Stanford Homes

TRANSPORTATION IMPACT STUDY

Proposed Mixed-Use Development
1437-1455 Queen Street West,
City of Toronto

April 2023

23322

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April 24, 2023

Reference Number: 23322

Michael Pirocchi, MCIP RPP
Stanford Homes
2700 Dufferin Street, Unit 50
Toronto, Ontario
M6B 4J3

Dear Michael Pirocchi,

RE: Transportation Impact Study
Proposed Mixed-Use Development
1437-1455 Queen Street West, City of Toronto

LEA Consulting Ltd. (LEA) is pleased to present our findings for our Transportation Impact Study (TIS) for the proposed mixed-use development at 1437-1455 Queen Street West in the City of Toronto. This TIS has been prepared for Stanford Homes in support of the Zoning By-Law Amendment (ZBA) and Site Plan Control (SPA) applications for the development proposal. This report concludes that the traffic associated with the proposed development has a minimal impact on the road network in the surrounding area and no new constraints identified with added site traffic.

Please do not hesitate to contact the undersigned should you have any additional questions or concerns at (905) 470-0015.

Yours truly,

LEA CONSULTING LTD.

Zara Georgis, M.Eng., P.Eng.
Project Manager, Transportation Planning & Engineering

Matthew Doren, Msc. Pl.
Transportation Planner

Encl. Transportation Impact Study – 1437-1455 Queen Street West, Proposed Mixed-Use Development, City of Toronto (April 2023)

Disclaimer

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1 INTRODUCTION

LEA Consulting Ltd. (LEA) was retained by Stanford Homes to undertake a Transportation Impact Study (TIS) for the proposed mixed-use development located at 1437-1455 Queen Street West in the City of Toronto (hereinafter referred to as the "subject site"). The following TIS has been prepared in support of the Zoning By-law Amendment (ZBA) and Site Plan Control (SPA) applications for the proposed development. The subject site is currently occupied by 1-2 storey commercial shops and surface parking lot and is located near the southwest corner of Queen Street West and Jameson Avenue. The subject site location is illustrated in **Figure 1-1**.

Figure 1-1: Subject Site Location

Source: Google Maps, accessed February 2023

The purpose of this assessment is to review the existing transportation infrastructure in the surrounding area, including the road network, transit network and active transportation network and assess the traffic impact of the proposed development on the network. In addition, the proposed parking and loading provisions will be reviewed, and Transportation Demand Management (TDM) measures will be recommended to encourage the use of other modes of transportation which aligns with the City of Toronto Official Plan objectives.

1.1 PROPOSED DEVELOPMENT

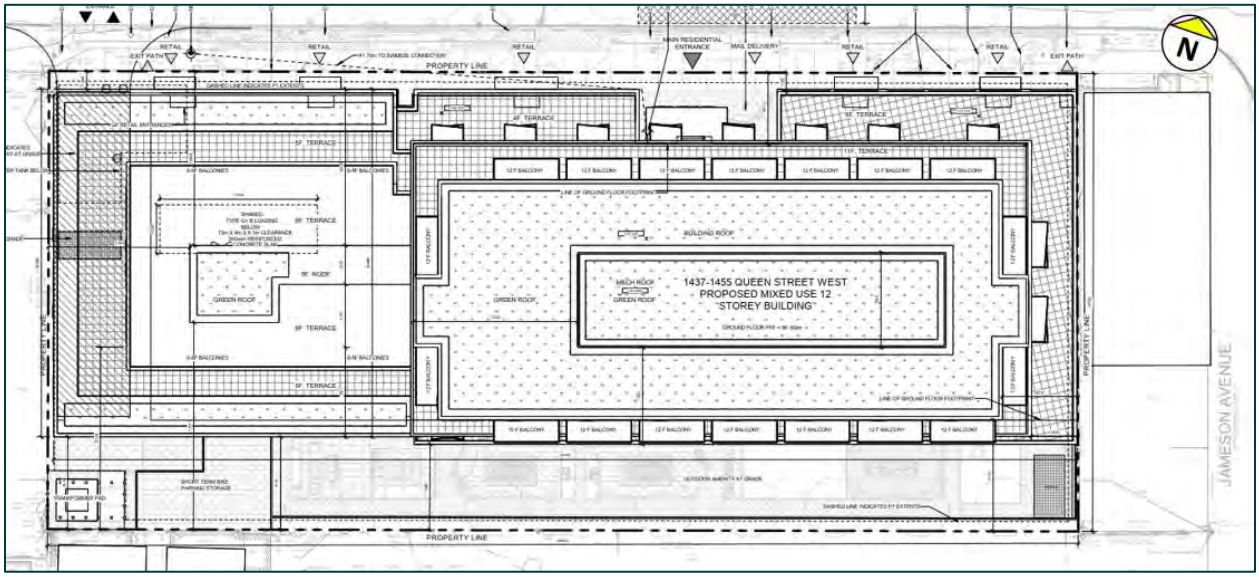
The development proposal includes a 12-storey mixed-use building. A total of 249 units and approximately 789 m^2 of ground floor retail GFA are proposed. A breakdown of the proposed land uses is outlined in **Table 1-1**.

Table 1-1: Site Statistics

Land Use	Unit/GFA
Residential	249 Units
Studio	9
1 Bedroom	130
2 Bedroom	84
3 Bedroom	26
Retail	789 m^2

Access to the development is proposed via an unsignalized, all-moves site access via a laneway onto Queen Street West. The proposed site plan is illustrated in **Figure 1-2.**

Figure 1-2: Proposed Site Plan



Source: RAW Design., April 2023

2 EXISTING TRANSPORTATION CONDITIONS

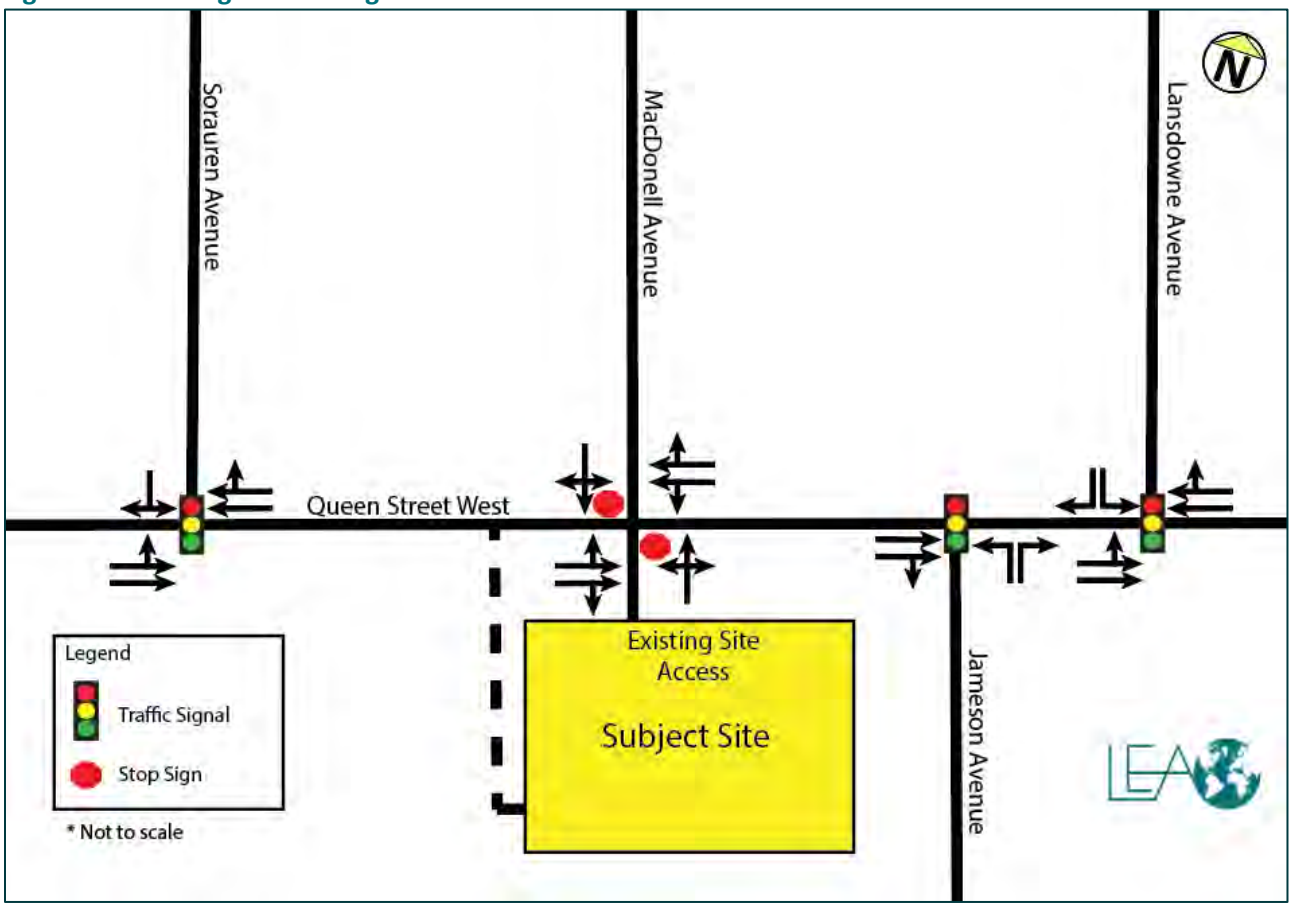
This section identifies the existing transportation conditions present in the study area, including the road, transit, cyclist and pedestrian networks. The study area was determined by assessing the size of the proposed development and its anticipated transportation impact. The terms of reference and correspondence with the City is included in **Appendix A**. The study area includes the following intersections:

- Lansdowne Avenue and Queen Street West (Signalized);
- MacDonell Avenue/Existing Site Access (Unsignalized);
- Jameson Avenue and Queen Street West (Signalized); and
- Sorauren Avenue and Queen Street West (Signalized).

2.1 EXISTING ROAD NETWORK

This section will describe the road network with the above-mentioned study area. The existing intersection controls and lane configuration are illustrated in **Figure 2-1**. All roadways within the study area are under the jurisdiction of the City of Toronto.

Figure 2-1: Existing Lane Configuration



Queen Street is an east-west major arterial roadway with a four-lane cross-section (two (2) lanes per direction) in the vicinity of the subject site. Under the City of Toronto's jurisdiction, the roadway extends from the intersection with King Street/Roncesvalles Avenue (where the road becomes The Queensway) in the west and Fallingbrook Road in the east. The roadway operates with a posted speed limit of 40 km/h within the study area.

Jameson Avenue is a north-south minor arterial roadway with a two-lane cross-section (one lane per direction) within the study area. The roadway operates between Queen Street West in the north and Lakeshore Boulevard in the south. Jameson Avenue operates with a posted speed limit of 40 km/h within the study area.

MacDonell Avenue is a north-south local roadway with a two-lane cross-section (one lane per direction) south of the intersection with Seaforth Avenue and a one-lane cross-section (one lane southbound direction) north of the intersection. The roadway operates between Queen Street West in the south and Wabash Avenue in the north. MacDonell Avenue operates with a speed limit of 30 km/h within the study area.

Lansdowne Avenue is a north-south minor arterial roadway with a two-lane cross-section (one lane per direction) within the study area. The roadway operates between Queen Street West in the south and St. Clair Avenue West in the north. Lansdowne Avenue operates with a posted speed limit of 40 km/h within the study area.

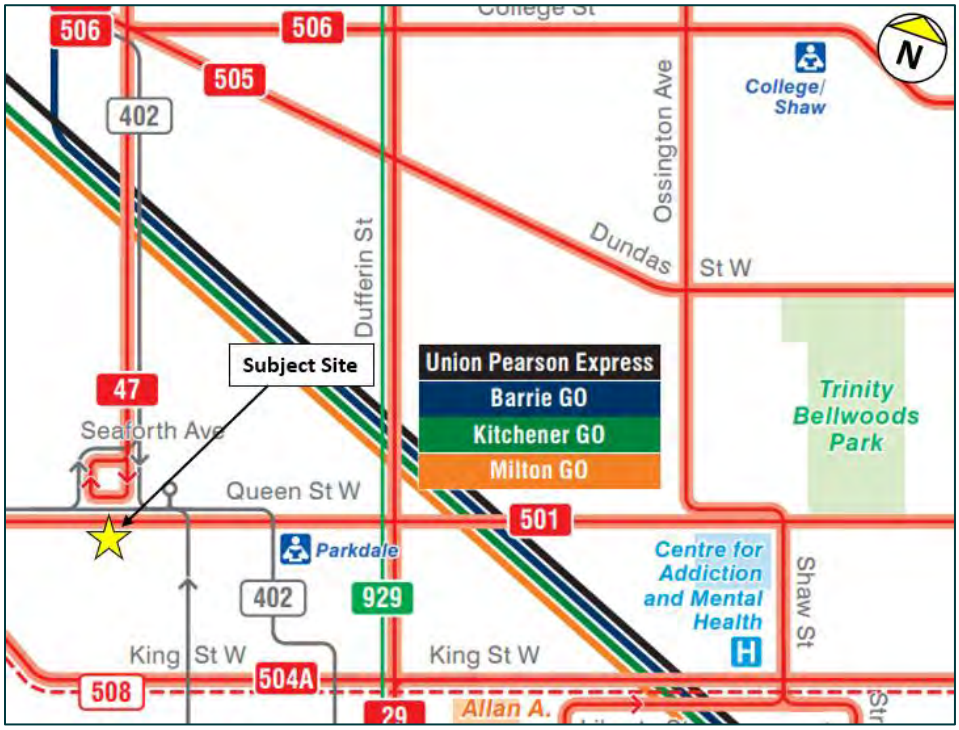
Sorauren Avenue is a north-south collector roadway with a two-lane cross-section (one lane per direction) within the study area. The roadway operates between Queen Street West in the south and Dundas Street West in the north. Sorauren Avenue operates with a posted speed limit of 30 km/h within the study area.

2.2 TRANSIT NETWORK

The subject site is located in an area well-serviced by the Toronto Transit Commission (TTC) transit network. The subject site is within walkable distance of bus stops along Queen Street West. Transit routes servicing the area are illustrated in **Figure 2-2**.

As a testament to the subject site's transit accessibility, the site receives a Transit Score of 82/100, indicating an excellent transit score when entered into the WalkScore application, indicating that public transit is a convenient mode of travel for most trips.

Figure 2-2: Existing Transit Network



Source: Toronto Transit Commission, January 2023

TTC Bus Route 47 – Lansdowne is a bus route that generally operates in a north-south direction between the area of Lansdowne Avenue and Queen Street West in the south and the area of Lansdowne Avenue and St. Clair Avenue West in the north. The route also provides service to Yorkdale TTC Stations on Line 1, Yonge-University. Accessible service is provided on the route. Three services are operated along the route and include the 47A short-turn and 47B branches which operates every day, all day. The route also includes the 47C branch which operates during weekday peak periods only. The route is part of the 10-Minute Network and as such operates with service headways of 10 minutes or better throughout the day.

> *Access Location:* Route 47 is accessible at the intersection of Queen Street West and Lansdowne Avenue, which is located 110 m from the subject site (equivalent to a two-minute walk) from the subject site.

TTC Streetcar Route 501 – Queen is a streetcar route that generally operates in an east-west direction between the Long Branch Loop in the west and the Neville Park Loop in the east. During the day and early evening times, all seven (7) days a week, the route operates two (2) services, the Humber-Neville Park and Long Branch-Humber routes. During the late evenings, the singular Long Branch-Neville Park route is operated. The route also provides service to Osgoode and Queen TTC Stations on Line 1 Yonge-University. The route is part of the 10-Minute Network and as such operates with service headways of 10 minutes or better throughout the day.

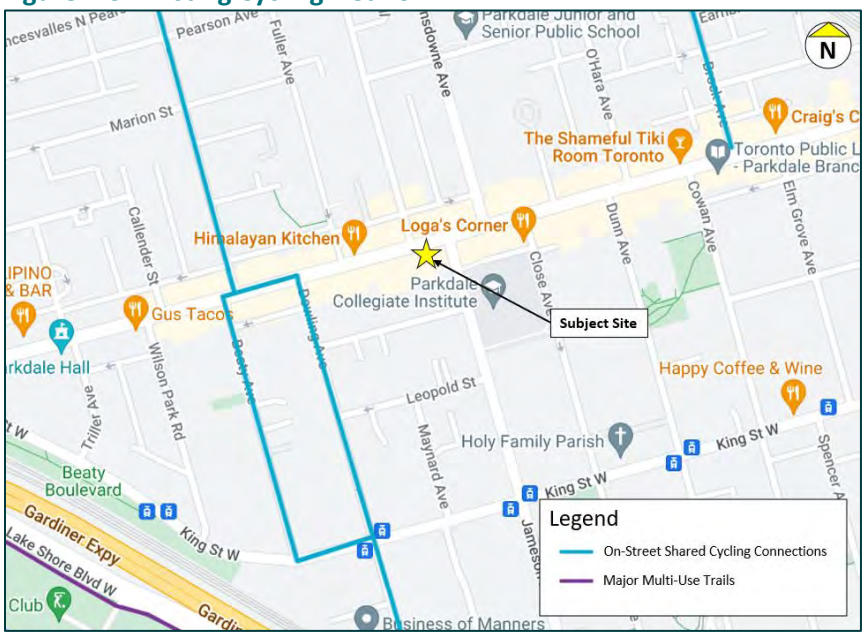
> *Access Location:* Route 501 is accessible near the intersection of Queen Street West and Jameson Avenue, which is located adjacent to the subject site.

2.3 CYCLING NETWORK

The subject site is located in a neighbourhood with access to some nearby existing cycling infrastructure. On-street shared cycling connections are located just to the west of the subject site along Queen Street West for east-west travel and connect to further on-street cycling connections along Sorauren Avenue.

As a testament to how bikeable the subject site is, the site receives a Bike Score of 85/100, or "Very Bikeable", when entered into the WalkScore application. This indicates that cycling is convenient for most trips. The cycling network is illustrated in **Figure 2-3**.

Figure 2-3: Existing Cycling Network



Source: City of Toronto, 2023

2.4 PEDESTRIAN NETWORK

In the area immediately surrounding the subject site, the existing pedestrian network and environment is excellent. Continuous sidewalks are available on both sides of all streets in the study area. Furthermore, pedestrian crosswalks are available on most approaches with protected pedestrian phases at the signalized intersection nearby. The existing pedestrian network provides excellent connections between the residential and commercial uses in the area as well as nearby TTC transit stops.

As a testament to the subject site's walkability, the site receives a Walk Score of 91/100, or "Walker's Paradise", when entered into the WalkScore application. This indicates that the day's errands are able to be accomplished without a vehicle. As shown in **Figure 2-4** below, a 15-minute walk from the subject site could permit an individual to reach Roncesvalles Avenue, Dufferin Street West, Dundas Street and King Street West along with many other amenities along Queen Street West.

Figure 2-4: 15-Minute Walking Distance from Subject Site

Source: walkscore.com, 2023

2.5 TRAFFIC DATA COLLECTION

Turning movement counts (TMCs) were used as the source of traffic data in the intersection capacity analysis. A summary of the TMC data collected is outlined in **Table 2-1** with details of the TMC data collected found within **Appendix B**. Counts were conducted by LEA for all study area intersections on February 7, 2023. The traffic data collected is considered to be an appropriate representation of current traffic patterns and an appropriate baseline to forecast future traffic patterns as COVID-19 restrictions have been removed and modified work commuting habits are expected to remain permanent. because of various workplaces implementing a hybrid in-person/work from home structure. The collected traffic data provides an appropriate representation of current traffic patterns as well as possible future traffic patterns caused by the pandemic. As such, no COVID-19 related adjustments to traffic patterns were applied.

Table 2-1: Data Collection Summary

Intersection	TMC Date	Source
Lansdowne Avenue & Queen Street West	February 7, 2023	LEA Consulting Ltd.
Jameson Avenue & Queen Street West		
Existing Site Access/MacDonell Avenue & Queen Street West		
Sorauren Avenue & Queen Street West		

2.6 EXISTING CONDITIONS SYNCHRO MODEL INPUTS

Existing traffic operations were assessed to provide a baseline for future traffic operations. The existing analysis incorporates the most recent signal timing plans for the study intersections and were obtained from the City of Toronto. Furthermore, peak hour factors (PHF) were obtained from the TMCs collected.

Existing model calibration was conducted based on existing conditions for the northbound right (NBR) movement at the Queen Street West and Jameson Avenue intersection during the PM peak hour. For this movement with the default model parameters, a Volume-to-Capacity (V/C) ratio greater than 1.00 was indicated. As this is not theoretically possible, the movement under the PM peak hour incorporated the following parameters:

- Lost Time Adjustment (LTA): LTA for the movement was decreased to -2 with assumption that more vehicles will use the amber and all-red time to complete the movement under congested conditions.
- Ideal Saturated Flow Rate: Ideal Saturated Flow rate was increased to 2100 vphpl, while maintaining the City of Toronto's *Guidelines for Using Synchro 11 (Including SimTraffic 11)* (2021) recommended saturated flow rate (protected) below threshold of 2005 vphpl for through lane groups.

The V/C ratio that resulted from the two adjustments described above for the NBR at Queen St W and Jameson Ave was checked against an estimation of capacity for this movement based on a review of video footage from the time of data collection. Details can be found in **Appendix B**.

