

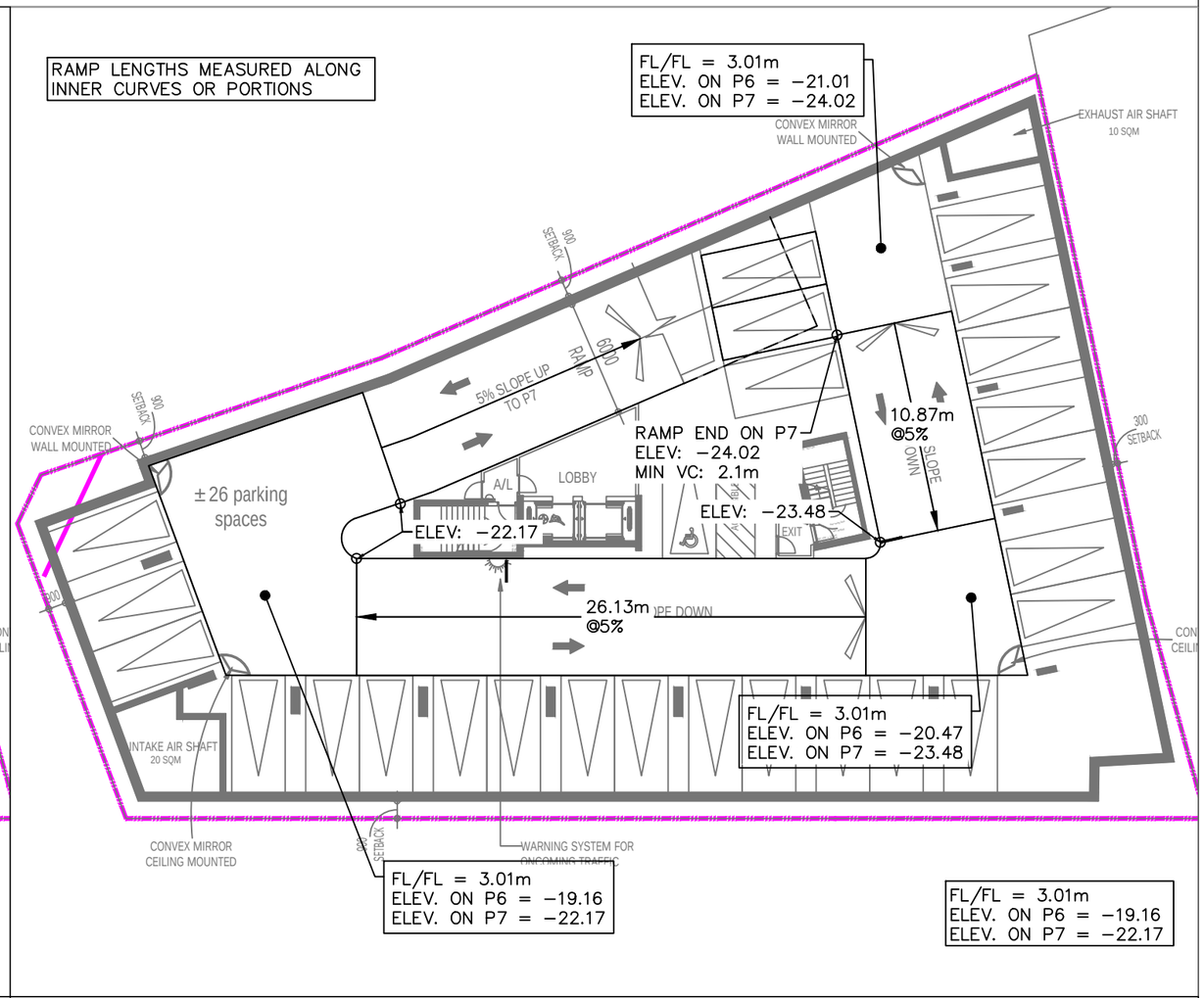
Drawing No. 010

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg

NOTES: CITY OF BURLINGTON THE UNDERGROUND PARKING RAMP MUST SATISFY ALL THE FOLLOWING CRITERIA:

1. MAXIMUM SLOPE OF A COVERED OR HEATED RAMP SHALL BE 15% AND THE MAXIMUM SLOPED FLOOR FOR DIRECT ACCESS TO PARKING AREAS SHALL BE 5%.
2. MINIMUM WIDTH OF A CLEAR STRAIGHT TWO-WAY DRIVEWAY SHALL BE 3.0m PER LANE.
3. FOR A RAMP SLOPE CHANGES OF 7.5% OR GREATER, A TRANSITION AREA WITH A MINIMUM LENGTH OF 3.65m (MEASURES PARALLEL TO THE DIRECTION OF TRAVEL ON THE RAMP) MUST BE PROVIDED. THE SLOPE OF THE TRANSITION AREA SHALL BE HALF THE SUM OF THE FIRST SLOPE OF THE RAMP OR DRIVEWAY AND THE SECOND SLOPE OF THE RAMP OR DRIVEWAY.