Existing model calibration was also conducted based on the streetcar operations in mixed traffic conditions along Queen Street West. As such, the existing analysis incorporated the following parameters:

- Lane Utilization Factor (LUF): LUF adjusted for eastbound and westbound lane groups along Queen Street West during both weekday peak hours to reflect mixing of streetcar and general traffic within the centre-lane. The base LUF was 0.95 for both directions in both peak hours. LUF adjustment was calculated based on review of survey video footage for the peak 15 minutes for both peak hours, with detailed calculations provided in **Appendix B**. The LUF was adjusted to 0.88 and 0.94 in the AM and PM peak hours, respectively for the eastbound direction. The LUF was adjusted to 0.93 and 0.99 in the AM and PM peak hours respectively for the westbound direction.

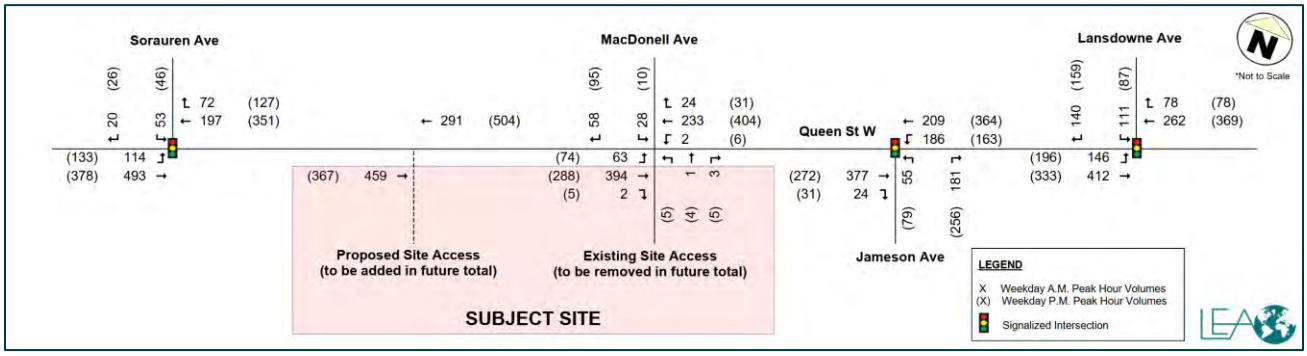
2.6.1 Queue Survey – Queen Street West & Jameson Avenue

A queue survey was conducted for eastbound movements at the intersection of Queen Street West & Jameson Avenue to assess queuing constraints on Queen Street West, west of the intersection travelling in the eastbound direction. The purpose of conducting this survey was to assist in assessing the limits to the synchro modelling in capturing queuing conditions during the traffic survey. The results of this survey are discussed in **Section 6** and details on the queue survey results are included in **Appendix C**.

2.7 EXISTING TRAFFIC VOLUMES

The existing traffic volumes in the study area during the weekday AM and PM peak hours are illustrated in **Figure 2-5**. No corridor traffic volume balancing was conducted for the existing traffic volumes.

Figure 2-5: Existing Traffic Volumes



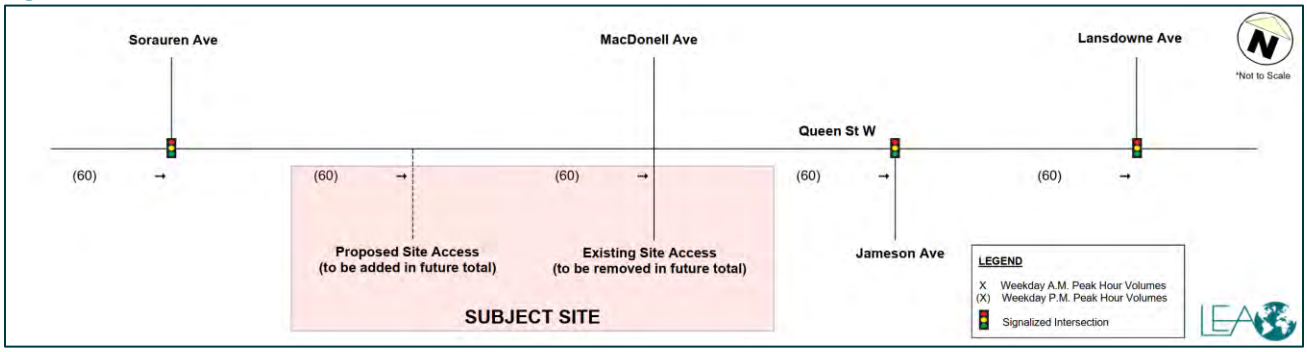
3 FUTURE BACKGROUND TRAFFIC CONDITIONS

For the analysis of future background traffic conditions, this study considers a five-year horizon to the year 2028. The following sections discuss the anticipated and planned changes to the transportation network as well as the background developments and corridor growth assumptions.

3.1 CORRIDOR GROWTH

Based on a review of TMC data for the intersections of Queen Street West and Lansdowne Avenue/Jameson Avenue from 2008, 2013 and 2019, and Queen Street West and Sorauren Avenue from 2015 and 2018, minimal or negative growth along Queen Street West was identified with the exception of the eastbound direction in the PM peak period, where some growth was indicated. As such a 3% compound annual growth rate for the eastbound PM peak hour was applied. Of note, the surrounding background development reports mostly assumed no growth for the study corridors, which aligns with the findings of historical counts historical counts. The corridor growth applied for the future scenarios is illustrated below in **Figure 3-1** and corridor growth calculations are included in **Appendix D**.

Figure 3-1: Corridor Growth



3.2 BACKGROUND DEVELOPMENTS

Four (4) background developments located within or near the study area were considered under future background conditions. The site statistics of the background developments are summarized below in **Table 3-1**.

Table 3-1: Background Developments

#	Location	Proposed Development	Source of Traffic Volumes
1	1521 Queen St W	95 residential units; 293 m^2 non-residential GFA	TIS dated Nov 2019 Table 15 (1) BA Group
2	1375 Queen St W	50 residential units; 264 m^2 non-residential / commercial GFA	TIS dated March 2020 (Figure H-3) BA Group
3	150 Dunn Ave	192 long-term care beds	TIS dated February 2019 (Figure 5-1 and 5-2) LEA
4	8-14 Brock Ave & 1354-1360 Queen St W	172 residential units; 386 m^2 retail GFA	TIS dated September 2020 (Figure 13) BA Group

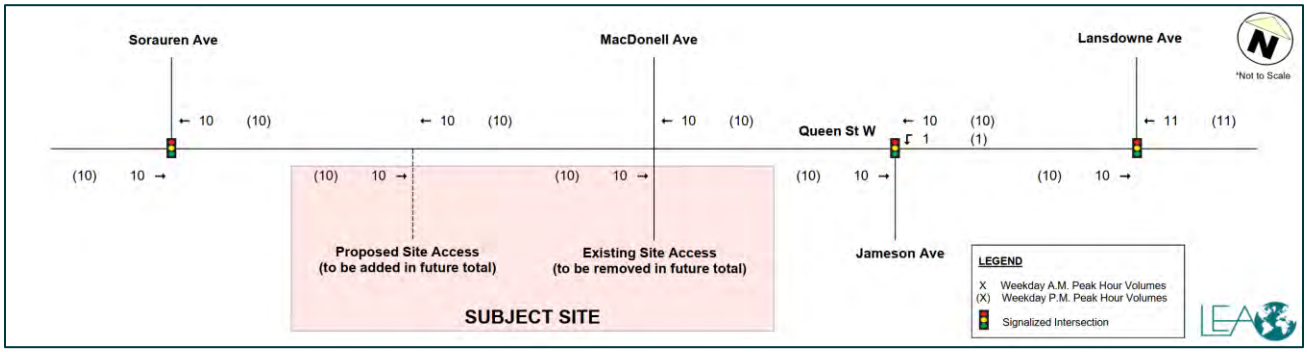
(1) The latest submission with site trip generation was from November 2019. Table 15 of this submission indicated that no auto driver trip generation is forecasted for this development given the provision of zero parking.

The site-generated traffic volumes and their assignment on the study area road network for the background developments were extracted from their respective traffic reports prepared in support of their development applications. Relevant excerpts from the traffic studies for each background development are included in **Appendix E**. The location of each background development relative to the location of the subject site is illustrated below in **Figure 3-2** and the background development traffic volumes considered in the analysis are illustrated below in **Figure 3-3**.

Figure 3-2: Background Development Locations

Source: Google Maps, 2023

Figure 3-3: Background Development Traffic Volumes



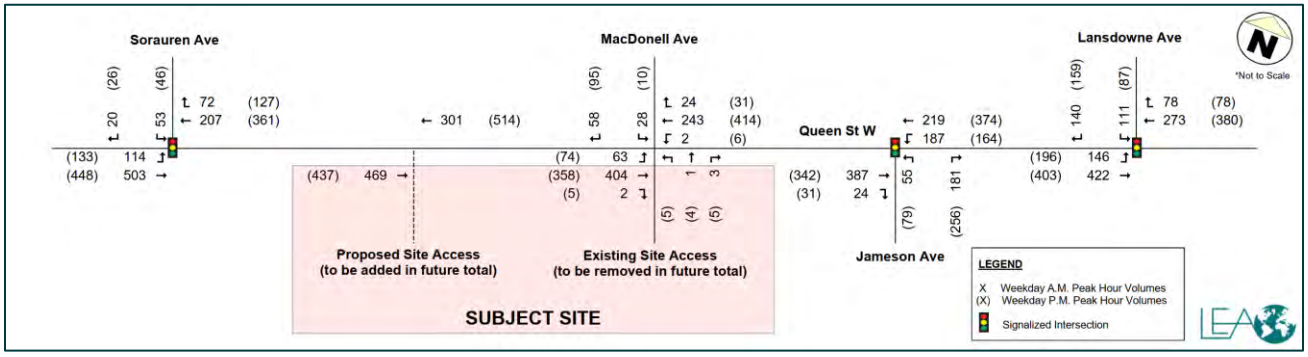
3.3 FUTURE BACKGROUND SYNCRHO MODEL INPUTS

Input parameters from the existing conditions scenario, inclusive of existing modal calibrations, were maintained with corresponding future background volumes. No signal optimization was conducted for the future scenarios.

3.4 FUTURE BACKGROUND TRAFFIC VOLUMES

The future background traffic volumes for the weekday AM and PM peak hours under the 2028 future background scenario are illustrated in **Figure 3-4**.

Figure 3-4: Future Background Traffic Volumes



4 SITE-GENERATED TRAFFIC

The proposed development consists of a 12-storey mixed-use building. A total of 249 units and approximately 789 m^2 of ground floor retail GFA are proposed. The following section details the trip generation from the subject site.

4.1 MODE SPLIT

Data from the 2016 Transportation Tomorrow Survey (TTS) was extracted to identify the modal split of the neighborhood trips based on home-based work trips for filtered for apartments from the Traffic Analysis Zones (TAZs): 89, 109, 110, and 113. This modal split was used to identify the transit and pedestrian mode shares to determine the breakdown of transit and pedestrian trips from the trip generation. Upon determining the breakdown of transit and pedestrian trips based on the TTS modal split data, the modal split for the site-generated trips was ultimately based on the ratio of two-way peak hour trips for each mode to the total site trip generation (discussed further in the next section). The TTS modal split is identified in **Table 4-1** below, with detailed TTS data is provided in **Appendix F**.

Table 4-1: Modal Split

Mode	%
Auto Driver + Passenger	33%
Transit	45%
Walk	14%
Cycle	8%
Total	100%

4.2 TRIP GENERATION

4.2.1 Residential Trip Generation

Trip generation was estimated for the residential portion of the subject site through the utilization of proxy surveys at comparable developments. The proxy sites chosen are 15 Stafford Street and 25 Stafford Street. These proxy sites were chosen as they display comparable land use characteristics to the subject site and have a similar transportation context. Furthermore, the proxy sites are located within reasonable proximity to the subject site (~2.5 km from the subject site). The trip generation surveys were conducted at the proxy sites between 7:30 AM – 9:30 AM and 4:30 PM and 6:30 PM on Tuesday, February 7, 2023. Trip generation rates from these sites were determined based on the average of both proxy sites for auto driver/passenger trips, pedestrian trips, and cyclist trips, to determine the multimodal trip generation for the subject site.

LEA Consulting has also surveyed these proxy sites in 2015 for trip generation and as such compared the 2015 rates with the rates from the 2023 surveys, determining they were comparable and in some cases, more conservative than the 2015 rates. The 2015 surveys were carried out from Friday June 5th to Friday June 12th 2015. Thus, this determined the 2023 surveyed rates are appropriate to use for the analysis. Of note however, there were no cyclist trips from the 2023 surveys and as such, the cyclist trip generation rates from the 2015 surveys were used to determine cyclist trips generated from the subject site.

The location of the proxy sites relative to the subject site is shown in **Figure 4-1** and detailed survey data is included in **Appendix G.**

Figure 4-1: Proxy Site Location

Source Google Maps, 2023

4.2.2 Retail Trip Generation – New Retail Use and Existing Retail Uses to Remove

Regarding the proposed retail component of the subject site, given the scale of retail use on-site, zero retail parking spaces provided on site, as well as local travel characteristics, it is assumed that the proposed retail use will attract local trips already in the area but is not expected to generate new vehicle trips solely for this use. As such, no new trip generation will be included for the retail use. For the existing retail uses, trip generation was based on the TMC data. Trips were removed at the existing site access but have not been removed from the remainder of the network. This methodology accounts for the fact that, while the existing retail use will not exist, these trips may still exist in the area in the form of previous pass-by trips to the existing retail use on the subject lands.

Table 4-2 below illustrates the trip generation for the new residential trips based on the average proxy site trip generation rates per mode.

Table 4-2: Subject Site Trip Generation (New Residential Trips)

New Residential Trips – 255 units	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Auto (Driver + Passenger) Trips						
Trip Rate	*0.02*	*0.10*	*0.11*	*0.09*	*0.03*	*0.13*
Auto (Driver + Passenger) Trips	**4**	**25**	**29**	**24**	**8**	**32**
Transit + Walking Trips						
Trip Rate	*0.09*	*0.17*	*0.26*	*0.17*	*0.10*	*0.28*
Trips (Transit + Walking) (1)	22	43	65	44	27	71
Transit Trips	**17**	**33**	**50**	**33**	**21**	**54**
Walking Only Trips	**5**	**10**	**15**	**11**	**6**	**17**
Cycling Trips						
Trip Rate	*0.00*	*0.03*	*0.03*	*0.01*	*0.00*	*0.01*
Cycling Trips	**0**	**7**	**7**	**2**	**1**	**3**
Total New Person Trips	**26**	**75**	**101**	**70**	**36**	**106**

(1) Total pedestrian trips from the proxy survey rates includes both transit trips and walk only trips. Local mode split data from the 2016 TTS indicated that transit trips make up 76% of the total transit + walk only trips. This was used to separate out the pedestrian trips into transit trips and walk only trips.

As noted in the above table, based on the average trip rates from the proxy sites, the subject site is anticipated to generate 29 two-way auto driver and auto passenger trips during the AM peak hour (4 inbound and 25 outbound) ad 32 two-way auto driver and auto passenger trips during the PM peak hour (24 inbound and 8 outbound). Furthermore, for transit trips, the subject site is anticipated to generate 49 two-way trips in the AM peak hour (17 inbound and 33 outbound) and 54 two-way trips in the PM peak hour (33 inbound and 21 outbound). For walking trips, 16 two-way AM peak hour trips (5 inbound and 10 outbound) and 17 two-way PM peak hour trips (11 inbound and 6 outbound) are anticipated to be generated. For cycling trips, 7 two-way AM peak hour trips (7 outbound only) and 3 two-way PM peak hour trips (2 inbound and 1 outbound) are anticipated to be generated.

4.2.3 Multi-Modal Trip Generation

The multi-modal site trip generation is summarized in **Table 4-3** below with the mode split for the subject site trips calculated.

Table 4-3: Subject Site Multi-Modal Trip Generation (New Residential)

Land Use	Description	Weekday AM Peak Hour				Weekday PM Peak Hour			
		Mode Split	In	Out	Total	Mode Split	In	Out	Total
New Residential	**External Person Trips**	-	**26**	**75**	**101**	-	**70**	**36**	**106**
	Auto Driver + Passenger Trips	29%	4	25	**29**	30%	24	8	**32**
	Transit Trips	49%	17	33	**49**	51%	33	21	**54**
	Walking trips	15%	5	10	**16**	16%	11	6	**17**
	Cycling Trips	7%	0	7	**7**	3%	2	1	**3**

4.3 TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution for the site traffic was derived using Transportation Tomorrow Survey (TTS) 2016 data for the TAZs 98, 109, 110, and 113. The distribution was based on the peak directional distribution. Trip assignment was based on local road network, turn restrictions, changes in the future network (assumed none for the analysis), logical routing, and the type of access. The trip distribution for the residential uses is outlined in **Table 4-4**. Detailed TTS data is provided in **Appendix F**.

Table 4-4: Proposed Auto Trip Distribution (New Residential)

Direction From/To	Expected Route	Weekday AM/PM Peak Hour	
		In	Out
North	Lansdowne Ave	7%	2%
South	Jameson Ave	36%	40%
East	Queen St W	39%	50%
West	Queen St W	18%	8%
	TOTAL	**100%**	**100%**

Of note, for the existing retail site traffic for removal, existing retail trips were removed at the existing site access but it was assumed that no net change at the remaining study area intersections as new retail trips may still be driving in and out of the area and parking nearby.

The new residential trips for the subject site are illustrated in **Figure 4-2**, the existing retail trips to remove are illustrated in **Figure 4-3** and the net site auto trips are illustrated in **Figure 4-4**.

Figure 4-2: New Residential Site Trips

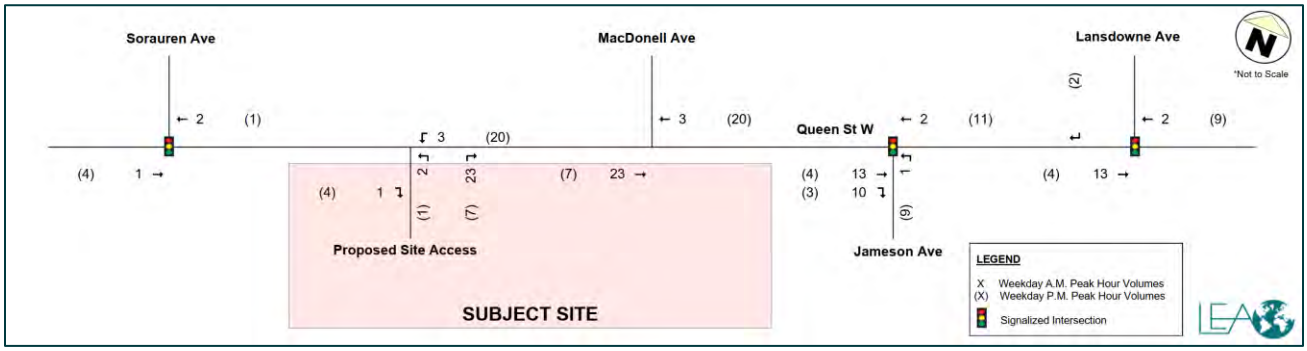


Figure 4-3: Existing Retail Trips to Remove

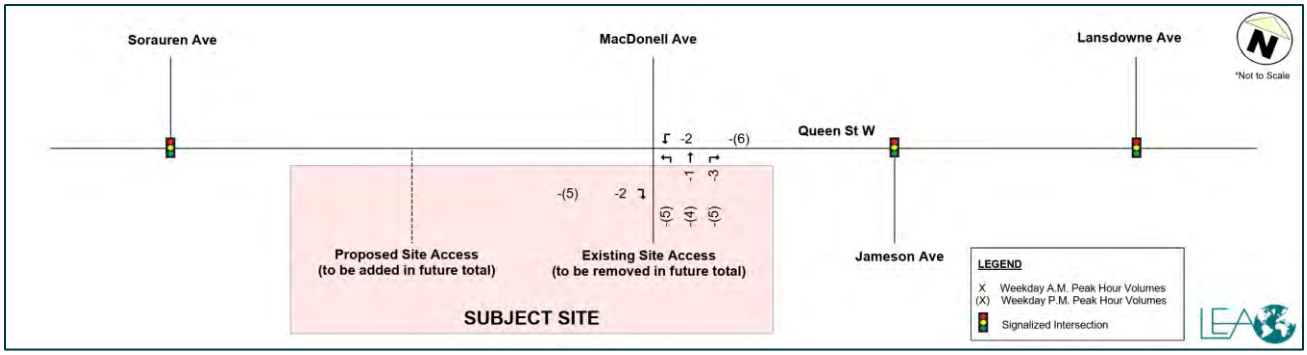
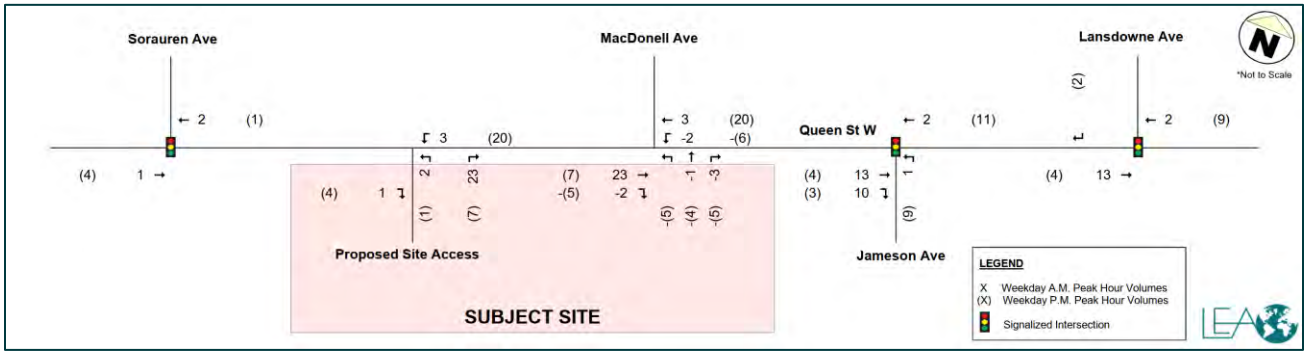


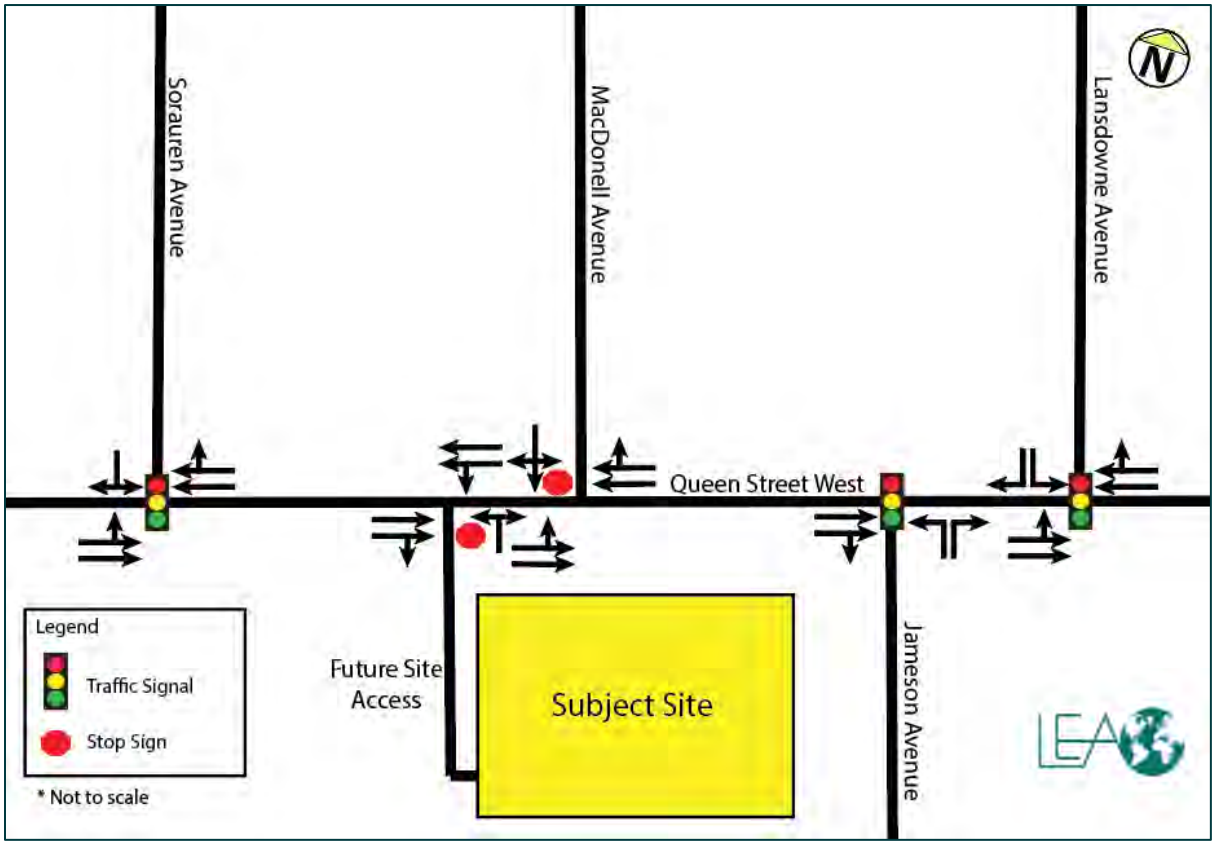
Figure 4-4: Net Site Auto Trips



5 FUTURE TOTAL TRANSPORTATION CONDITIONS

Future total traffic conditions include the addition of site trips to the 2028 future background volumes. Changes noted under future background conditions were maintained in the future total analysis. The future road network configuration is illustrated below in **Figure 5-1**.

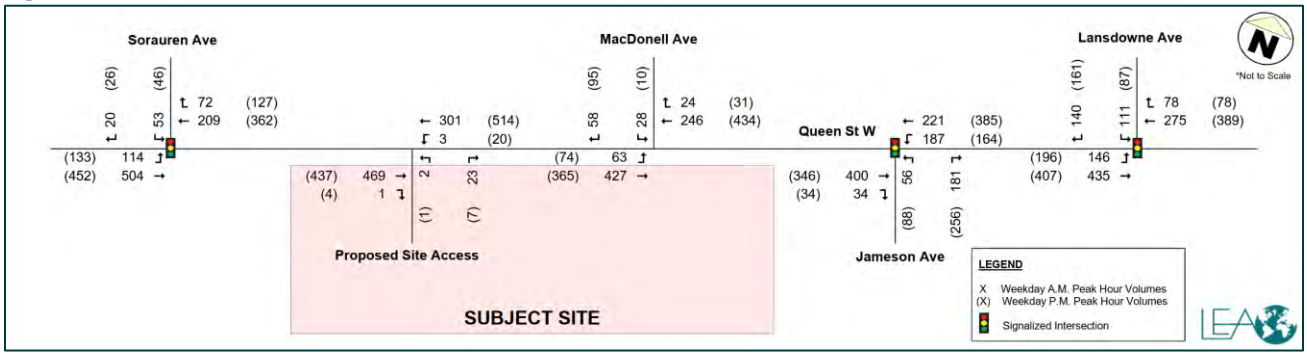
Figure 5-1: Future Road Network



5.1 FUTURE TOTAL TRAFFIC VOLUMES

The future total traffic volumes for the weekday AM and PM peak hours are illustrated in **Figure 5-2**.

Figure 5-2: Future Total Traffic Volumes



6 INTERSECTION CAPACITY ANALYSIS

The intersection capacity analysis was undertaken using Synchro 11.0, which is based on the Highway Capacity Manual (2000) methodology and adheres to the City of Toronto Guidelines for the Preparation of Transportation Impact Studies (2013). As per the City of Toronto Guidelines, key movements of interest are those with Level-of-Service (LOS) E or worse or a Volume-to-Capacity (V/C) ratio greater than 0.85 for through and right movements and a V/C greater than 0.9 for dedicated left turn-movements.

The intersection capacity analysis was conducted for the weekday AM and PM peak hours. As was noted prior, the Peak Hour Factors (PHF) under existing conditions for all intersections were calculated based on surveyed traffic counts. As noted in **Section 3.3**, input parameters under existing conditions, inclusive of existing model calibrations, were maintained under future background/total conditions. No signal optimization was conducted for the future scenarios.

The following sections outline a comparison of the capacity analysis results under existing, future background and future total conditions. The analysis outlines the intersection capacity analysis for signalized and unsignalized intersections.

Detailed intersection capacity analysis is provided in the following appendices:

- **Appendix H:** Existing Intersection Capacity Analysis;
- **Appendix I:** 2028 Future Background Intersection Capacity Analysis; and
- **Appendix J:** 2028 Future Total Intersection Capacity Analysis.

6.1 SIGNALIZED INTERSECTIONS

The intersection capacity analysis results for the signalized intersections for the AM and PM peak hour are summarized in **Table 6-1** to **Table 6-6** below.

Table 6-1: Queen Street West and Lansdowne Avenue Intersection Capacity Analysis

AM PK HR	Existing				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	-	0.63	25	C	-	0.64	25	C	-	0.64	25	C
EBLT	558	0.57	6	A	568	0.58	6	A	581	0.59	6	A
WBTR	340	0.59	36	D	351	0.61	37	D	353	0.61	37	D
SBL	111	0.58	47	D	111	0.58	47	D	111	0.58	47	D
SBR	140	0.67	52	D	140	0.67	52	D	140	0.67	52	D
PM PK HR	Existing				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	-	0.65	27	C	-	0.67	26	C	-	0.68	26	C
EBLT	529	0.51	7	A	599	0.56	7	A	603	0.57	7	A
WBTR	447	0.66	38	D	458	0.68	38	D	467	0.69	39	D
SBL	87	0.43	41	D	87	0.43	41	D	87	0.43	41	D
SBR	159	0.71	54	D	159	0.71	54	D	161	0.72	55	D

Table 6-2: Queen Street West and Lansdowne Avenue Queues

AM PEAK Mvmt	Available Storage (m) (1)	Existing Queue (m)		Future Background 2028 Queue (m)		Future Total 2028 Queue (m)	
		50th	95th	50th	95th	50th	95th
EBLT	23	6	11	6	12	6	14
WBTR	40	31	**48**	33	**50**	33	**50**
SBL	221	22	42	22	42	22	42
SBR	45	28	**57**	28	**57**	28	**57**
PM PEAK Mvmt	**Available Storage (m) (1)**	**Existing Queue (m)**		**Future Background 2028 Queue (m)**		**Future Total 2028 Queue (m)**	
		50th	95th	50th	95th	50th	95th
EBLT	23	6	9	6	9	6	9
WBTR	40	**40**	**58**	**42**	**60**	**43**	**61**
SBL	221	16	32	16	32	16	32
SBR	45	31	**62**	31	**62**	32	**64**

(1) For through or shared through/right movements without dedicated turn lanes, the distance to the closest intersection or main accesses upstream that could potentially be impacted by queues has been included under available storage.

Table 6-3: Queen Street West and Jameson Avenue Intersection Capacity Analysis

AM PK HR Mvmt	Existing Vol	V/C	Delay (s)	LOS	Future Background (2028) Vol	V/C	Delay (s)	LOS	Future Total (2028) Vol	V/C	Delay (s)	LOS
OVERALL	-	**0.65**	**27**	**C**	-	**0.66**	**27**	**C**	-	**0.68**	**28**	**C**
EBTR	401	0.65	32	C	411	0.67	32	C	434	0.71	34	C
WBLT	395	0.44	4	A	406	0.45	5	A	408	0.46	5	A
NBL	55	0.26	36	D	55	0.26	36	D	56	0.27	36	D
NBR	**181**	**0.81**	**62**	**E**	**181**	**0.81**	**62**	**E**	**181**	**0.81**	**62**	**E**
PM PK HR Mvmt	**Existing Vol**	**V/C**	**Delay (s)**	**LOS**	**Future Background (2028) Vol**	**V/C**	**Delay (s)**	**LOS**	**Future Total (2028) Vol**	**V/C**	**Delay (s)**	**LOS**
OVERALL	-	**0.66**	**29**	**C**	-	**0.68**	**29**	**C**	-	**0.69**	**29**	**C**
EBTR	303	0.45	27	C	373	0.55	29	C	380	0.56	29	C
WBLT	527	0.49	5	A	538	0.50	6	A	549	0.51	6	A
NBL	79	0.40	40	D	79	0.40	40	D	88	0.44	41	D
NBR	**256**	**0.93**	**76**	**E**	**256**	**0.93**	**76**	**E**	**256**	**0.93**	**76**	**E**

Table 6-4: Queen Street West and Jameson Avenue Queues

AM PEAK Mvmt	Available Storage (m) (1)	Existing Queue (m)		Future Background 2028 Queue (m)		Future Total 2028 Queue (m)	
		50th	95th	50th	95th	50th	95th
EBTR	28	**36**	**52**	**37**	**53**	**41**	**58**
WBLT	23	3	5	3	5	3	5
NBL	15	10	**23**	10	**23**	11	**23**
NBR	84	39	77	39	77	39	77
PM PEAK Mvmt	**Available Storage (m) (1)**	**Existing Queue (m)**		**Future Background 2028 Queue (m)**		**Future Total 2028 Queue (m)**	
		50th	95th	50th	95th	50th	95th
EBTR	28	19	**32**	27	**40**	27	**41**
WBLT	23	4	6	4	7	4	8
NBL	15	15	**31**	15	**31**	**17**	**34**

NBR	84	56	**106**	56	**106**	56	**106**

(1) For through or shared through/right movements without dedicated turn lanes, the distance to the closest intersection or main accesses upstream that could potentially be impacted by queues has been included under available storage.

Table 6-5: Queen Street West and Sorauren Avenue Intersection Capacity Analysis

AM PK HR	Existing				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	**-**	**0.47**	**9**	**A**	**-**	**0.47**	**9**	**A**	**-**	**0.47**	**10**	**A**
EBLT	607	0.50	7	A	617	0.51	7	A	618	0.51	7	A
WBTR	269	0.17	7	A	279	0.17	7	A	281	0.18	7	A
SBL	53	0.28	37	D	53	0.28	37	D	53	0.28	37	D
SBR	20	0.02	35	C	20	0.02	35	C	20	0.02	35	C
PM PK HR	**Existing**				**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	**-**	**0.37**	**9**	**A**	**-**	**0.41**	**9**	**A**	**-**	**0.41**	**9**	**A**
EBLT	511	0.40	6	A	581	0.44	7	A	585	0.45	7	A
WBTR	478	0.26	7	A	488	0.27	8	A	489	0.27	8	A
SBL	46	0.23	37	D	46	0.23	37	D	46	0.23	37	D
SBR	26	0.02	35	C	26	0.02	35	C	26	0.02	35	C

Table 6-6: Queen Street West and Sorauren Avenue Queues

AM PEAK	Available Storage (m) [1]	Existing		Future Background 2028		Future Total 2028	
Mvmt		Queue (m)		Queue (m)		Queue (m)	
		50th	95th	50th	95th	50th	95th
EBLT	20	**35**	**50**	**36**	**51**	**36**	**52**
WBTR	135	9	18	12	19	12	19
SBL	119	10	22	10	22	10	22
SBR	35	0	7	0	7	0	7
PM PEAK	**Available Storage (m) [1]**	**Existing**		**Future Background 2028**		**Future Total 2028**	
Mvmt		Queue (m)		Queue (m)		Queue (m)	
		50th	95th	50th	95th	50th	95th
EBLT	20	**23**	**33**	**28**	**40**	**28**	**40**
WBTR	135	18	26	20	26	20	26
SBL	119	8	19	8	19	8	19
SBR	35	0	7	0	7	0	7

6.2 UNSIGNALIZED INTERSECTIONS

The intersection capacity analysis results for the unsignalized intersections for the AM and PM peak hour are summarized in **Table 6-7** to **Table 6-10** below.

Table 6-7: Queen Street West and Existing Site Access/MacDonell Avenue Intersection Capacity Analysis

AM PK HR	Existing				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
NBLTR	4	0.01	17	C	4	0.02	17	C	-	-	-	-
EBL	63	0.08	10	A	63	0.08	10	A	63	0.07	9	A
EBT	394	0.00	0	A	404	0.00	0	A	427	0.00	0	A
EBR	2	0.00	0	A	2	0.00	0	A	-	-	-	-
WBL	2	0.00	9	A	2	0.00	9	A	-	-	-	-
WBT	233	0.00	0	A	243	0.00	0	A	246	0.00	0	A
WBR	24	0.00	0	A	24	0.00	0	A	24	0.00	0	A
SBLTR	86	0.27	19	C	86	0.27	19	C	-	-	-	-
SBLR	-	-	-	-	-	-	-	-	86	0.25	18	C
PM PK HR	**Existing**				**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
NBLTR	**14**	**0.14**	**42**	**E**	**14**	**0.15**	**48**	**E**	-	-	-	-
EBL	74	0.13	12	B	74	0.13	12	B	74	0.12	11	B
EBT	288	0.00	1	A	358	0.00	1	A	365	0.00	1	A
EBR	5	0.00	0	A	5	0.00	0	A	-	-	-	-
WBL	6	0.01	9	A	6	0.01	10	A	-	-	-	-
WBT	404	0.00	0	A	414	0.00	0	A	434	0.00	0	A
WBR	31	0.00	0	A	31	0.00	0	A	31	0.00	0	A
SBLTR	105	0.43	28	D	105	0.44	29	D	-	-	-	-
SBLR	-	-	-	-	-	-	-	-	105	0.38	24	C

Table 6-8: Queen Street West and Existing Site Access/MacDonell Avenue Queues

AM PEAK	Available Storage (m) [1]	Existing	Future Background 2028	Future Total 2028
Mvmt		Queue (m)	Queue (m)	Queue (m)
		95th	95th	95th
NBLTR	7	0	0	-
EBL	76	0	0	0
EBT	76	0	0	0
EBR	76	0	0	-
WBL	27	0	0	-
WBT	27	0	0	0
WBR	27	0	0	0
SBLTR	35	7	7	-
SBLR	35	-	-	7
PM PEAK	**Available Storage (m) [1]**	**Existing**	**Future Background 2028**	**Future Total 2028**
Mvmt		Queue (m)	Queue (m)	Queue (m)
		95th	95th	95th
NBLTR	7	7	7	-
EBL	76	7	7	0
EBT	76	0	0	0
EBR	76	0	0	-
WBL	27	0	0	-
WBT	27	0	0	0

WBR	27	0	0	0
SBLTR	35	13	13	-
SBLR	35	-	-	13

(1) For through or shared through/right movements without dedicated turn lanes, the distance to the closest intersection or main accesses upstream that could potentially be impacted by queues has been included under available storage.

Table 6-9: Queen Street West and Proposed Site Access Intersection Capacity Analysis

AM PK HR	Existing				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
NBLR	-	-	-	-	-	-	-	-	25	0.05	12	B
EBT	-	-	-	-	-	-	-	-	469	0.00	0	A
EBR	-	-	-	-	-	-	-	-	1	0.00	0	A
WBL	-	-	-	-	-	-	-	-	3	0.00	9	A
WBT	-	-	-	-	-	-	-	-	301	0.00	0	A
PM PK HR	**Existing**				**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
NBLR	-	-	-	-	-	-	-	-	8	0.02	14	B
EBT	-	-	-	-	-	-	-	-	437	0.00	0	A
EBR	-	-	-	-	-	-	-	-	4	0.00	0	A
WBL	-	-	-	-	-	-	-	-	20	0.03	10	A
WBT	-	-	-	-	-	-	-	-	514	0.00	0	A

Table 6-10: Queen Street West and Proposed Site Access Queues

AM PEAK	Available Storage (m) (1)	Existing	Future Background 2028	Future Total 2028
Mvmt		Queue (m) 95th	Queue (m) 95th	Queue (m) 95th
NBLR	7	-	-	0
EBT	35	-	-	0
EBR	35	-	-	0
WBL	42	-	-	0
WBT	42	-	-	0
PM PEAK	**Available Storage (m) (1)**	**Existing**	**Future Background 2028**	**Future Total 2028**
Mvmt		Queue (m) 95th	Queue (m) 95th	Queue (m) 95th
NBLR	7	-	-	0
EBT	35	-	-	0
EBR	35	-	-	0
WBL	42	-	-	0
WBT	42	-	-	0

(1) For through or shared through/right movements without dedicated turn lanes, the distance to the closest intersection or main accesses upstream that could potentially be impacted by queues has been included under available storage.

Existing Conditions

Under existing weekday AM and PM peak hour conditions, the signalized study intersections are indicated to be operating within capacity with V/C ratios less than 1.00 and at an acceptable overall LOS C or better. The northbound right turn at the Jameson Avenue intersection was indicated to be a movement of interest with a V/C ratio of 0.81 and LOS E with 62 seconds of delay in the AM peak hour and a V/C ratio of 0.93 and LOS E with 76 seconds of delay in the PM peak hour.

Furthermore, the unsignalized intersection indicates all movements operating within capacity with V/C ratios below 1.00, acceptable LOS of D or better, and minimal queuing (i.e. no more than 2 vehicles) with the exception of the northbound movement out of the site access during the PM peak hour. This movement of interest indicates a LOS E (42 seconds of delay) during the PM peak hour. This delay can likely be attributed to the heavy traffic flow along Queen Street East, which would limit opportunities for drivers to make left turns from the minor approaches. This is not uncommon for an unsignalized approach to an arterial road in the City of Toronto during the busiest peak of the day.

Field observations indicated that there are currently queueing constraints along Queen Street West. A queue survey of the eastbound approach at the Jameson Avenue intersection (as noted in **Section 2.6.1**) indicated queue lengths on average extended beyond the existing site access during both peak hours. The longest queue lengths recorded at the onset of green during both peak hours extended to the Sorauren Avenue intersection (i.e. 300 m just after 9:00 AM and 294 m just after 5:00 PM). These queueing conditions may not be captured in the synchro modelling as the flow may be metered (i.e. intersections may indicate low volumes because volumes cannot get through due to downstream queueing). Therefore, it is recognized that although the synchro analysis may indicate movements are operating within capacity and generally with acceptable delay, the model is limited in capturing the queuing conditions along Queen Street West observed in the field.

Future Background/Total Conditions

Under future background weekday AM and PM peak hour conditions, the study intersections are expected to continue operating with minimal changes to operations compared to existing.

Under future total weekday AM and PM peak hour conditions, the study intersections are expected to continue operating similar to future background. The v/c ratios, delay, and queue lengths for all movements during both peak hours indicate minimal changes with the added site traffic compared to future background conditions. No new constraints were identified as a result of the added site traffic. It is recognized that drivers making a left in or out of the proposed site access may have to rely on courtesy gaps in order to complete their movement, given the existing queuing constraints fronting the site access along Queen Street West.