LEVEL P2 TO P6 (TYPICAL)

LEVEL P7

PLOT DATE: December 09, 2024

DRAWN BY: C.T.

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Date DEC 09, 2024

2072 LAKESHORE RD
BURLINGTON ONTARIO

3 0 3 6 9m
1:300

RAMP GRADING REVIEW
LEVEL P2 TO P6 (TYPICAL) &
LEVEL P7

Drawing No. 011

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg

STOPPING SIGHT DISTANCE (LAKESHORE RD):
- "TAC" TABLE 9.9.4 & 9.9.6
- POSTED SPEED: 50km/h
- DESIGN SPEED: 60km/h
- REQUIRED STOPPING SIGHT DISTANCE = 85m
- DOES IT MEET THE REQUIREMENT – YES



5.60
1.10 3.20
P

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

DRAWN BY: C.T. PLOT DATE: December 09, 2024

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2072 LAKESHORE RD
BURLINGTON ONTARIO
5 0 5 10 15m
1:500

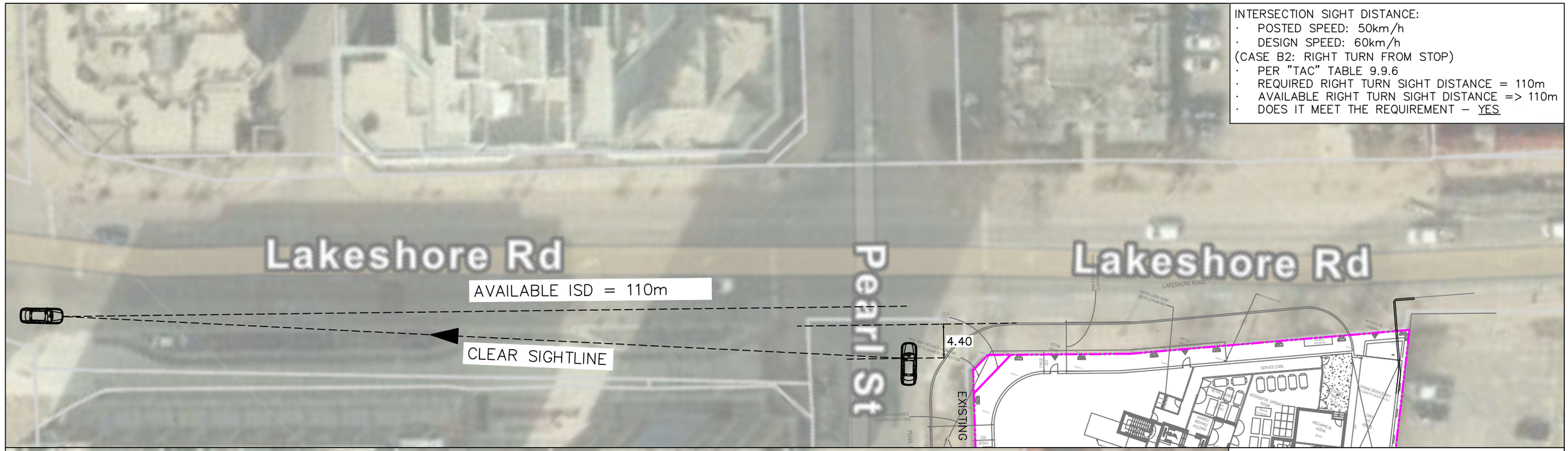
SIGHTLINE ANALYSIS
STOPPING SIGHT DISTANCE (SSD)

Drawing No. 012

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg

INTERSECTION SIGHT DISTANCE:
- POSTED SPEED: 50km/h
- DESIGN SPEED: 60km/h

(CASE B2: RIGHT TURN FROM STOP)
- PER "TAC" TABLE 9.9.6
- REQUIRED RIGHT TURN SIGHT DISTANCE = 110m
- AVAILABLE RIGHT TURN SIGHT DISTANCE => 110m
- DOES IT MEET THE REQUIREMENT – YES