7 MULTI-MODAL ANALYSIS

7.1 EXISTING MULTI-MODAL LEVEL OF SERVICE

The City of Ottawa's *Multi-Modal Level of Service (MMLOS) Guidelines* were adopted to generate levels of service (LOS) to describe the convenience and comfort level of existing and proposed active transportation infrastructure within the subject area. The results are presented on a scale of A to F, where A represents preferred conditions and F represents the least preferred conditions, depending on the criteria of each mode. It should be noted that LOS is not always the desired target for all modes, as each mode is considered independently, and the minimum LOS targets depend on the context of the street and surrounding area.

The transit level of service (TLOS) was conducted for the major signalized study intersections along Queen Street West, including at Lansdowne Avenue and at Jameson Avenue based on the "worst intersection" approach. It should be noted that the evaluation is only confined to surface bus and streetcar routes operating within mixed general traffic and does not consider rapid transit options in the area (i.e. TTC subway service, Metrolinx GO service), which would provide grade-separated rapid transit access unencumbered by general vehicle traffic.

The pedestrian level of service (PLOS) and cycling level of service (BLOS) evaluations were conducted for the "worst section" of the segment of Queen Street West between Macdonell Avenue and Lansdowne Avenue near the subject site.

A breakdown of the calculations and lookup tables from the MMLOS Guidelines are provided in **Appendix K**. **Table 7-1** and **Table 7-2** summarize the results for transit and pedestrians/cyclists, respectively.

Table 7-1: Surface Transit Level of Service Evaluation

Intersection Evaluation	Criteria	Queen St W & Lansdowne Ave	Queen St W & Jameson Ave
TLOS	delay	F	E

Table 7-2: Pedestrian and Bicycling Level of Service Evaluation

Segment Evaluation	Criteria	Queen St W – Macdonell Avenue and Lansdowne Avenue
PLOS	• sidewalk width • boulevard width • motor vehicle volume (AADT/lane) • presence of on-street parking • vehicle operating speed	C
BLOS	• type of cycling facility • street width • vehicle operating speed • width of bike lane (if present) • bike lane blockage (if present)	D

The two signalized intersections along Queen Street West closest to the subject site indicate a TLOS score of F (at Lansdowne Avenue) and a TLOS score of E (at Jameson Avenue). Transit vehicles mix with general traffic without dedicated space to operate, which leads to transit delays at the signalized intersections. The results therefore indicate that surface transit is generally not prioritized at study area intersections and has no dedicated infrastructure.

Pedestrian conditions on the analyzed segment is indicated to be PLOS C on both the north side and the south side of Queen Street West. There are sidewalks with boulevard space provided along the corridor, which also has low vehicle operating speeds. Conditions are somewhat impacted by the road width and vehicle volumes along Queen Street West. The results therefore indicate that the study area pedestrian environment is characterized by appropriate infrastructure and a largely comfortable experience for users.

The segment indicates a BLOS of D due to the lack of cycling facilities available and the road width, providing a less comfortable experience for cyclists (particularly new cyclists) compared to dedicated cycling facilities. The evaluation results demonstrate that on-street cycling is currently used given the low vehicle volumes, but conditions may be impacted by high vehicle volumes and limited infrastructure and connectivity to other existing cycling infrastructure.

7.2 FUTURE BACKGROUND MULTI-MODAL LEVEL OF SERVICE ASSESSMENT

No improvements in transit, pedestrian or cycling infrastructure along the studied areas were assumed; therefore, no change in results are expected to the TLOS, PLOS and BLOS compared to existing conditions.

7.3 SITE MULTI-MODAL LEVEL OF SERVICE ASSESSMENT

As indicated prior in **Table 4-3**, the new two-way site trips estimated for transit, walking, and cycling modes for each weekday peak hour are as follows:

- Transit: 50 to 55;
- Walking: 15 to 20; and
- Cycling: 5 to 10.

As discussed below, these new trips are expected to be supported by the multi-modal transportation network surrounding the subject site. In addition, the Transportation Demand Management (TDM) plan for the subject site (see **Section 11**) include strategies to support and encourage users to travel by alternative modes to driving.

7.3.1 Transit Trips

The proposed development is projected to generate 50 to 55 two-way transit trips per weekday peak hour.

The routes expected to be taken by the transit trips were estimated using 2016 TTS transit data for the same traffic zones as used for mode split and vehicle trip distribution, filtered for outbound home-based trips during the weekday AM peak period. A breakdown of the routes is outlined in Table 7-3 below. Detailed TTS results are indicated in **Appendix X**.

Table 7-3: Breakdown of Expected Routes for Local Transit Trips

Transit	%
TTC	**99%**
Bus	23%
Streetcar	75%
Subway	1%
GO	**1%**
Train	1%
Total	**100%**

Based on the TTS data, approximately 75% of transit trips leaving the subject site are expected to use the nearby streetcar routes, particularly the 504 King Streetcar (closest stop is located at the King Street West and Jameson Avenue intersection, about 400 m south of the subject site, equivalent to a 5 minute walk) and the 501 Queen Streetcar (closest stop is located at the Jameson Avenue intersection just east of the subject site). Both streetcars are part of the 10-minute network and operate 10 minutes or better, all day, every day. The proposed development is anticipated to add up to 7 riders for a streetcar per peak hour, which is considered minimal.

7.3.2 Walking Trips

The proposed development is projected to generate 15 to 20 two-way walking trips per weekday peak hour. This is in addition to the walking trips that represent the first/last connection for transit trips from/to the subject site. These pedestrian trips are expected to be supported by the continuous pedestrian facilities in the study area. However, many of the additional walk-only commute trips may be converted from transit trips, so the impact to the pedestrian infrastructure surrounding the site would remain relatively unchanged.

7.3.3 Cycling Trips

The proposed development is projected to generate 5 to 10 two-way cycling trips per weekday peak hour. These forecasted cycling trips are minimal and are anticipated to have minimal impact on the surrounding network.

8 PARKING ASSESSMENT

This section reviews the vehicular parking standards based on the zoning by-law requirements applicable to the subject site.

8.1 ZONING BY-LAW REQUIREMENTS – BICYCLE PARKING

The bicycle parking provision of the proposed development has been assessed according to the standards set by the City of Toronto Zoning By-Law 569-2013 and the Toronto Green Standard Tier 1 Guidelines. The subject site is located in Bicycle Zone 1, and the required bicycle parking rates and bicycle parking provisions are summarized in **Table 8-1**.

Table 8-1: Zoning By-Law Bicycle Parking Requirements

Land Use	Units/GFA	ZBL 569-2013 Bike Zone 1	Min. Requirement	Proposed Supply
Residential	249 Units	Short Term: 0.2 spaces/unit	50	50
		Long Term: 0.9 spaces/unit	225	225
Retail	789 m^2	Short Term: None Required (GFA < 2000 m2)	0	0
		Long Term: None Required (GFA < 2000 m2)	0	0
		Total	275	275

According to the City of Toronto Zoning By-law 569-2013 and TGS, the subject site requires a total of 275 bicycle parking spaces, consisting of 50 short-term and 225 long-term residential spaces, resulting in a total of 275 bicycle parking spaces. Regarding bicycle parking requirements for the retail land use, Section 230.5.10.1 (3) in the City of Toronto Zoning By-law 569-2013, "*if a bicycle parking space is required for uses on a lot, other than a dwelling unit, and the total interior floor area of all such uses on the lot is 2000 square metres or less, then no bicycle parking space is required*". As such, no retail bicycle parking spaces are required. The proposed supply therefore meets the bicycle parking requirements of the zoning by-law.

8.2 ZONING BY-LAW REQUIREMENTS – VEHICLE PARKING

The parking requirements for vehicle parking are governed by the parking standards set out in By-law 89-2022. The City of Toronto undertook a review of its parking requirements for new developments under a study titled *Review of Parking Requirements for New Development*, which commenced in January 2021 and concluded in November 2021.

On November 25, 2021, City staff recommended the adoption of Zoning By-law Amendments to the city-wide Zoning By-law 569-2013 to modify the current standards for automobile parking as a result of this review. In recognition that the demand for parking is shifting from societal changes, decreases in automobile ownership, increases in the popularity of sustainable alternatives, and significant investments in transit infrastructure, the Zoning By-law Amendment removes the minimum residential parking requirements for multi-unit residential buildings and introduces updated maximum parking requirements for developments throughout the City.

The Zoning By-law Amendment was approved by City Council on December 15th, 2021, enacted in February 2022 as By-law 89-2022 and is now fully in force.

In addition to the removal of most parking minimums, the Zoning By-law Amendment has separated parking requirements from the existing Policy Areas, which will be relevant to the updated parking standards. Two (2) Parking Zones (PZ) are proposed. As illustrated in **Figure 8-1**, the subject site falls within Parking Zone B.

Therefore, the requirements based on the Zoning By-law Amendment Parking rates for Parking Zone B are summarized below in **Table 8-2**.

Figure 8-1: Proposed Parking Zones

Source: City of Toronto, February 2022

Table 8-2: Zoning By-law 89-2022 Vehicular Parking Standards – Parking Zone B

Unit Type	Units/GFA	ZBL 89-2022 Parking Zone B				Proposed Supply
		Min. Parking Rate (spaces/unit)	Max. Parking Rate (spaces/unit)	Min. Required Spaces	Max. Allowed Spaces	
Studio	9 Units	-	0.7	0	6	59
1 Bedroom	130 Units	-	0.8	0	104	
2 Bedroom	84 Units	-	0.9	0	75	
3 Bedroom	26 Units	-	1.1	0	28	
Residential Sub-Total				**0**	**213**	**59**
Visitor	249 Units	2 + 0.05/unit	1/unit for the first 5 units and 0.1/unit for the 6th and subsequent unit	14	29	14
Retail	789 m^2	-	4.0 spaces/100m2	0	31	0
Non-Residential Sub-Total				14	60	14
Total				**14**	**273**	**73**

According to Zoning By-law 89-2022, the proposed development is subject to a minimum parking requirement of 14 visitor spaces and an overall maximum of 273 residential, visitor and retail spaces. As such, the parking supply proposed for the subject site consisting of 59 residential and 14 visitor parking spaces will satisfy the requirements from the zoning by-law requirement.

All residential and visitor parking spaces will be equipped with Electric Vehicle (EV) outlets to which meets TGS V4's EV infrastructure requirements for residential parking spaces and exceeds the requirement for visitor parking spaces, which will be further discussed in **Section 10.1.2**.

8.3 ACCESSIBLE VEHICLE PARKING REQUIREMENTS

The City of Toronto Zoning By-law 569-2013, through by-law 89-2022, provides updated parking requirements to determine effective parking requirements to calculate the required accessible parking supply for the subject site. The by-law requirements and proposed supply are illustrated below in **Table 8-3**.

Table 8-3: Accessible Parking Requirements

Unit Type	Units/GFA	Rate (Parking Zone B)	Effective Parking Spaces	Required Accessible Spaces	Provided Accessible Spaces
Studio	9 Units	0.7 spaces/unit	6	**8**	9
1 Bedroom	130 Units	0.8 spaces/unit	104		
2 Bedroom	84 Units	0.9 spaces/unit	75		
3 Bedroom	26 Units	1.1 spaces/unit	28		
Residential Sub-total			**215**		
Visitor Parking	249 Units	0.1 spaces/unit	24		
Residential and Residential Visitor Total			**242**	**8**	
Retail	789 m^2	1.0 space/100 m2 GFA	7	**1**	
Min. Number of Accessible Spaces				**9**	**9**

The proposed development is required to provide a minimum of 9 accessible parking spaces as outlined in the zoning by-law requirements. The proposed development will satisfy the requirements by providing 9 accessible parking spaces. Based on the calculation provided above, 1 accessible retail parking space is

required to be provided on-site. However, as no retail spaces are provided on-site, no designated accessible retail parking spaces are provided. Of note, the site is located adjacent to the streetcar stop for the 501 Queen Streetcar at Jameson and Queen Street West. This stop is designated as an accessibility stop and as such will provide transportation access to the retail component of the subject site without requiring the provision of a parking space on-site or requiring an onerous walk to the subject site.

9 LOADING ASSESSMENT

The City of Toronto By-Law 569-2013 was reviewed to determine the loading requirements for the proposed development. **Table 9-1** summarizes the loading requirements according to the City's by-law and the proposed supply.

Table 9-1: Zoning By-Law Loading Requirements

Land Use	Unit Count/GFA	ZBL 569-2013		Proposed Supply
		Required Rate	Loading Space Required	
Residential	249 Units	31 to 399 dwelling units	1 Type "G"	1 Type "G/B"
Retail	789 m^2	500 to 1,999 m^2	1 Type "B"	
		Total	**1 Type "B" and 1 Type "G"**	**1 Type "G/B"**

The subject site is required to provide one (1) Type "G" and one (1) Type "B" loading space which meets the loading requirements of the zoning by-law. One shared Type "G/B" loading space is provided on-site to accommodate the loading requirements. Given the sharing of the loading space, it is anticipated that future deliveries for the retail component will be conducted in a manner that does not conflict with City garbage collection.

A review of the functionality and accessibility of the proposed loading space indicates that the proposed loading space can be safely accessed and egressed by a garbage truck. Swept paths were conducted which confirmed that garbage trucks will be able to enter the loading zone and reverse back out of the space to egress the site. Swept path diagrams are provided in **Appendix L**.

10 TRANSPORTATION DEMAND MANAGEMENT

The subject site is required to meet the Tier 1 Performance Measures listed under the Toronto Green Standards Version 4 (TGS V4) for Mid- to High -Rise Residential and Non-Residential developments. This section will review the TGS V4 development features based on the applicable requirements for the study area. Overall, the proposed development is compliant with all the Tier 1 Performance Measures where applicable with respect to transportation-related measures.

10.1 LOW EMMISSIONS TRANSPORTATION

10.1.1 Single-Occupant vehicle Trips

Section AQ 1.1 of TGS V4 requires that the proposed development reduce single-occupancy-vehicle trips by 25%. This will be achieved through the inclusion of a variety of multimodal infrastructure strategies and Transportation Demand Management (TDM) measures. The subject site meets this requirement as the proposed development includes a TDM plan. This plan will be discussed in greater detail in **Section 10**.

10.1.2 Electric Vehicle Infrastructure

Section AQ 1.2 of the TGS V4 requires that parking spaces in the proposed development be equipped with an Energized Outlet in accordance with Zoning By-Law 569-2013. According to the Zoning By-Law, all residential parking spaces provided for dwelling units and 25% of non-residential parking spaces located in a mixed-use building must include an energized outlet to ensure electric vehicles can be accommodated. **Table 10-1** summarizes the required Electric Vehicle (EV) parking supply.

Table 10-1: Zoning By-Law 569-2013 Electric Vehicle Parking Standards

Use	Proposed Spaces	Minimum Rate	Required EV Spaces	Proposed EV Spaces
Residential	59	100% of parking spaces	59	59
Visitor	14	25% of parking spaces	4	14
Retail	0	25% of parking spaces	0	0
Total	**73**	-	**63**	**73**

All proposed residential and visitor parking spaces on-site will provide an electrical rough-in to ensure EVs can be accommodated on-site, thus supporting sustainable travel options for the subject development. This meets the requirement for residential parking spaces and exceeds the requirement for the visitor parking spaces. The new EV infrastructure will help enable a wider range of individuals to have access to parking spaces that support low emission transportation modes.

10.2 CYCLING INFRASTRUCTURE

10.2.1 Bicycle Parking Rates

Section AQ 2.1 of TGS V4 requires developments to provide bicycle parking spaces in accordance with Zoning By-Law 569-2013. These rates will inform the bicycle parking supply to be provided on-site to accommodate travel by bicycle to and from the subject site. As discussed in **Section 8.1**, the proposed development will provide bicycle parking facilities that meet the requirements for long-term and short-term bicycle parking for the residential uses. This will support and encourage active transportation and travel by bicycle in place of a personal vehicle for residents and visitors.

10.2.2 Long-Term Bicycle Parking Location

Section AQ 2.2 of TGS V4 requires developments to provide long-term bicycle parking in a secure controlled-access bicycle parking facility or purpose-built bicycle locker on the first or second storey of the building or on levels below ground commencing with the first level below ground. Long-term bicycle parking can be provided on levels below ground when at least 50 percent of the area of the level is occupied by bicycle parking spaces until all required spaces have been provided. However, required spaces such as elevator shafts and mechanical rooms are omitted when calculating for the net area of a level.

The subject development proposes to place long-term residential bicycle parking spaces on the P1 parking level in a secure bicycle storage room.

10.2.3 Short-Term Bicycle Parking Location

Section AQ 2.3 of TGS V4 requires developments to provide short-term bicycle parking in a highly visible and publicly accessible location at-grade or on the first parking level of the building below grade.

The site plan for the subject site proposes to provide short-term residential bicycle parking at-grade at the rear of the subject site near the southwest corner of the property. This provides easy access for visitors to first park their bikes. The subject site therefore meets this requirement through appropriate provisions in the site plan.

10.2.4 Electric Bicycle Infrastructure

Section AQ 2.4 of TGS V4 requires developments to provide bicycle parking spaces equipped with an energized outlet for at least 15 percent of the required long-term bicycle parking spaces.

As such, 15% of long-term residential bicycle parking spaces are equipped with an energized outlet.

10.2.5 Shower and Change Facilities

Section AQ 2.5 of TGS V4 requires developments to provide shower and change facilities consistent with the rate identified in Zoning By-Law 569-2013. Since the proposed development includes residential uses and does not require bicycle parking spaces for the retail component, on-site shower and change facilities are not required.

10.3 PEDESTRIAN INFRASTRUCTURE

Section 3.1 of the TGS V4 requires developments to provide safe, direct, universally accessible pedestrian routes that connect the buildings on-site to the off-site pedestrian network and priority destinations. The subject site meets this requirement as the plan for the development includes several elements to maintain and improve pedestrian access and permeability through the subject site. Building entrances connect to the adjacent sidewalks along Queen Street West and allow ease of access to the nearby transit stop for the 501 Queen Streetcar which is adjacent to the subject site.

Section AQ 3.2 requires developments to provide a context-sensitive pedestrian clearway that is a minimum of 2.1 m wide, to safely and comfortably accommodate pedestrian flow. At least a 2.1 m sidewalk is currently existing along Queen Street West with a sidewalk of at least 2.1 m being provided along the street fronting the subject site according to the site plan.

Section 3.3 of the TGS V4 requires developments to provide covered outdoor waiting areas for pedestrian comfort and protection from inclement weather. Covered outdoor waiting areas are proposed via canopies at the building entrances.

Section 3.4 of the TGS V4 requires developments to provide pedestrian-scale lighting that is evenly spaced, continuous and directly onto sidewalks pathways, entrances, outdoor waiting areas and public spaces. The subject site will meet this requirement by providing appropriate pedestrian scale lighting throughout the site plan. These measures will foster a safer experience for pedestrians regardless of the time of day and promote walking, biking, and riding public transit as a viable option to travel to and from the subject site.

11 TRANSPORTATION DEMAND MANAGEMENT PLAN

Transportation Demand Management (TDM) is a set of strategies that strive towards a more efficient transportation network by influencing travel behaviour. Effective TDM measures can reduce vehicle usage and encourage residents to engage in more sustainable methods of travel. There are various opportunities to incorporate TDM measures that support alternative modes of transportation. The recommendations should enhance non-single occupant auto vehicle trips for future residents of the subject development.

These TDM strategies are critical in achieving a balanced multi-modal transportation system in the City of Toronto and supporting goals towards sustainable development as identified by the Toronto Green Standards (TGS) and TransformTO Net Zero Strategy to achieve net zero greenhouse gas emissions by 2040.

A specific requirement of the TGS is to reduce single-occupancy vehicle (SOV) trips generated by a proposed development by 25%. The following multimodal infrastructure strategies and TDM measures are recommended for consideration to support the subject site's parking strategy and role in transforming the surrounding neighbourhood. As the development moves through the development process, the TDM plan will undergo further refinement.

11.1.1 Cycling-based Strategies

On-site bicycle parking facilities.

- The proposed development will provide bicycle parking facilities to support and encourage active transportation. A supply of 225 and 50 long-term and short-term residential bicycle parking spaces, respectively, will be accommodated on-site. This supply is provided to satisfy the required rate of 0.9 spaces per unit for residents and 0.2 spaces per unit for residential visitors.

  Additionally, the provision of electric bicycle infrastructure in line with Toronto Green Standard version 4 requirements, will enable a wider range of residents to have access to a bicycle parking space on-site that meets their needs.

- The proposed development will provide bicycle parking facilities both at-grade and in the underground parking level, in secure locations. This provision will accommodate bike parking in a manner that is safe, secure and convenient.

Provision of Bicycle Repair Stations.

- One (1) bicycle repair station is provided on-site. The provision of the bicycle repair stations will support the use of cycling as an alternative mode of transportation to further reduce SOV trips from the site and reduce barriers to cycling. A bicycle repair station is provided near the long-term bicycle parking storage areas on-site.

Promote and increase cycling awareness and multi-modal transport.

- It is recommended that information packages be provided to residents of the proposed development to help encourage active transportation and increase awareness of different travel alternatives. The package should include information regarding the environmental and health benefits of cycling, rules of the road, as well as maps of active transportation available in the surrounding area.

Provision of Bike Share memberships for residents.

- The subject site is located within walking distance to Bike Share docking stations. This will provide residents with a convenient option to travel for short trips and discourage single-occupancy vehicle usage. As such, it is recommended that Bike Share memberships are provided for each unit of the subject site and are subsidized for one (1) year.

Estimated Impact: Based on the trip generation conducted for the subject site from the proxy trip generation rates, about 7% and 3% of trips undertaken to and from the site are cycling trips in the AM and PM peak hours (**Table 4-3**), respectively, indicating a prevalence of cycling usage as a mode of transportation. The combination of these robust measures, notably on-site bicycle parking facilities, bicycle repair stations, promotional/information packages and provision of Bike Share membership for all units, have the ability to further encourage the use of transit with an estimated impact of approximately 10%.

11.1.2 Pedestrian-Based Recommended Strategies

Building entrances are to be oriented close to the street with direct connections to the pedestrian pathways.

- The proposed pedestrian entrance for the residential and retail components are oriented to a sidewalk at greater than 2.1 m in width along Queen Street West to provide convenient linkages for pedestrians, transit users and cyclists to access the residential units and ground-floor retail, respectively. The development should also maintain enhanced landscaping and facades throughout the site to encourage walking and ensure minimal barriers to provide a safe and accessible pedestrian realm.

Mixed land uses to facilitate walking trips.

- The inclusion of ground-floor retail in the same building as residential units provides a great opportunity for residents to walk to retail destinations that they may otherwise drive to. This retail space within the proposed development will also provide opportunities for nearby local residents to walk to the destinations via the Queen Street West and Jameson Avenue sidewalk network, or from nearby transit stops, which will ultimately further discourage automobile travel in the area.

Estimated Impact: Based on the trip generation conducted for the subject site from the proxy trip generation rates, and as determined through the utilization of TTS modal split data (**Table 4-1**), about 15-16% of trips undertaken to and from the site are walking trips in the AM and PM peak hours (**Table 4-3**), indicating a prevalence of walking trips. The combination of these robust pedestrian-based measures, inclusive of the location of the building entrances close to the street providing connections to pedestrian pathways and the provision of mixed-land use to reduce SOV trips, will have the ability to further encourage walking with an estimated impact of at least 1-2% considering how very walkable the local area is as noted from the walkscore (91/100 – "Walkers Paradise") provided in **Section 2.4**.

11.1.3 Transit-Based Strategies

Transit incentive program.

- As PRESTO has become a dominant form of payment for transit throughout the Greater Toronto and Hamilton Area (GTHA), it is recommended that pre-loaded PRESTO cards be offered to units in their welcome packages. This incentive, coupled with the site's proximity to transit from the 501 Queen Streetcar and the 47 Lansdowne bus, provides an opportunity for residents to experience the benefits of using adjacent transit facilities.

Communication strategy and information packages.

- In order for residents to take advantage of the transit services surrounding the subject site, it is recommended that the owners provide information packages and communications to increase transit awareness and multimodal transport by encouraging active transportation and different travel demand management programs. The information packages should contain public transit information such as route maps and schedule timetables.

Estimated Impact: Based on the trip generation conducted for the subject site from the proxy trip generation rates, and as determined through the utilization of TTS modal split data (**Table 4-1**), about 49-51% of trips undertaken to and from the site are transit trips in the AM and PM peak hours (**Table 4-3**), indicating a prevalence of transit usage. The combination of these robust measures, notably the provision of pre-loaded PRESTO cards to all units on-site, given that the Queen Streetcar stop is located adjacent to the northeast corner of the subject site, will have the ability to further encourage the use of transit with an estimated impact of at least 20%.

11.2 IMPACT OF TDM MEASURES

The proposed TDM measures are expected to further support the site's proposed parking strategy by increasing the convenience and attractiveness of taking transit, walking, or cycling to/from the subject site. The proposed TDM measures will help further reduce vehicle activity associated with the subject site and encourage a lifestyle that largely relies upon transit and active transportation. **Table 11-1** summarizes the proposed strategies and the expected auto trip reductions.

Table 11-1: Summary of TDM Strategies and Estimated Impacts

Recommended TDM Measures	Benefits	Impact [(1)]
Cycling-Based Strategies		
On-site bicycle parking facilities	+ Supports and encourages cycling as primary mode of travel + Provides secure bicycle parking and bicycle repair station on-site	~10%
Provision of bicycle repair stations	+ Support cycling as an alternative to SOV trips + Reduce barriers to cycling	
Promote and increase cycling awareness and multi-modal transport	+ Encourages active transportation and increase awareness of active travel alternatives + Spreads awareness of benefits of cycling	
Provision of Bike Share membership for residents	+ Encourage cycling usage as convenient option for short-trips and reduce SOV trips	
Pedestrian-Based Recommended Strategies		
Building entrances are to be oriented close to the street with direct connections to the pedestrian pathways	+ Encourages walking and improves pedestrian realm + Provides convenient linkages for pedestrians etc.	~1-2%
Mixed land uses to facilitate walking trips	+ Reduce SOV trips for residents shopping	
Transit-Based Strategies		
Transit incentive program	+ Provides financial incentive to utilize transit	~20%
Communication strategy and information packages	+ Spreads awareness to residents about available transit services in area and encourage usage	
	Total Estimated Reductions	**~31-32%**

Note: (1) – Consultant Estimate

The combination of these TDM strategies listed above is expected to significantly reduce the auto-dependency of residents and visitors in the subject development and encourage more sustainable travel habits. This thereby enables the requirements of TGS V4 to be met and contributes to a 25% SOV reduction for the subject development.

11.3 TDM MONITORING

It is recommended that ongoing monitoring and evaluation be undertaken to collect data and information regarding TDM performance measures. The key goal of TDM monitoring is to provide useful information on identifying successful program activities, improvements to existing programming as well as the potential development of future programs. The owner should perform periodic evaluation to assess how well the TDM Program is achieving the goal in reducing the number of single-occupant vehicle trips generated by the site. A baseline survey and annual monitoring five (5) years onward is recommended to ensure effective monitoring.

12 CONCLUSIONS AND RECOMMENDATIONS

- The development proposal consists of a 12-storey mixed-use building. A total of 249 residential units and approximately 789 m^2 of ground floor retail GFA are proposed. Access to the development is proposed via an unsignalized, all-moves site access via a laneway onto Queen Street West.
- The subject site is located in an area that is well-serviced by the Toronto Transit Commission (TTC) transit networks. The subject site is within walkable distance of bus stops and a streetcar stop for the 501 Queen Streetcar. The subject site is located in a neighbourhood with some nearby cycling infrastructure and an excellent pedestrian network and environment.
- The proposed development is anticipated to generate 29 two-way auto driver and auto passenger trips during the AM peak hour (4 inbound and 25 outbound) ad 32 two-way auto driver and auto passenger trips during the PM peak hour (24 inbound and 8 outbound). Furthermore, for transit trips, the subject site is anticipated to generate 49 two-way trips in the AM peak hour (17 inbound and 33 outbound) and 54 two-way trips in the PM peak hour (33 inbound and 21 outbound). For walking trips, 16 two-way AM peak hour trips (5 inbound and 10 outbound) and 17 two-way PM peak hour trips (11 inbound and 6 outbound) are anticipated to be generated. For cycling trips, 7 two-way AM peak hour trips (7 outbound only) and 3 two-way PM peak hour trips (2 inbound and 1 outbound) are anticipated to be generated.
- Under existing conditions the signalized and unsignalized intersections all operate within capacity with only two movements of interest noted. It should also be noted that queuing constraints were identified from field observations that may not be captured through Synchro as the flows may be metered. As such the model is limited in capturing queueing conditions that may exist in the field. Under future background conditions, minimal change in operations are seen, as well as minimal change in operations with the addition of site traffic in future total conditions and no new constrains are added.
- The development is providing 73 vehicle parking spaces consisting of 59 residential spaces and 14 visitor parking spaces. The proposed parking supply will be acceptable and will satisfy the minimum requirements of the zoning by-law.
- The proposed bicycle parking supply of 275 residential spaces, consisting of 50 short-term and 225 long-term spaces meeting the requirements under the City of Toronto Zoning By-law 569-2013. The proposed bicycle parking supply satisfies the minimum requirements of the zoning by-law.
- The provision of one (1) shared Type “G/B” loading space satisfies the By-law requirements.
- The proposed development will meet all of the Tier 1 Performance Measures in the Toronto Green Standards Version 4 (TGS V4) where applicable by including the required design features in the site plan.

- A set of transportation demand management (TDM) measures have been recommended to reduce single-occupant vehicle trips the required 25% according to the TGS Version 4 requirement and encourage multi-modal travel alternatives. A TDM plan containing these measures and a monitoring strategy has been included.

APPENDIX A

Terms of Reference

LEA Consulting Ltd.
40 University Ave, Suite 503
Toronto, ON, M5J 1T1 Canada
T | 905 470 0015 F | 905 470 0030
WWW.LEA.CA

February 2, 2023

Reference Number: 23322.200

Daniel Reynolds
City of Toronto
55 John St,
Toronto ON M5V 3C6

Dear Daniel Reynolds,

RE: Terms of Reference
Transportation Impact Study for Proposed Mixed-Use Development
1437-1455 Queen Street West, City of Toronto

We wish to confirm the following work plan for a Transportation Impact Study (TIS) in support of the Zoning By-law Amendment (ZBA) application for the proposed mixed-use residential development located at 1437-1455 Queen Street West in the City of Toronto. **Figure 1** below illustrates the subject site.

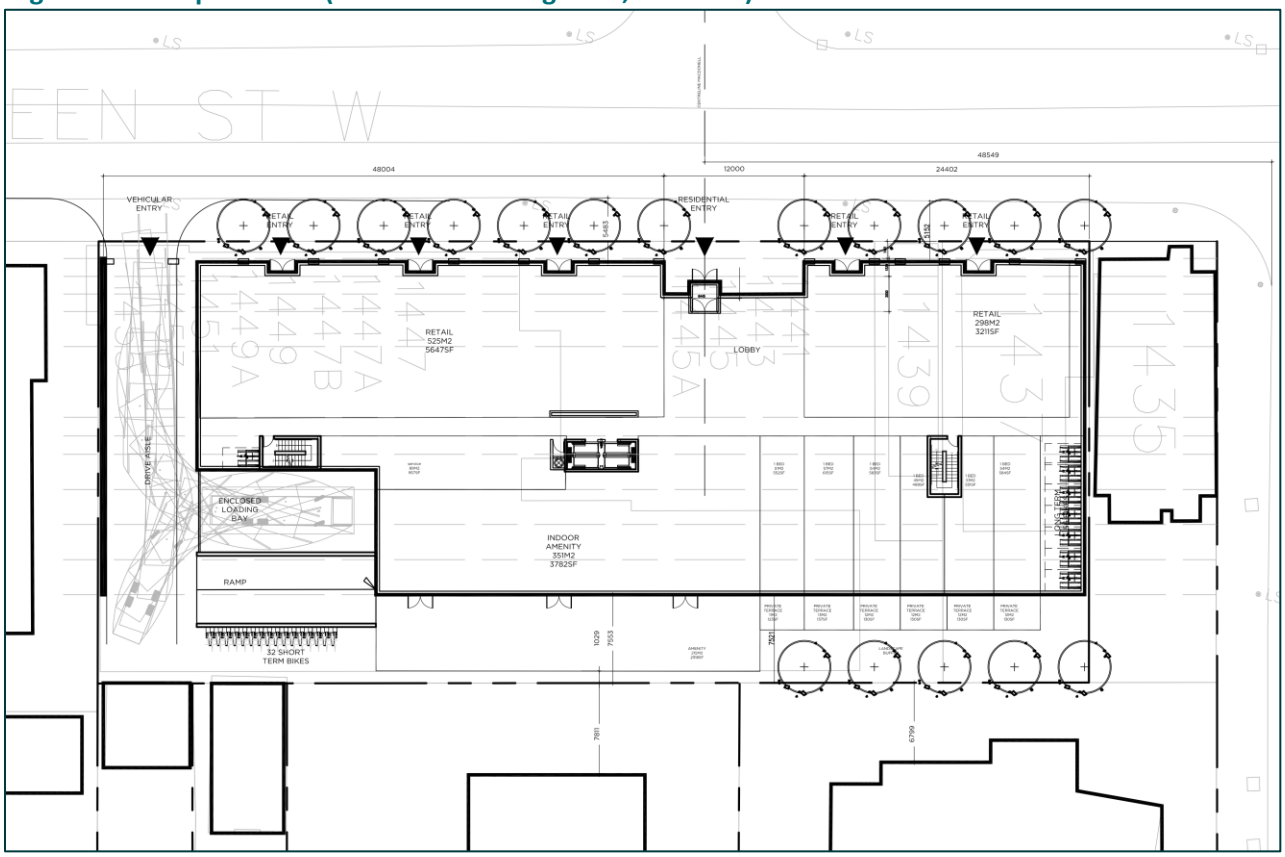
Figure 1: Subject Site and Proposed Study Area (Source: Google Earth, retrieved January 2023)

The TIS will be conducted following the *City of Toronto's Guidelines for the Preparation of Transportation Impact Studies (2013)*. The following outlines the proposed Terms of Reference for the TIS for your review and approval.

Proposed Redevelopment

The subject site is currently occupied by several low-rise retail buildings and a surface parking lot. The proposed development will involve replacing the existing land uses with an 11-storey residential tower containing 244 residential units, 853 m^2 of ground floor retail GFA, and one level of underground parking. Vehicular and loading access to the site is proposed via a laneway connection to Queen Street West on the west side of the subject site. The latest available conceptual plan is illustrated below in **Figure 2**.

Figure 2: Conceptual Plan (Source: Raw Design Inc., Oct 2022)



Study Area & Traffic Data

LEA will review the existing conditions of the proposed study area, including the existing road, active transportation, and transit networks. As illustrated in **Figure 1**, the proposed study area includes the following intersections:

- Lansdowne Avenue and Queen Street West (Signalized);
- Jameson Avenue and Queen Street West (Signalized); and
- Sorauren Avenue and Queen Street West (Signalized).

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

Peak hour factors, heavy vehicle percentages, and conflicting pedestrian/cyclist volumes will be adopted based on the existing turning movement count (TMC) data. The latest signal timing plans will be obtained from City staff.

Study Horizons and Traffic Assessment

The TIS will assess traffic operations during the weekday AM peak hour and the weekday PM peak hour for the study area intersections. A five (5) year horizon period to the year 2028 will be assessed as part of the study.

Synchro 11.0 software will be used to perform intersection capacity analysis, utilizing the methodology of the 2000 Highway Capacity Manual and input parameter values consistent with the *City of Toronto's Guidelines for Using Synchro 11 (Including SimTraffic 11), dated January 15, 2021*.

Background Traffic

General Corridor Growth Rate – LEA will obtain historical TMC data in the study area to determine appropriate growth rates to apply for the major study corridors for the 2028 study horizon.

Road Network Improvements – LEA will investigate and account for any anticipated road improvements in the study area.

Background Development Traffic – LEA is requesting that the City confirm the list of background developments provided in **Table 1**.

Table 1: Background Developments (Source: City of Toronto Development Applications)

File Number	Location	Description
22 138059 STE 04 SA	1521 Queen St W	95 residential units; 293 m^2 retail GFA
21 251366 STE 04 SA	1375 Queen St W	50 residential units; 264 m^2 commercial GFA
19 112609 STE 04 OZ	150 Dunn Ave	Expansion to long-term care facility with a 60-storey wing containing 192 beds with new parking
20 200379 STE 04 OZ	8-14 Brock Ave & 1354-1360 Queen St W	172 residential units; 386.1 m^2 commercial GFA

Trip Generation, Distribution and Assignment

The trip generation methodology for the proposed development is as follows:

- *Proposed residential use*: LEA is proposing to collect trip generation survey data at a proxy site (15 & 25 Stafford Street) with comparable land use characteristics and transportation context as the subject site. This data will be compared to the trip generation survey data collected at the same proxy site prior to the pandemic (which was used for two approved developments nearby at 1182 King Street W and 1221 King Street West) to determine appropriate residential trip generation rates to apply.

- *Proposed retail use*: Given the scale of the retail use and the local travel characteristics, it is assumed that the proposed retail use will attract local trips already in the area but is not expected to generate new vehicle trips solely for this use. As such, no new vehicle trip generation will be included.
- *Existing commercial use*: Existing commercial trips will be removed based on the observed TMC data.

The local mode split will be estimated using the 2016 Transportation Tomorrow Survey (TTS). Trip distribution and assignment will be based on a review of 2016 TTS data as well as observations of traffic patterns and existing turn permissions/prohibitions.

Multi-Modal Transportation Assessment

A multi-modal level of service (MMLOS) evaluation of the surrounding transit, pedestrian, and cycling environments will be conducted adopting the *City of Ottawa's Multi-Modal Level of Service Guidelines*. This evaluation will assess the level of convenience and comfort of transit and active transportation infrastructure users given existing conditions, planned background network changes, and the impact of site generated trips.

Site Specific Transportation Improvements

Based on the results of the TIS, LEA will identify whether transportation related improvements or mitigation measures are required to accommodate traffic generated by the proposed development.

Parking & Loading

The site is currently subject to City of Toronto Zoning By-Law 569-2013, which will be reviewed for parking and loading requirements.

Transportation Demand Management

A TDM plan will be completed and provide recommendations to promote alternate modes of travel. The TDM will justify the appropriate parking requirement and reduce the auto dependency of the subject site.

Site Plan Review

A site plan review will be undertaken to ensure vehicular movements can be accommodated at the proposed loading bay, drive aisle, garage ramp, etc. and loading and servicing vehicles can effectively access, circulate, and/or perform loading activities on-site.

Should you have any questions or concerns regarding these terms of reference, please do not hesitate to contact me at pperera@lea.ca.

Yours truly,

LEA CONSULTING LTD.

Pavani Perera, EIT, B.A.Sc.
Transportation Analyst

Pavani Perera

From: Daniel Reynolds <Daniel.Reynolds@toronto.ca>
Sent: February 6, 2023 12:03 PM
To: Pavani Perera
Cc: Zara Georgis; Joia Mendez
Subject: RE: Terms of Reference_1437-1455 Queen Street West, Toronto

External Sender

Hey Pavani,

Thanks for this submission. My comments are as follows:

- The traffic assessment methodology is acceptable, including existing/future assumptions, study scope, etc.;
- No major infrastructure works are anticipated along this segment of Queen Street West, as far as I can determine at this time;
- For parking, application of By-law No. 89-2022 (which amends 569-2013) is acceptable;
- The loading will be subject to By-law 569-2013 requirements (any deviation from the minimums will require appropriate justification);
- A full TDM plan, including provisions to be provided for the site and secured via the Site Plan Agreement (e.g. memberships to car/bike-share) is to be provided;
- The proposed access must be appropriately offset from the existing driveway to the west. This will likely require some site re-design and additional details. It is noted that the existing driveway to the west does not appear to be heavily used, however we would like to limit the width of the consolidated curb cut at this location on Queen West; and
- There is no right-of-way widening along Queen Street West for this site, though we would like a 2.5 metre wide pedestrian clearway (with a furnishing/planting zone to be provided adjacent to the curb). This may require a pedestrian clearway easement to secure the appropriate space on private land (to be determined).

Let me know if you have any other questions or concerns.

Thanks.

Daniel Reynolds
Senior Project Manager, Development Planning & Review Area 1
Transportation Services
Metro Hall, 17th Floor
416-392-1124
daniel.reynolds@toronto.ca

From: Pavani Perera [mailto:PPerera@lea.ca]
Sent: February 2, 2023 3:09 PM
To: Daniel Reynolds <Daniel.Reynolds@toronto.ca>
Cc: Zara Georgis <ZGeorgis@lea.ca>; Joia Mendez <JMendez@lea.ca>
Subject: Terms of Reference_1437-1455 Queen Street West, Toronto

Hi Daniel

We wish to confirm the attached Terms of Reference for a Transportation Impact Study for a proposed mixed-use residential development located at 1437-1455 Queen Street West in the City of Toronto.

Please let me know if you have any comments or concerns with our assumptions.

Thank you,

Pavani Perera, EIT, B.A.Sc.
Transportation Analyst
LEA Consulting Ltd.
40 University Avenue, Suite 503 | Toronto, ON | M5J 1T1
T: 905 470 0015 **E:** pperera@lea.ca **W:** www.LEA.ca

We've Moved!
Our Downtown office has moved, please make note of our new address above.

APPENDIX B

Traffic Data and Signal Timing Plans

Signal Timing Plans

LOCATION: **Queen St W & Sorauren Ave**
MODE/COMMENT: **SAP with PR & TSP***
TCS: **1745**
PREPARED BY / DATE: **RanaJamil Iftikhar / Jaunary 18, 2021**
CHECKED BY / DATE:
IMPLEMENTATION DATE: **January 18, 2021**

DISTRICT: **Toronto & East York**
COMPUTER SYSTEM: **TransSuite**
CONTROLLER/CABINET TYPE: **Peek ATC-1000 / TS2 T1**
CONFLICT FLASH: **Red & Red**
DESIGN WALK SPEED: **0.9 m/s (FDW based on full crossing at 1.1 m/s)**
CHANNEL/DROP: **4036/11**
CONTROLLER FIRMWARE: **3.018.1.2976**

N

NEMA Phase		OFF	AM	PM	NGHT	WKND	Gardiner Closure	Phase Mode	Remarks
		All Other Times	06:30-09:30 M-F	15:00-19:00 M-F	23:00-06:30 Daily	10:00-19:00 Sat & Sun		(Fixed/Demanded or Callable)	
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 16		
	Split Table	Split 1	Split 2	Split 3	Split 4	Split 5	Split 16		
1 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT								Pedestrian Minimums: EWWK = 8 sec, EWFD = 16 sec NSWK = 8 sec, NSFD = 13 sec NS phase is callable by vehicle, bicycle and/or pedestrian actuation. If a vehicle, bicycle and / or pedestrian call is received, the maximum NSG is served. The NSWK & NSFD are displayed on the pedestrian signal heads if a vehicle, bicycle and /or pedesrian call is received.
2 Queen St W	WLK 8 FDW 16 MIN 24 MAX1 68 AMB 3.0 ALR 2.7 SPLIT	74	74	74	74	74	84	Fixed POZ activated by Request Loop (max extension of 30 secs in Green/WLK)	See back for TSP instructions Additional time above the pedestrian minimum provided to the Phase 4/8 SPLIT (including fractions of a second) is to be served in Phase 4/8. ~~TSP enabled in EB & WB directions on December 5, 2014.~~ TSP temporarily disabled on January 18, 2021 during bus replacement for 501 Queen routes.
3 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT								
4	WLK 8 FDW 13 MIN 21 MAX1 21 AMB 3.0 ALR 3.1 SPLIT	28	28	28	28	28	28	Callable by Wavetronix detector and/or Pushbutton	
5 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT								
6 Queen St W	WLK 8 FDW 16 MIN 24 MAX1 68 AMB 3.0 ALR 2.7 SPLIT	74	74	74	74	74	84	Fixed POZ activated by Request Loop (max extension of 30 secs in Green/WLK)	
7 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT								
8 Sorauren Ave	WLK 8 FDW 13 MIN 21 MAX1 21 AMB 3.0 ALR 3.1 SPLIT	28	28	28	28	28	28	Callable by Stopbar Loop and/or Push Buttons	
	CL OF	102 31	102 70	102 19	102 82	102 100	112 100		

Notes: T intersection with no south leg.