INTERSECTION SIGHT DISTANCE:
- POSTED SPEED: 50km/h
- DESIGN SPEED: 60km/h

(CASE B1: LEFT TURN FROM STOP)
- PER "TAC" TABLE 9.9.4
- REQUIRED RIGHT TURN SIGHT DISTANCE = 130m
- AVAILABLE RIGHT TURN SIGHT DISTANCE => 130m
- DOES IT MEET THE REQUIREMENT – YES



P

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

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BURLINGTON ONTARIO

5 0 5 10 15m
1:500

SIGHTLINE ANALYSIS
INTERSECTION SIGHT DISTANCE (ISD)

Drawing No. 013

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg

STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
ASSUMED POSTED SPEED	30Km/h
DESIGN SPEED	30Km/h
STOPPING SIGHT DISTANCES	
REQUIRED SSD	35
AVAILABLE SSD	38
REQUIRED SSD SATISFIED	YES (SEE NOTE 1)

WITH AN ASSUMED DESIGN SPEED OF 30km/h, THE AVAILABLE SSD EXCEEDS REQUIRED SSD WITHOUT A DAYLIGHT TRIANGLE NEEDED

APPROXIMATE CENTER LINE

10.73

AVAILABLE SSD = 38.67m

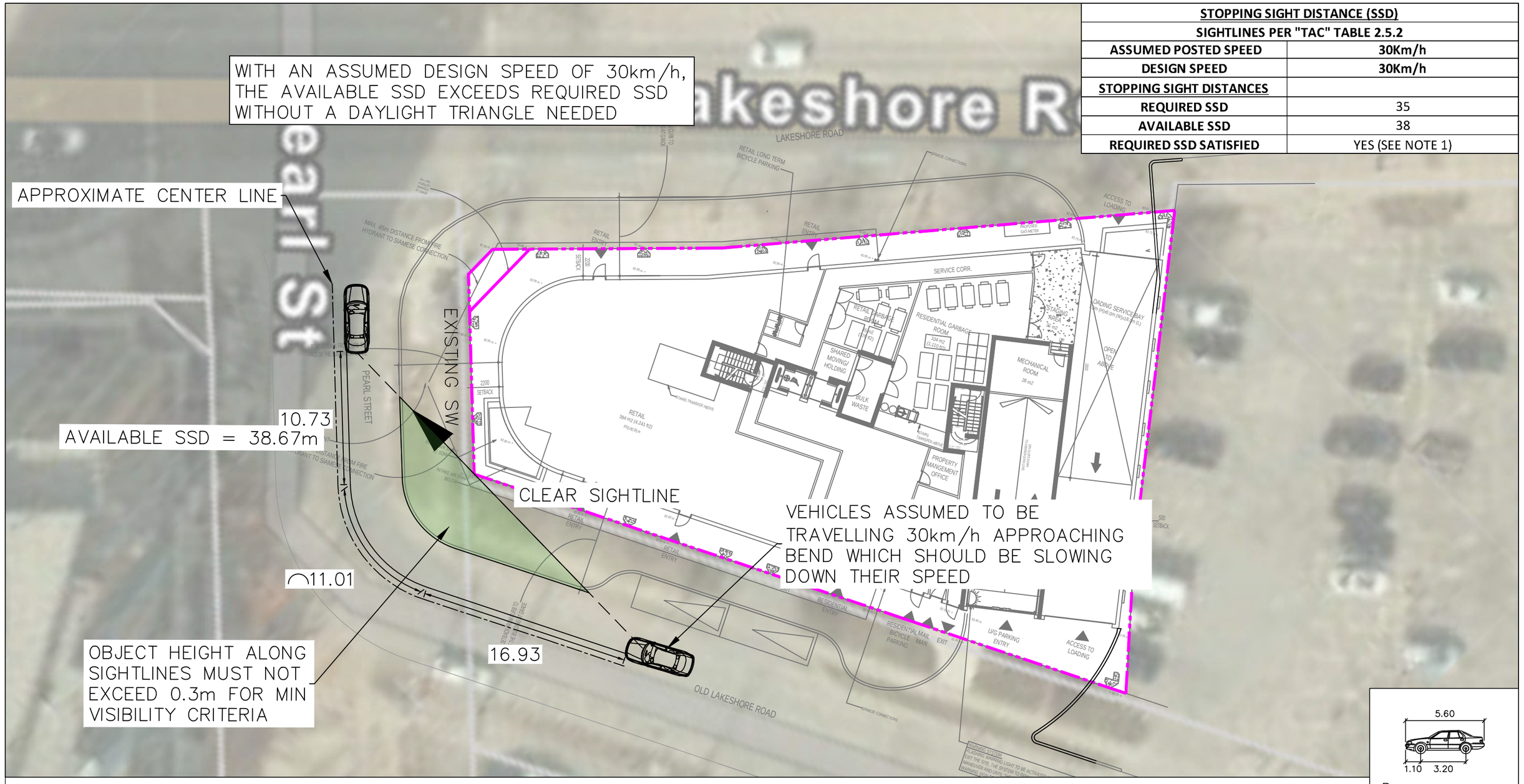
11.01

16.93

CLEAR SIGHTLINE

VEHICLES ASSUMED TO BE TRAVELLING 30km/h APPROACHING BEND WHICH SHOULD BE SLOWING DOWN THEIR SPEED

OBJECT HEIGHT ALONG SIGHTLINES MUST NOT EXCEED 0.3m FOR MIN VISIBILITY CRITERIA



NOTES:
1. THE AVAILABLE STOPPING SIGHT DISTANCE (SSD) OF 38.67m IS GREATER THAN THE DESIRED SSD OF 35m FOR AN ASSUMED DESIGN SPEED LIMIT OF 30KM/H (PER TABLE 2.5.2 OF TRANSPORTATION ASSOCIATION OF CANADA (TAC) GUIDELINE – CHAPTER 2). GIVEN THERE IS NO POSTED SPEED LIMIT, AND THE RADIUS AT THE BEND, IT CAN BE ASSUMED THAT VEHICLES WILL BE TRAVELLING AT 30KM/H AND MUST FURTHER SLOW DOWN PRIOR TO TRAVELLING THE BEND. THEREFORE THE REQUIRED SSD IS SATISFIED AS THE AVAILABLE SSD IS MORE THAN THE REQUIRED AT A SPEED OF 30KM/H.

P

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

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LEGEND