LOC: Queen St W & Sorauren Ave
MODE: SAP with PR & TSP*
TCS: 1745 ***PREPARATION DATE (TIMING CARD):*** March 5, 2020

OFFSET CORRECTION PARAMETERS

2.3.4 O.C. Extend / Reduce *(Max. time added & subtracted in sec.)*

		Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8	From page 1 [Cycle]	From page 1 [Slop]	2.3.2.x O.C. Thres.
OFF												Pattern 1
Split 1	Ext.	--	36	--	--	--	36	--	--	102	44	**30** s
	Rdc.	--	44	--	--	--	44	--	--			[29 %]
AM												Pattern 2
Split 2	Ext.	--	36	--	--	--	36	--	--	102	44	**30** s
	Rdc.	--	44	--	--	--	44	--	--			[29 %]
PM												Pattern 3
Split 3	Ext.	--	36	--	--	--	36	--	--	102	44	**30** s
	Rdc.	--	44	--	--	--	44	--	--			[29 %]
NGHT												Pattern 4
Split 4	Ext.	--	36	--	--	--	36	--	--	102	44	**30** s
	Rdc.	--	44	--	--	--	44	--	--			[29 %]
WEEKEND												Pattern 5
Split 5	Ext.	--	36	--	--	--	36	--	--	102	44	**30** s
	Rdc.	--	44	--	--	--	44	--	--			[29 %]
GARDINER												Pattern 16
Split 16	Ext.	--	41	--	--	--	41	--	--	112	54	**30** s
	Rdc.	--	54	--	--	--	54	--	--			[27 %]

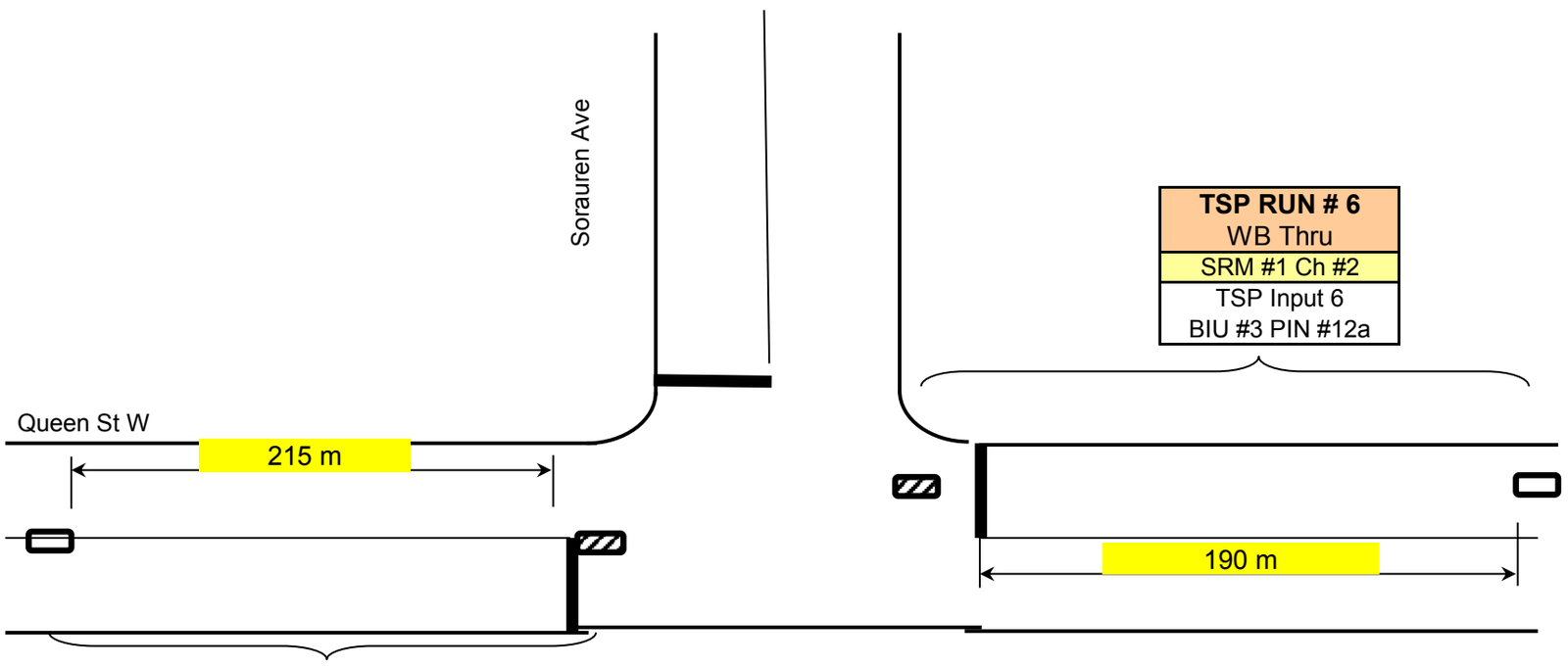
OC Thres set to 30s so that OC will typically use -TSP Recovery, which will reduce wait times on the side street and can help get the controller back in sync faster.

T.S.P. PARAMETERS

PREPARED: *HDR*

	TSP RUN # 2 EB Thru	**TSP RUN # 6** WB Thru
2.8.2 Transit Run Parameters		
ATC Green Extend Mode (Equivalent TTC Algorithm)	Mode 2 A	Mode 2 A
2.8.3 Transit Action Plan 1 (Used for all Patterns)		
Run Enable (X = Yes)	X	X
Run Config = **1**	Recovery = 2 (O.C. with delay)	
2.8.4 Transit Run Configuration 1		
Delay / Extend / Fail	8 / -- / 235	2 / -- / 235
Max Req During Offset Corr	1	1
CALLS (and Extends)	**Ø 2/6**	**Ø 2/6**
Skips	--	--
Reduces (Truncates)	--	--

2.8.6 TSP Split Tables: 1,2,3, 4, 5 & 16	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
GRN EXT (SDW Extension)	--	--	--	--	--	--	--	--
GRN RDC (Reduction)	--	--	--	--	--	--	--	--
WLK EXT (Walk Extension)	--	30	--	--	--	30	--	--



TSP RUN # 2
EB Thru
SRM #1 Ch #1
TSP Input 2
BIU #3 PIN #10a

TSP RUN # 6
WB Thru
SRM #1 Ch #2
TSP Input 6
BIU #3 PIN #12a

N

Schematic of TSP Loops and TSP Runs (N.T.S)

TSP Loop Legend
Request (Thru)
Cancel (Thru)

Notes:

Truncations of Phase 4/8 are permitted, but there is currently less than 1s of available slop.

ATC Mode	0	2	3	4
TTC Algor'm	**B-2**	**A**	**C**	**D**
Extensions	SDW	Walk	W/SDW	W/SDW

TSP SUMMARY

Maximum Green Extensions:
EWG: 30 s Green/WLK
Truncation of phases 4 and 8 to ped min

LOCATION:	**Queen St W & Lansdowne Ave / Jameson Ave**	*ATO / DISTRICT / WARD:*	**Area 1 / Toronto & East York / Ward 4**
MODE/COMMENT:	**FT with 2-wire Polara APS, Firehall Preemption (SB/WBLA), TSP* & RLC (EB)**	*COMPUTER SYSTEM:*	**TransSuite**
TCS:	**1981 (Formerly TCS#0558)**	*CONTROLLER/CABINET TYPE:*	**Peek ATC-1000 / TS2T1**
PREPARED BY / DATE:	**RanaJamil Iftikhar / Jaunary 18, 2021**	*CONFLICT FLASH:*	**Red & Red**
CHECKED BY / DATE:		*DESIGN WALK SPEED:*	**0.9 m/s (FDW based on full crossing at 1.1 m/s)**
IMPLEMENTATION DATE:	**January 18, 2021**	*CHANNEL/DROP:*	**5025/9**
		CONTROLLER FIRMWARE:	**3.018.1.2976**

N

NEMA Phase		OFF	AM	PM	NGHT	WKND	Gardiner Closure	Phase Mode	Remarks
		All Other Times	06:30-09:30 M-F	15:00-19:00 M-F	23:00-06:30 Daily	10:00-19:00 Sat & Sun		(Fixed/Demanded or Callable)	
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern5	Pattern 16		
	Split Table	Split 1	Split 2	Split 3	Split 4	Split 5	Split 16		
1 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT								Pedestrian Minimums: EWWK = 8 sec, EWFD = 15 sec NSWK = 8 sec, NSFD = 13 sec APS on during Full WALK time when activated by push buttons. APS Extended Push Activation = 3 sec. **Overlap A or B must terminate concurrently with its parent phase during the transiton of different parent phases.**
2 Queen St W	WLK 8 FDW 15 MIN 23 MAX1 27 AMB 3.0 ALR 8.0 SPLIT	38	38	38	38	38	48	**EBG at Jameson Av** Fixed POZ activated by Request Loop (max extension of 30 secs in Green/Walk)	Firehall Preemption Instructions: • If preemption is received in phase 2/6: Time to Preemption Sequence = 0 - 33 secs • If preemption is received in phase 7 or 8: Time to Preemption Sequence = 0 - 32 secs • Signals go to All Red display before going into preemption sequence Preemption Sequence: Serve 67.0 seconds WBLA/WBG/NSDW at Jameson, and SBG/NSDW at Lansdowne Serve 3.0 seconds WBY/EWDW/NSDW at Jameson and SBY/NSDW/EWDW at Lansdowne Serve 8.0 second of ALLR Return to normal operation in EWG/EWWK.
3 ACTIVATED	WLK 8 FDW 13 MIN 21 MAX1 21 AMB 3.0 ALR 8.0 SPLIT	32	32	32	32	32	32		~~**EW TSP enabled on October 08, 2019**~~
4 ACTIVATED	WLK 8 FDW 13 MIN 21 MAX1 21 AMB 3.0 ALR 8.0 SPLIT	32	32	32	32	32	32		See back for TSP Instructions. ▪▪▪▪▪▪▪◆ Limited Vision Visor signal Ring 2 3 4 / 6 7 8
5 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT								RLC (EB) is tied to the EB limited vision head at Lansdowne TSP temporarly disabled on January 18, 2021 during bus replacement for 501 Queen routes.
6 Queen St W	WLK 8 FDW 15 MIN 23 MAX1 27 AMB 3.0 ALR 8.0 SPLIT	38	38	38	38	38	48	**WBG at Lansdowne Av** Fixed POZ activated by Request Loop (max extension of 30 secs in Green/Walk)	
7 Jameson Ave	WLK 8 FDW 13 MIN 21 MAX1 21 AMB 3.0 ALR 8.0 SPLIT	32	32	32	32	32	32	**NBG at Jameson Ave** Fixed	
8 Lansdowne Ave	WLK 8 FDW 13 MIN 21 MAX1 21 AMB 3.0 ALR 8.0 SPLIT	32	32	32	32	32	32	**SBG at Lansdowne Ave** Fixed	
Overlap A	WLK FDW MIN MAX1 AMB 3 ALR 8 SPLIT							Farside EBG at Lansdowne Ave **(Parent Phase 2 and 7)**	
Overlap B	WLK FDW MIN MAX1 AMB 3 ALR 8 SPLIT							Farside WBG at Jameson Ave **(Parent Phase 6 and 8)**	
Overlap C	WLK FDW MIN MAX1 AMB 3 ALR 8 SPLIT							EBLT at Lansdowne Ave **(Parent Phase 7)**	
Overlap D	WLK FDW MIN MAX1 AMB 3 ALR 8 SPLIT							WBLT at Jameson Ave **(Parent Phase 8)**	
	CL OF	102 52	102 99	102 47	102 8	102 25	112 15		

Notes: Turning Restrictions: "No SB Right-Turn on Red", "No NB Right-Turn on Red", "No EB Right-Turn on Red".
Offset Intersection, Farside EW vehicle heads with limited vision visors.

LOC: Queens St W & Lansdowne Ave / Jameson Ave
MODE: FT with 2-wire Polara APS, TSP*, Firehall Preemption, RLC (EB)
TCS: 1981 **PREPARATION DATE (TIMING CARD):** March 5, 2020

OFFSET CORRECTION PARAMETERS

2.3.4 O.C. Extend / Reduce *(Max. time added & subtracted in sec.)*

		Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	From page 1 [Cycle]	[Slop]	2.3.2.x O.C. Thres.
OFF												Pattern 1
Split 1	Ext.	--	15	15	15	--	15	15	15	102	4	12 s
	Rdc.	--	4	---	---	--	4	---	---			[12 %]
AM												Pattern 2
Split 2	Ext.	--	15	15	15	--	15	15	15	102	4	12 s
	Rdc.	--	4	---	---	--	4	---	---			[12 %]
PM												Pattern 3
Split 3	Ext.	--	15	15	15	--	15	15	15	102	4	12 s
	Rdc.	--	4	---	---	--	4	---	---			[12 %]
NGHT												Pattern 4
Split 4	Ext.	--	15	15	15	--	15	15	15	102	4	12 s
	Rdc.	--	4	---	---	--	4	---	---			[12 %]
WKND												Pattern 5
Split 5	Ext.	--	15	15	15	--	15	15	15	102	4	12 s
	Rdc.	--	4	---	---	--	4	---	---			[20%]
GARDINER												Pattern 16
Split 16	Ext.	--	16	16	16	--	16	16	16	112	9	18 s
	Rdc.	--	9	---	---	--	9	---	---			[27%]

Pattern 1 to 5 OC Thres set to 3x OC Rdc due to limited slop. Controller could take up to 3 cycles to get back in sync in -TSP Recovery.

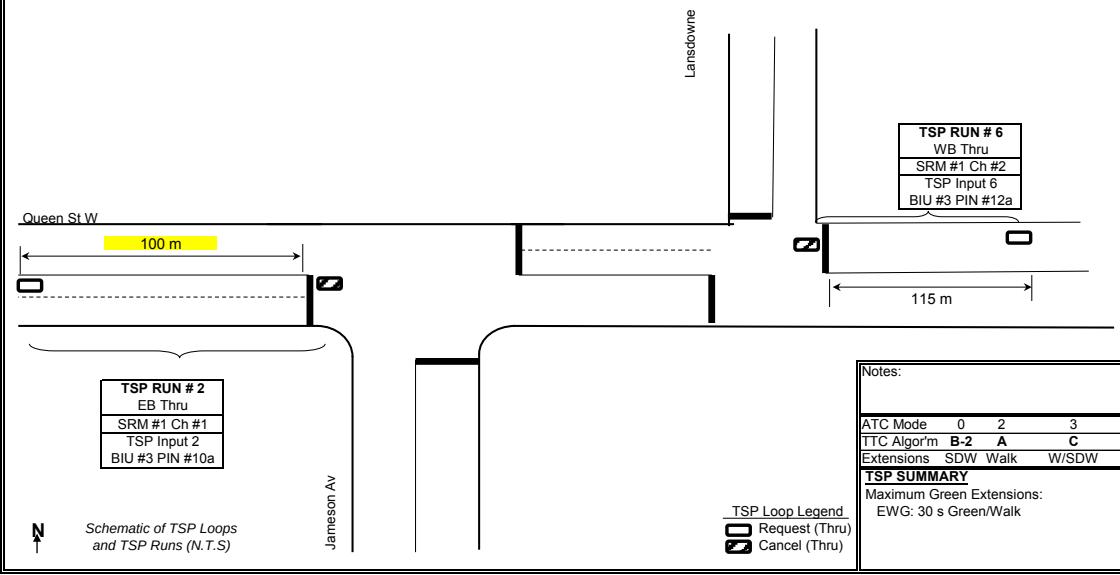
T.S.P. PARAMETERS

PREPARED: *HDR*

	TSP RUN # 2 EB Thru	TSP RUN # 6 WB Thru
2.8.2 Transit Run Parameters		
ATC Green Extend Mode (Equivalent TTC Algorithm)	Mode 2 A	Mode 2 A
2.8.3 Transit Action Plan 1 (Used for all Patterns)		
Run Enable (X = Yes)	X	X
Run Config = **1**	Recovery = 2 (O.C. with delay)	
2.8.4 Transit Run Configuration 1		
Delay / Extend / Fail	-- / -- / 235	7 / -- / 235
Max Req During Offset Corr	1	1
CALLS (and Extends)	**Ø 2/6**	**Ø 2/6**
Skips	--	--
Reduces (Truncates)	--	--

2.8.6 TSP Split Tables: 1, 2, 3, 4, 5 & 16

	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
GRN EXT (SDW Extension)	--	--	--	--	--	--	--	--
GRN RDC (Reduction)	--	--	--	--	--	--	--	--
WLK EXT (Walk Extension)	--	30	--	--	--	30	--	--



Notes:

ATC Mode	0	2	3	4
TTC Algor'm	**B-2**	**A**	**C**	**D**
Extensions	SDW	Walk	W/SDW	W/SDW

TSP SUMMARY
Maximum Green Extensions:
EWG: 30 s Green/Walk

Turning Movement Counts

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Jameson Ave & Queen St W-AM
Site Code: 23322
Start Date: 02/07/2023

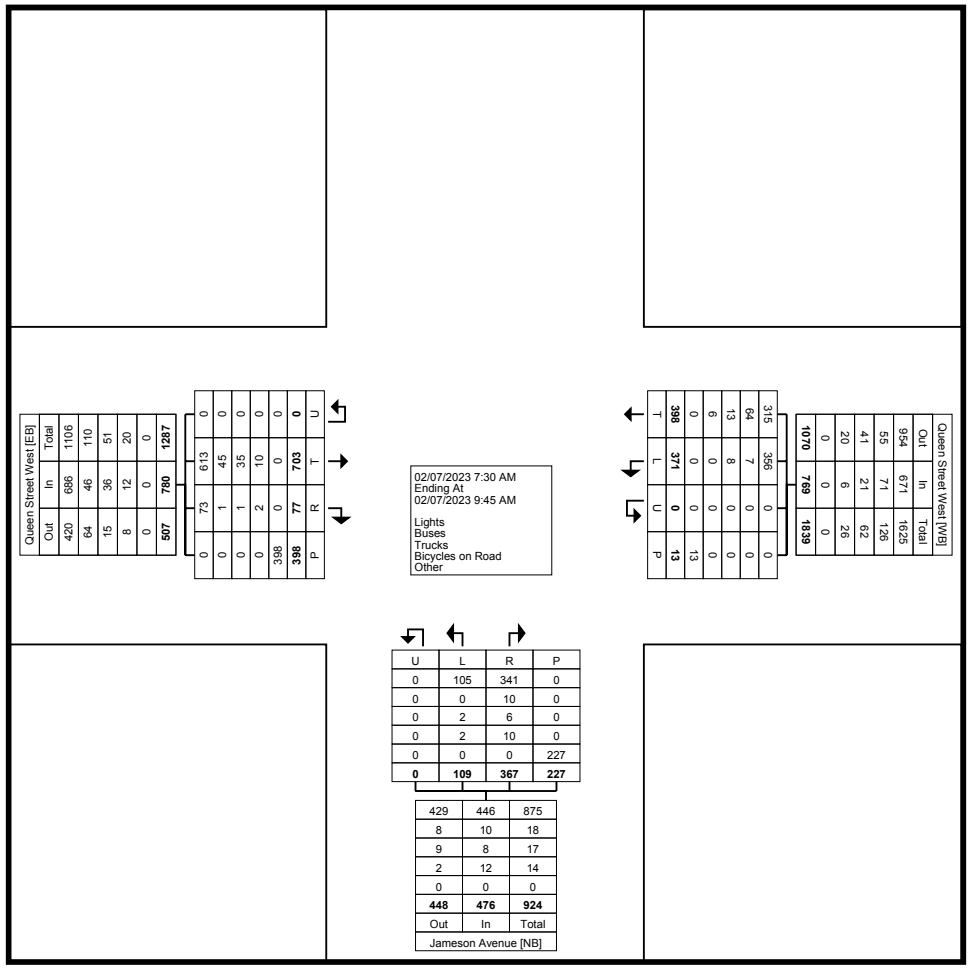
Turning Movement Data

Start Time	Queen Street West Westbound					Jameson Avenue Northbound					Queen Street West Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
7:30 AM	48	54	0	0	102	37	10	0	11	47	17	83	0	29	100	249
7:45 AM	45	49	0	0	94	56	12	0	14	68	11	70	0	36	81	243
Hourly Total	93	103	0	0	196	93	22	0	25	115	28	153	0	65	181	492
8:00 AM	49	49	0	0	98	39	13	0	12	52	15	69	0	25	84	234
8:15 AM	54	48	0	1	102	45	11	0	19	56	8	77	0	36	85	243
8:30 AM	41	46	0	2	87	55	15	0	31	70	9	105	0	67	114	271
8:45 AM	59	49	0	2	108	44	15	0	72	59	1	91	0	75	92	259
Hourly Total	203	192	0	5	395	183	54	0	134	237	33	342	0	203	375	1007
9:00 AM	58	43	0	3	101	43	16	0	38	59	8	113	0	68	121	281
9:15 AM	44	33	0	5	77	48	17	0	30	65	8	95	0	62	103	245
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	398	371	0	13	769	367	109	0	227	476	77	703	0	398	780	2025
Approach %	51.8	48.2	0.0	-	-	77.1	22.9	0.0	-	-	9.9	90.1	0.0	-	-	-
Total %	19.7	18.3	0.0	-	38.0	18.1	5.4	0.0	-	23.5	3.8	34.7	0.0	-	38.5	-
Lights	315	356	0	-	671	341	105	0	-	446	73	613	0	-	686	1803
% Lights	79.1	96.0	-	-	87.3	92.9	96.3	-	-	93.7	94.8	87.2	-	-	87.9	89.0
Buses	64	7	0	-	71	10	0	0	-	10	1	45	0	-	46	127
% Buses	16.1	1.9	-	-	9.2	2.7	0.0	-	-	2.1	1.3	6.4	-	-	5.9	6.3
Trucks	13	8	0	-	21	6	2	0	-	8	1	35	0	-	36	65
% Trucks	3.3	2.2	-	-	2.7	1.6	1.8	-	-	1.7	1.3	5.0	-	-	4.6	3.2
Bicycles on Road	6	0	0	-	6	10	2	0	-	12	2	10	0	-	12	30
% Bicycles on Road	1.5	0.0	-	-	0.8	2.7	1.8	-	-	2.5	2.6	1.4	-	-	1.5	1.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	5	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	2.2	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	13	-	-	-	-	222	-	-	-	-	398	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	97.8	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Jameson Ave & Queen St W-AM
Site Code: 23322
Start Date: 02/07/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Jameson Ave & Queen St W-AM
Site Code: 23322
Start Date: 02/07/2023

Turning Movement Peak Hour Data (8:30 AM)

Start Time	Queen Street West Westbound					Jameson Avenue Northbound					Queen Street West Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
8:30 AM	41	46	0	2	87	55	15	0	31	70	9	105	0	67	114	271
8:45 AM	59	49	0	2	108	44	15	0	72	59	1	91	0	75	92	259
9:00 AM	58	43	0	3	101	43	16	0	38	59	8	113	0	68	121	281
9:15 AM	44	33	0	5	77	48	17	0	30	65	8	95	0	62	103	245
Total	202	171	0	12	373	190	63	0	171	253	26	404	0	272	430	1056
Approach %	54.2	45.8	0.0	-	-	75.1	24.9	0.0	-	-	6.0	94.0	0.0	-	-	-
Total %	19.1	16.2	0.0	-	35.3	18.0	6.0	0.0	-	24.0	2.5	38.3	0.0	-	40.7	-
PHF	0.856	0.872	0.000	-	0.863	0.864	0.926	0.000	-	0.904	0.722	0.894	0.000	-	0.888	0.940
Lights	159	163	0	-	322	172	60	0	-	232	25	350	0	-	375	929
% Lights	78.7	95.3	-	-	86.3	90.5	95.2	-	-	91.7	96.2	86.6	-	-	87.2	88.0
Buses	30	4	0	-	34	6	0	0	-	6	0	25	0	-	25	65
% Buses	14.9	2.3	-	-	9.1	3.2	0.0	-	-	2.4	0.0	6.2	-	-	5.8	6.2
Trucks	9	4	0	-	13	4	1	0	-	5	1	22	0	-	23	41
% Trucks	4.5	2.3	-	-	3.5	2.1	1.6	-	-	2.0	3.8	5.4	-	-	5.3	3.9
Bicycles on Road	4	0	0	-	4	8	2	0	-	10	0	7	0	-	7	21
% Bicycles on Road	2.0	0.0	-	-	1.1	4.2	3.2	-	-	4.0	0.0	1.7	-	-	1.6	2.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	4	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	2.3	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	12	-	-	-	-	167	-	-	-	-	272	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	97.7	-	-	-	-	100.0	-	-

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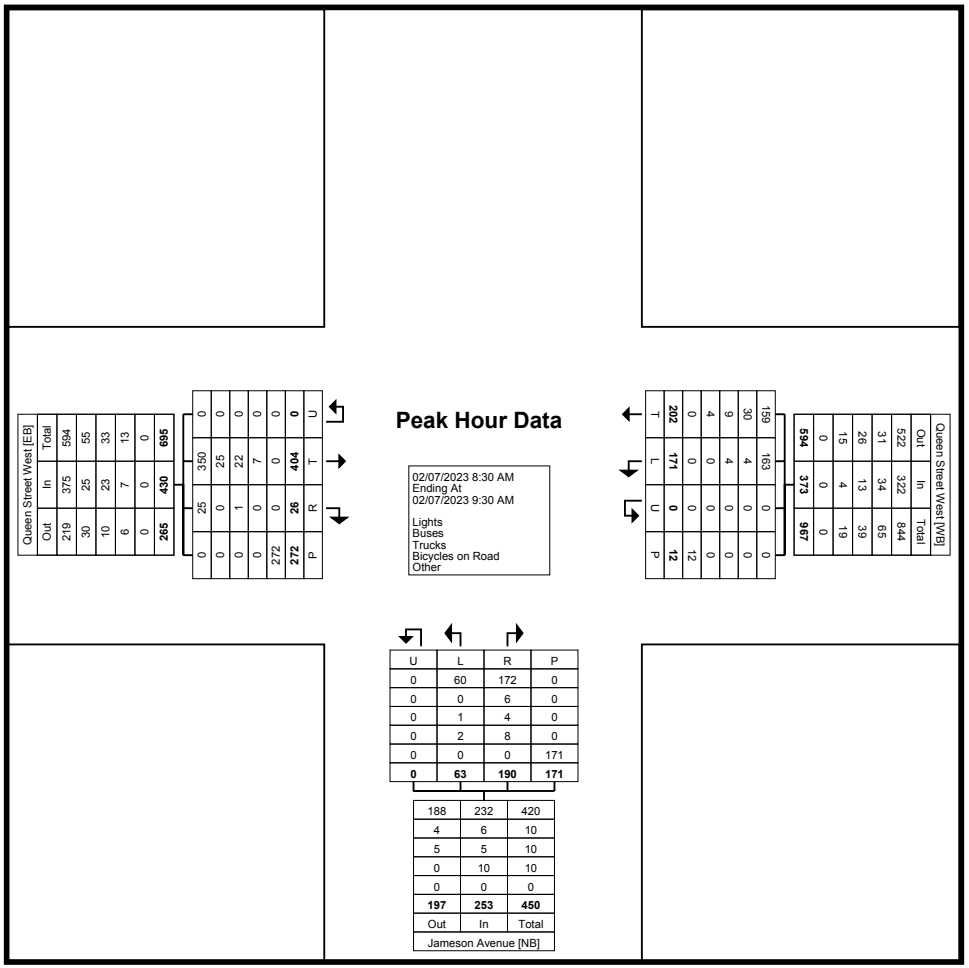
Count Name: 23322_Jameson Ave & Queen St W-AM
Site Code: 23322
Start Date: 02/07/2023



Turning Movement Peak Hour Data Plot (8:30 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Jameson Ave & Queen St W-PM
Site Code: 23322
Start Date: 02/07/2023

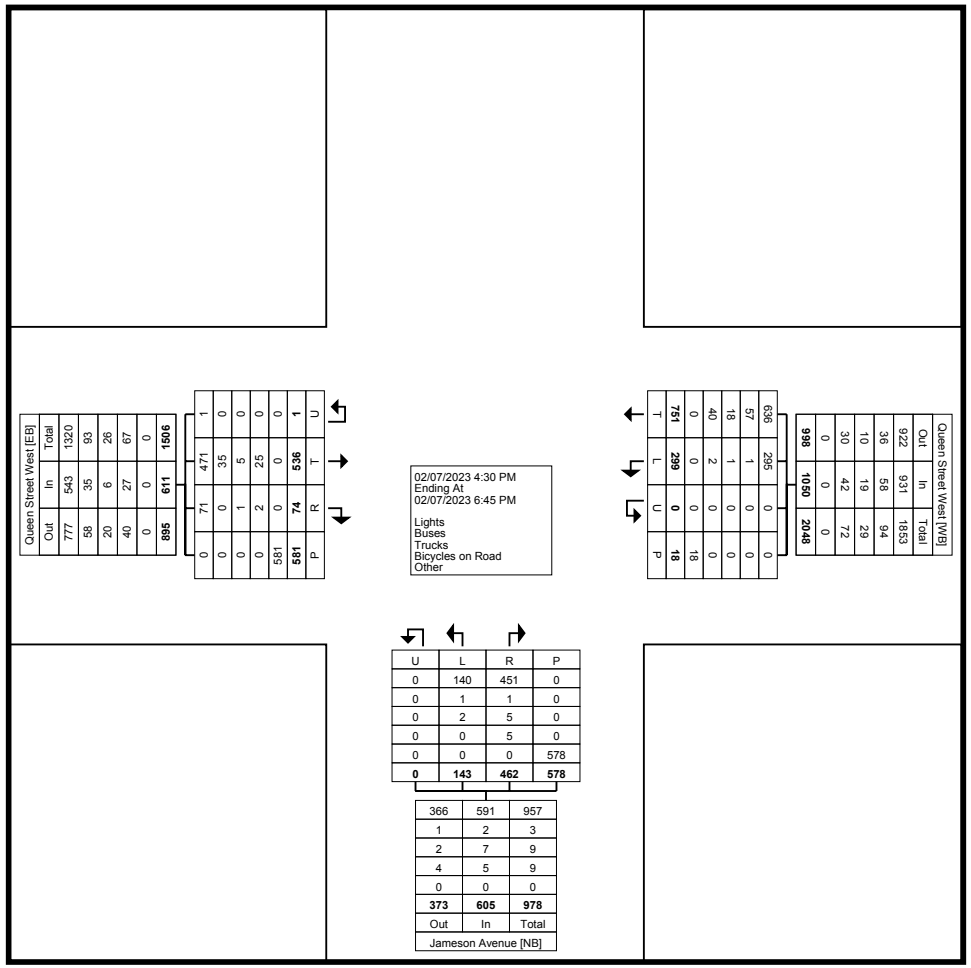
Turning Movement Data

Start Time	Queen Street West Westbound					Jameson Avenue Northbound					Queen Street West Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:30 PM	107	40	0	1	147	54	14	0	74	68	14	66	1	92	81	296
4:45 PM	96	27	0	0	123	57	19	0	69	76	8	68	0	66	76	275
Hourly Total	203	67	0	1	270	111	33	0	143	144	22	134	1	158	157	571
5:00 PM	70	32	0	8	102	54	17	0	76	71	9	49	0	57	58	231
5:15 PM	94	32	0	2	126	69	20	0	71	89	6	61	0	67	67	282
5:30 PM	94	35	0	4	129	71	21	0	82	92	9	63	0	87	72	293
5:45 PM	113	50	0	2	163	57	18	0	73	75	7	77	0	89	84	322
Hourly Total	371	149	0	16	520	251	76	0	302	327	31	250	0	300	281	1128
6:00 PM	87	46	0	1	133	64	20	0	72	84	9	86	0	65	95	312
6:15 PM	90	37	0	0	127	36	14	0	61	50	12	66	0	58	78	255
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	751	299	0	18	1050	462	143	0	578	605	74	536	1	581	611	2266
Approach %	71.5	28.5	0.0	-	-	76.4	23.6	0.0	-	-	12.1	87.7	0.2	-	-	-
Total %	33.1	13.2	0.0	-	46.3	20.4	6.3	0.0	-	26.7	3.3	23.7	0.0	-	27.0	-
Lights	636	295	0	-	931	451	140	0	-	591	71	471	1	-	543	2065
% Lights	84.7	98.7	-	-	88.7	97.6	97.9	-	-	97.7	95.9	87.9	100.0	-	88.9	91.1
Buses	57	1	0	-	58	1	1	0	-	2	0	35	0	-	35	95
% Buses	7.6	0.3	-	-	5.5	0.2	0.7	-	-	0.3	0.0	6.5	0.0	-	5.7	4.2
Trucks	18	1	0	-	19	5	2	0	-	7	1	5	0	-	6	32
% Trucks	2.4	0.3	-	-	1.8	1.1	1.4	-	-	1.2	1.4	0.9	0.0	-	1.0	1.4
Bicycles on Road	40	2	0	-	42	5	0	0	-	5	2	25	0	-	27	74
% Bicycles on Road	5.3	0.7	-	-	4.0	1.1	0.0	-	-	0.8	2.7	4.7	0.0	-	4.4	3.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	10	-	-	-	-	12	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	1.7	-	-	-	-	2.1	-	-
Pedestrians	-	-	-	18	-	-	-	-	568	-	-	-	-	569	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	98.3	-	-	-	-	97.9	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Jameson Ave & Queen St W-PM
Site Code: 23322
Start Date: 02/07/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Jameson Ave & Queen St W-PM
Site Code: 23322
Start Date: 02/07/2023

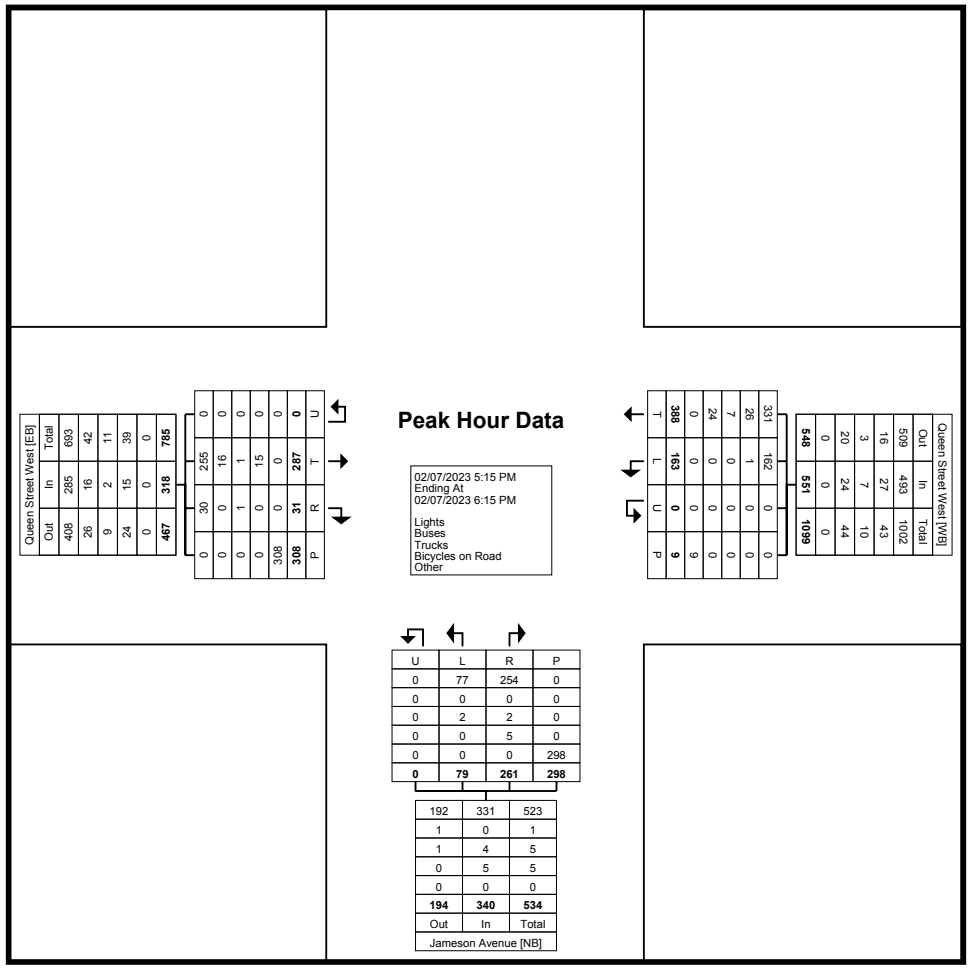
Turning Movement Peak Hour Data (5:15 PM)

Start Time	Queen Street West Westbound					Jameson Avenue Northbound					Queen Street West Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
5:15 PM	94	32	0	2	126	69	20	0	71	89	6	61	0	67	67	282
5:30 PM	94	35	0	4	129	71	21	0	82	92	9	63	0	87	72	293
5:45 PM	113	50	0	2	163	57	18	0	73	75	7	77	0	89	84	322
6:00 PM	87	46	0	1	133	64	20	0	72	84	9	86	0	65	95	312
Total	388	163	0	9	551	261	79	0	298	340	31	287	0	308	318	1209
Approach %	70.4	29.6	0.0	-	-	76.8	23.2	0.0	-	-	9.7	90.3	0.0	-	-	-
Total %	32.1	13.5	0.0	-	45.6	21.6	6.5	0.0	-	28.1	2.6	23.7	0.0	-	26.3	-
PHF	0.858	0.815	0.000	-	0.845	0.919	0.940	0.000	-	0.924	0.861	0.834	0.000	-	0.837	0.939
Lights	331	162	0	-	493	254	77	0	-	331	30	255	0	-	285	1109
% Lights	85.3	99.4	-	-	89.5	97.3	97.5	-	-	97.4	96.8	88.9	-	-	89.6	91.7
Buses	26	1	0	-	27	0	0	0	-	0	0	16	0	-	16	43
% Buses	6.7	0.6	-	-	4.9	0.0	0.0	-	-	0.0	0.0	5.6	-	-	5.0	3.6
Trucks	7	0	0	-	7	2	2	0	-	4	1	1	0	-	2	13
% Trucks	1.8	0.0	-	-	1.3	0.8	2.5	-	-	1.2	3.2	0.3	-	-	0.6	1.1
Bicycles on Road	24	0	0	-	24	5	0	0	-	5	0	15	0	-	15	44
% Bicycles on Road	6.2	0.0	-	-	4.4	1.9	0.0	-	-	1.5	0.0	5.2	-	-	4.7	3.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	8	-	-	-	-	7	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	2.7	-	-	-	-	2.3	-	-
Pedestrians	-	-	-	9	-	-	-	-	290	-	-	-	-	301	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	97.3	-	-	-	-	97.7	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Jameson Ave & Queen St W-PM
Site Code: 23322
Start Date: 02/07/2023



Turning Movement Peak Hour Data Plot (5:15 PM)

LEA Consulting Ltd.