- SIGHT LINE
- AVAILABLE SSD
- PROPERTY LINE

2072 LAKESHORE RD
BURLINGTON ONTARIO

3 0 3 6 9m
1:300

SIGHTLINE ANALYSIS
STOPPING SIGHT DISTANCE
SCENARIO A
ASSUMED DESIGN SPEED 30KM/H

Drawing No. 014

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg

WITH AN ASSUMED CAUTIONARY DESIGN SPEED OF 15km/h AT THE BEND, THE AVAILABLE SSD EXCEEDS REQUIRED SSD WITHOUT A DAYLIGHT TRIANGLE OR OBSTRUCTION FREE AREA NEEDED

STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
ASSUMED POSTED SPEED	30Km/h
DESIGN SPEED	15Km/h
STOPPING SIGHT DISTANCES	
REQUIRED SSD	13
AVAILABLE SSD	18
REQUIRED SSD SATISFIED	YES (SEE NOTE 1)

APPROXIMATE CENTER LINE

AVAILABLE SSD = 18m

3.26

CLEAR SIGHTLINE

VEHICLES ASSUMED TO BE TRAVELLING 15km/h APPROACHING THE BEND

11.01

3.74

LAKESHORE ROAD

OLD LAKESHORE ROAD

PEARL STREET

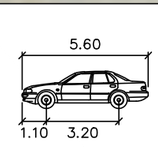
EXISTING SW

NOTES:

1. THE AVAILABLE STOPPING SIGHT DISTANCE (SSD) OF 18m IS GREATER THAN THE DESIRED SSD OF 13m FOR AN ASSUMED DESIGN SPEED LIMIT OF 15KM/H (PER 2.5.3 OF TRANSPORTATION ASSOCIATION OF CANADA (TAC) GUIDELINE – CHAPTER 2). THE REQUIRED SSD FOR A SPEED LIMIT OF 15KM/H AT THE BEND IS CALULATED AS FOLLOWS:

$SSD = 0.278*V*t+0.039*(\frac{V^2}{a}) = 0.278*15*2.5+0.039*(\frac{15^2}{3.4}) = 13m$

TRAVELLING VEHICLES MUST SLOW DOWN APPROACHING THE BEND TO AN ASSUMED SPEED OF 15KM/H WHICH RESULTS IN THE AVAILABLE SSD EXCEEDS THE REQUIRED SSD.



P

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

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Date DEC 09, 2024

LEGEND
SIGHT LINE
AVAILABLE SSD
PROPERTY LINE

2072 LAKESHORE RD
BURLINGTON ONTARIO
3 0 3 6 9m
1:300

SIGHTLINE ANALYSIS
STOPPING SIGHT DISTANCE
SCENARIO B
ASSUMED DESIGN SPEED 15KM/H

Drawing No. 015

DRAWING NAME: F:\23356\Drafting\23356WF015.dwg