625 Cochrane Drive, 9th Floor
Markham, ON L3R 9R9

Project No.: 23322
Intersection: Lansdowne Ave & Queen St W
Weather: Clear
Surveyor(s): ID

File Name : Lansdowne Ave & Queen St W - AM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 1

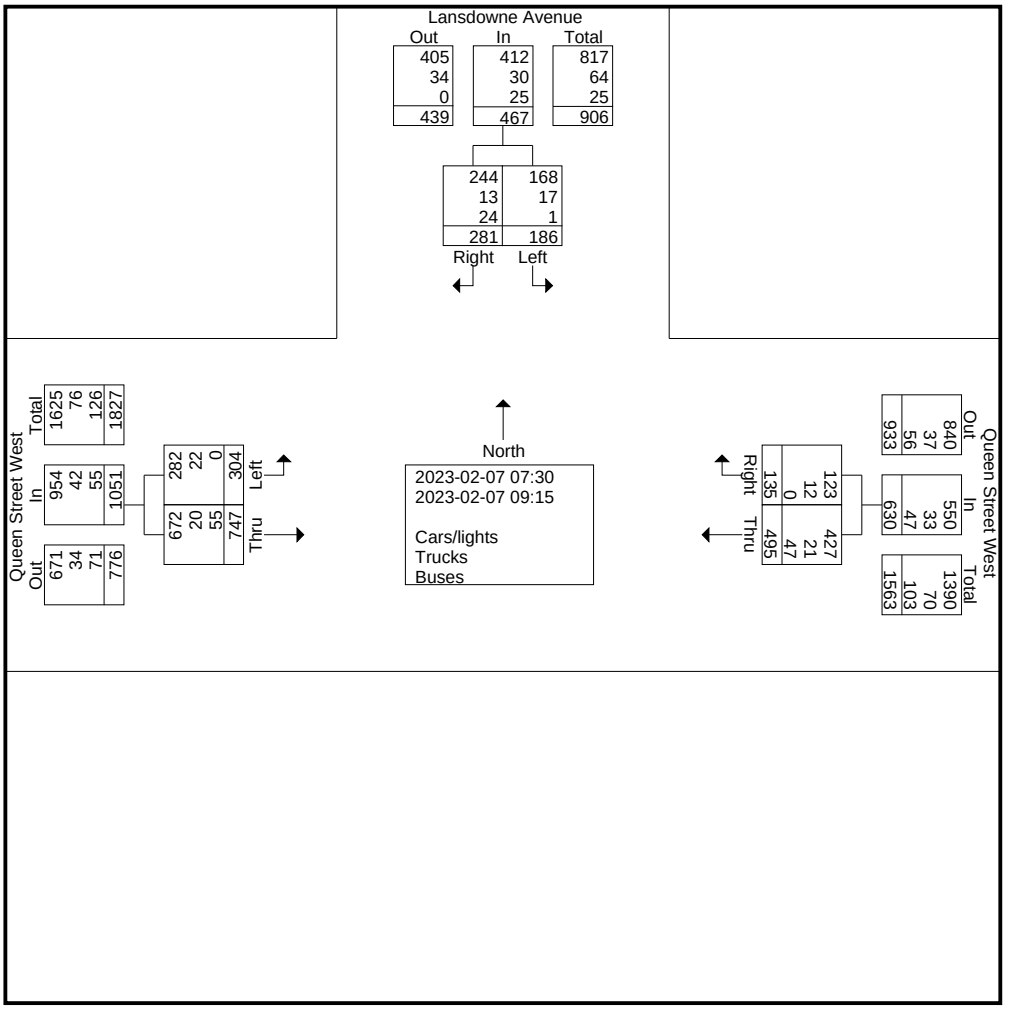
Groups Printed- Cars/lights - Trucks - Buses

	Lansdowne Avenue Southbound				Queen Street West Westbound				Queen Street West Eastbound						
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:30	17	44	[24]	61	57	10	[8]	67	36	85	[0]	121	32	249	281
07:45	16	32	[24]	48	62	13	[9]	75	47	77	[1]	124	34	247	281
Total	33	76	[48]	109	119	23	[17]	142	83	162	[1]	245	66	496	562
08:00	17	35	[42]	52	67	17	[19]	84	33	74	[0]	107	61	243	304
08:15	20	35	[31]	55	69	28	[20]	97	33	87	[1]	120	52	272	324
08:30	24	34	[59]	58	56	20	[51]	76	42	114	[0]	156	110	290	400
08:45	31	41	[60]	72	66	16	[63]	82	37	93	[1]	130	124	284	408
Total	92	145	[192]	237	258	81	[153]	339	145	368	[2]	513	347	1089	1436
09:00	36	30	[47]	66	71	14	[46]	85	34	118	[2]	152	95	303	398
09:15	25	30	[52]	55	47	17	[36]	64	42	99	[0]	141	88	260	348
Grand Total	186	281	[339]	467	495	135	[252]	630	304	747	[5]	1051	596	2148	2744
Apprch %	39.8	60.2			78.6	21.4			28.9	71.1					
Total %	8.7	13.1		21.7	23	6.3		29.3	14.2	34.8		48.9	21.7	78.3	
Cars/lights	168	244		751	427	123		799	282	672		959	0	0	2509
% Cars/lights	90.3	86.8	100	93.2	86.3	91.1	98.8	90.6	92.8	90	100	90.8	0	0	91.4
Trucks	17	13		30	21	12		36	22	20		42	0	0	108
% Trucks	9.1	4.6	0	3.7	4.2	8.9	1.2	4.1	7.2	2.7	0	4	0	0	3.9
Buses	1	24		25	47	0		47	0	55		55	0	0	127
% Buses	0.5	8.5	0	3.1	9.5	0	0	5.3	0	7.4	0	5.2	0	0	4.6

LEA Consulting Ltd.

625 Cochrane Drive, 9th Floor
Markham, ON L3R 9R9

File Name : Lansdowne Ave & Queen St W - AM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 2



LEA Consulting Ltd.

625 Cochrane Drive, 9th Floor
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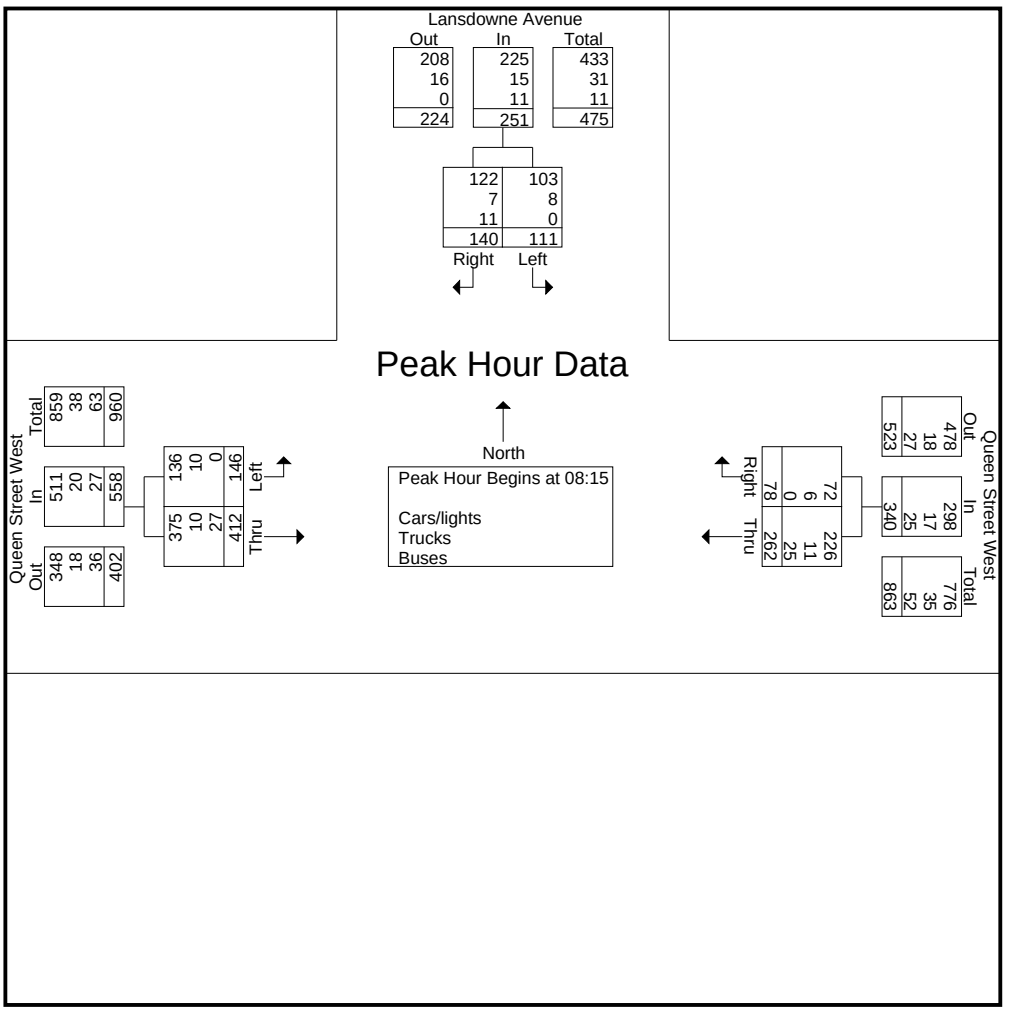
File Name : Lansdowne Ave & Queen St W - AM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 3

	Lansdowne Avenue Southbound			Queen Street West Westbound			Queen Street West Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:15										
08:15	20	35	55	69	**28**	**97**	33	87	120	272
08:30	24	34	58	56	20	76	**42**	114	**156**	290
08:45	31	**41**	**72**	66	16	82	37	93	130	284
09:00	**36**	30	66	**71**	14	85	34	**118**	152	**303**
Total Volume	111	140	251	262	78	340	146	412	558	1149
% App. Total	44.2	55.8		77.1	22.9		26.2	73.8		
PHF	.771	.854	.872	.923	.696	.876	.869	.873	.894	.948
Cars/lights	103	122	225	226	72	298	136	375	511	1034
% Cars/lights	92.8	87.1	89.6	86.3	92.3	87.6	93.2	91.0	91.6	90.0
Trucks	8	7	15	11	6	17	10	10	20	52
% Trucks	7.2	5.0	6.0	4.2	7.7	5.0	6.8	2.4	3.6	4.5
Buses	0	11	11	25	0	25	0	27	27	63
% Buses	0	7.9	4.4	9.5	0	7.4	0	6.6	4.8	5.5



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625 Cochrane Drive, 9th Floor
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625 Cochrane Drive, 9th Floor
Markham, ON L3R 9R9

Project No.: 23322
Intersection: Lansdowne Ave & Queen St
Weather: Clear
Surveyor(s): ID

File Name : Lansdowne Ave & Queen St W - PM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 1

Groups Printed- Cars/lights - Trucks - Buses

	Lansdowne Avenue Southbound				Queen Street West Westbound				Queen Street West Eastbound						
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
16:30	24	47	[83]	71	97	17	[45]	114	57	64	[1]	121	129	306	435
16:45	27	26	[76]	53	94	19	[40]	113	48	71	[2]	119	118	285	403
Total	51	73	[159]	124	191	36	[85]	227	105	135	[3]	240	247	591	838
17:00	26	36	[108]	62	64	16	[46]	80	52	47	[2]	99	156	241	397
17:15	23	33	[80]	56	91	23	[42]	114	57	71	[1]	128	123	298	421
17:30	25	43	[107]	68	83	19	[51]	102	48	82	[3]	130	161	300	461
17:45	14	41	[88]	55	113	16	[46]	129	43	84	[2]	127	136	311	447
Total	88	153	[383]	241	351	74	[185]	425	200	284	[8]	484	576	1150	1726
18:00	25	42	[65]	67	82	20	[51]	102	48	96	[4]	144	120	313	433
18:15	29	39	[71]	68	80	9	[46]	89	53	47	[1]	100	118	257	375
Grand Total	193	307	[678]	500	704	139	[367]	843	406	562	[16]	968	1061	2311	3372
Apprch %	38.6	61.4			83.5	16.5			41.9	58.1					
Total %	8.4	13.3		21.6	30.5	6		36.5	17.6	24.3		41.9	31.5	68.5	
Cars/lights	188	278		1138	653	134		1120	395	527		935	0	0	3193
% Cars/lights	97.4	90.6	99.1	96.6	92.8	96.4	90.7	92.6	97.3	93.8	81.2	95	0	0	94.7
Trucks	5	9		20	14	5		53	11	0		14	0	0	87
% Trucks	2.6	2.9	0.9	1.7	2	3.6	9.3	4.4	2.7	0	18.8	1.4	0	0	2.6
Buses	0	20		20	37	0		37	0	35		35	0	0	92
% Buses	0	6.5	0	1.7	5.3	0	0	3.1	0	6.2	0	3.6	0	0	2.7

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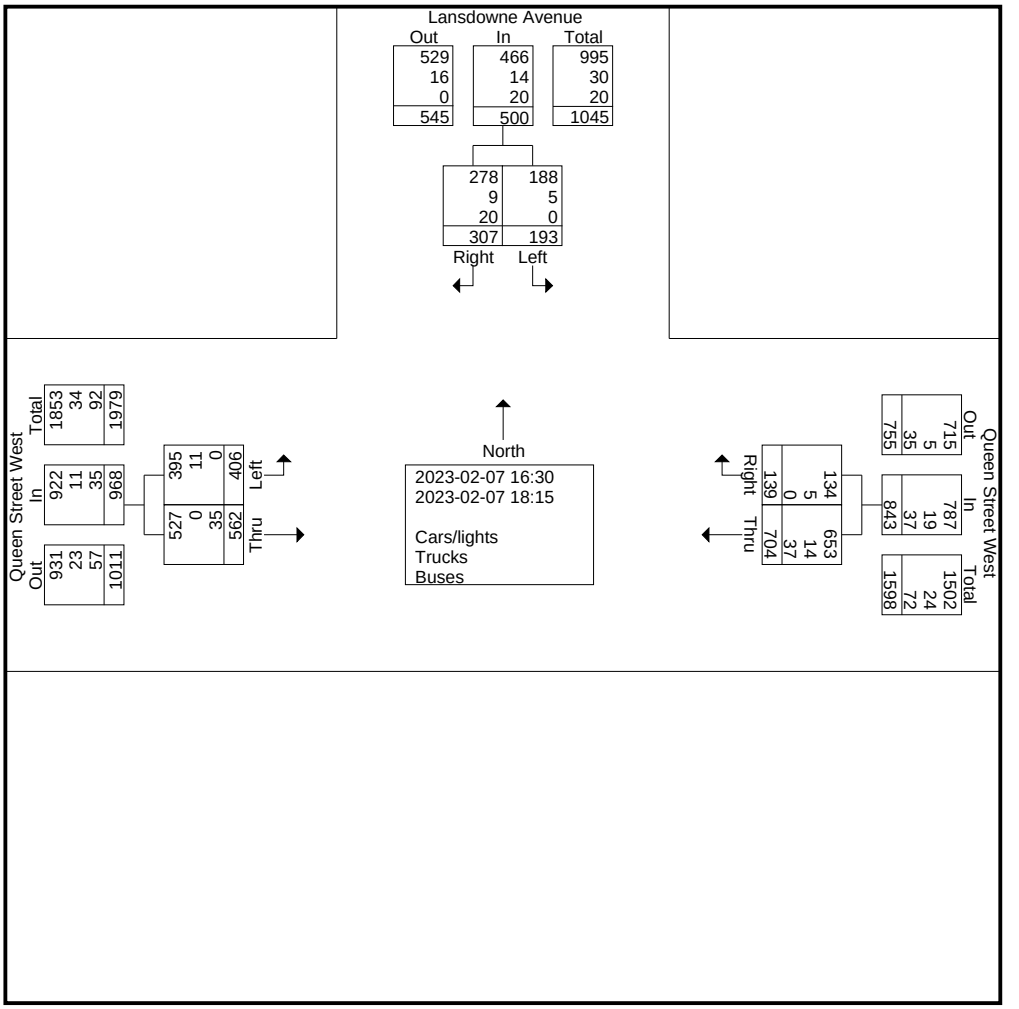
625 Cochrane Drive, 9th Floor
Markham, ON L3R 9R9

File Name : Lansdowne Ave & Queen St W - PM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 2

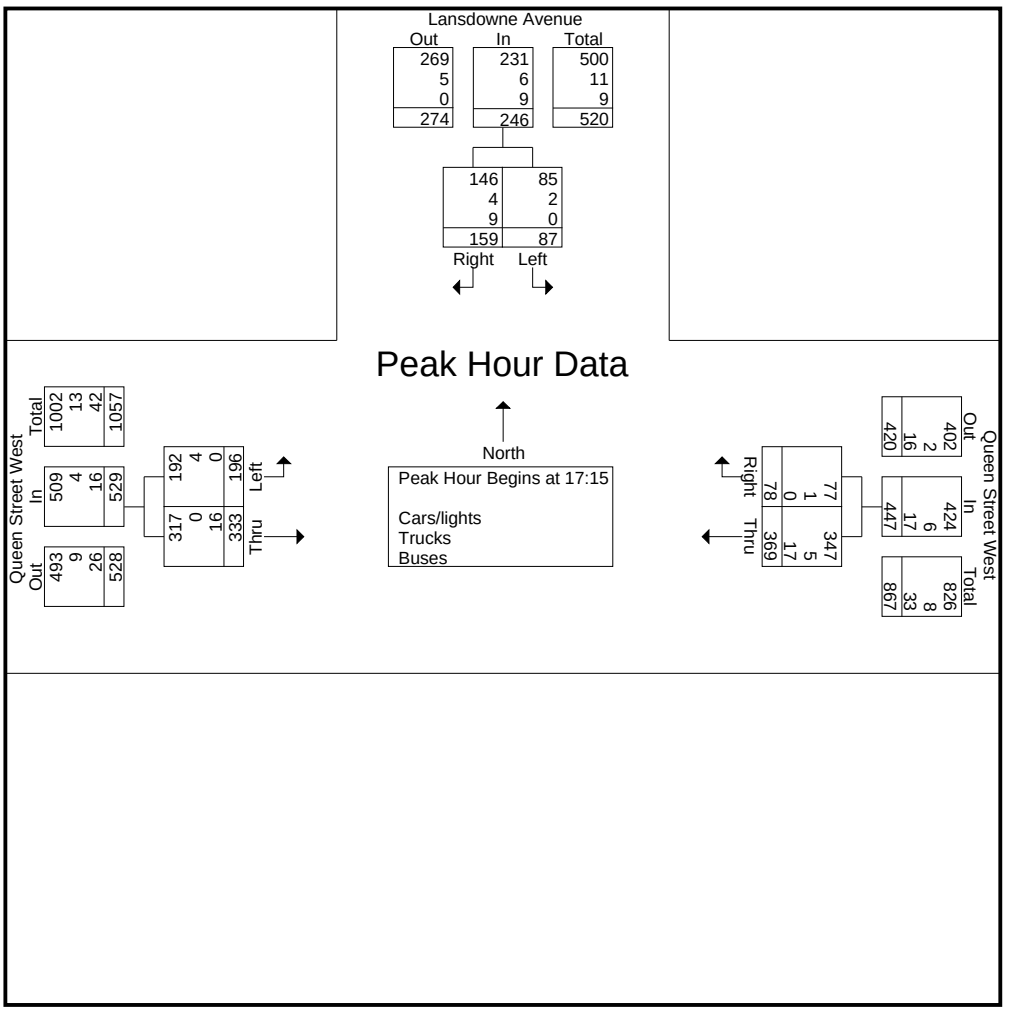


LEA Consulting Ltd.

625 Cochrane Drive, 9th Floor
Markham, ON L3R 9R9

File Name : Lansdowne Ave & Queen St W - PM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 3

	Lansdowne Avenue Southbound			Queen Street West Westbound			Queen Street West Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 16:30 to 18:15 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:15										
17:15	23	33	56	91	**23**	114	**57**	71	128	298
17:30	**25**	**43**	**68**	83	19	102	48	82	130	300
17:45	14	41	55	**113**	16	**129**	43	84	127	311
18:00	25	42	67	82	20	102	48	**96**	**144**	**313**
Total Volume	87	159	246	369	78	447	196	333	529	1222
% App. Total	35.4	64.6		82.6	17.4		37.1	62.9		
PHF	.870	.924	.904	.816	.848	.866	.860	.867	.918	.976
Cars/lights	85	146	231	347	77	424	192	317	509	1164
% Cars/lights	97.7	91.8	93.9	94.0	98.7	94.9	98.0	95.2	96.2	95.3
Trucks	2	4	6	5	1	6	4	0	4	16
% Trucks	2.3	2.5	2.4	1.4	1.3	1.3	2.0	0	0.8	1.3
Buses	0	9	9	17	0	17	0	16	16	42
% Buses	0	5.7	3.7	4.6	0	3.8	0	4.8	3.0	3.4



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625 Cochrane Drive, 9th Floor
Markham, ON L3R 9R9

Project No.: 23322
Intersection: Macdonnell Ave & Queen St
Weather: Clear
Surveyor(s): ID

File Name : RAW_Macdonnel Ave & Queen St W - AM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 1

Groups Printed- Cars/lights - Trucks - Buses

	Macdonnell Avenue Southbound					Queen Street West Westbound					1441 Queen Street West Northbound					Queen Street West Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:30	7	0	11	[23]	18	0	50	7	[4]	57	0	0	1	[10]	1	7	93	0	[2]	100	39	176	215
07:45	7	1	6	[21]	14	1	50	6	[1]	57	0	0	0	[15]	0	14	73	0	[2]	87	39	158	197
Total	14	1	17	[44]	32	1	100	13	[5]	114	0	0	1	[25]	1	21	166	0	[4]	187	78	334	412
08:00	10	0	8	[19]	18	0	58	3	[1]	61	0	0	0	[13]	0	13	73	0	[4]	86	37	165	202
08:15	5	1	8	[24]	14	0	61	4	[0]	65	1	1	1	[14]	3	7	76	3	[3]	86	41	168	209
08:30	6	0	16	[57]	22	0	47	9	[1]	56	0	0	0	[27]	0	23	107	1	[2]	131	87	209	296
08:45	7	0	12	[49]	19	0	65	5	[5]	70	0	0	0	[16]	0	14	83	1	[3]	98	73	187	260
Total	28	1	44	[{\fs1 5 14 9}]	73	0	231	21	[7]	252	1	1	1	[70]	3	57	339	5	[12]	401	238	729	967
09:00	7	0	9	[44]	16	1	66	7	[2]	74	0	1	1	[27]	2	15	110	0	[6]	125	79	217	296
09:15	8	0	21	[24]	29	1	55	3	[3]	59	0	0	2	[28]	2	11	94	0	[2]	105	57	195	252
Grand Total	57	2	91	[{\fs1 5 26 1}]	150	3	452	44	[17]	499	1	2	5	[{\fs1 5 15 0}]	8	104	709	5	[24]	818	452	1475	1927
Apprch %	38	1.3	60.7			0.6	90.6	8.8			12.5	25	62.5			12.7	86.7	0.6					
Total %	3.9	0.1	6.2		10.2	0.2	30.6	3		33.8	0.1	0.1	0.3		0.5	7.1	48.1	0.3		55.5	23.5	76.5	
Cars/lights	56	2	86		405	3	398	19		430	1	2	4		157	100	630	5		752	0	0	1744
% Cars/lights	98.2	100	94.5	100	98.5	100	88.1	43.2	58.8	83.3	100	100	80	100	99.4	96.2	88.9	100	70.8	89.3	0	0	90.5
Trucks	1	0	5		6	0	14	1		22	0	0	1		1	4	34	0		45	0	0	74
% Trucks	1.8	0	5.5	0	1.5	0	3.1	2.3	41.2	4.3	0	0	20	0	0.6	3.8	4.8	0	29.2	5.3	0	0	3.8
Buses	0	0	0		0	0	40	24		64	0	0	0		0	0	45	0		45	0	0	109
% Buses	0	0	0	0	0	0	8.8	54.5	0	12.4	0	0	0	0	0	0	6.3	0	0	5.3	0	0	5.7

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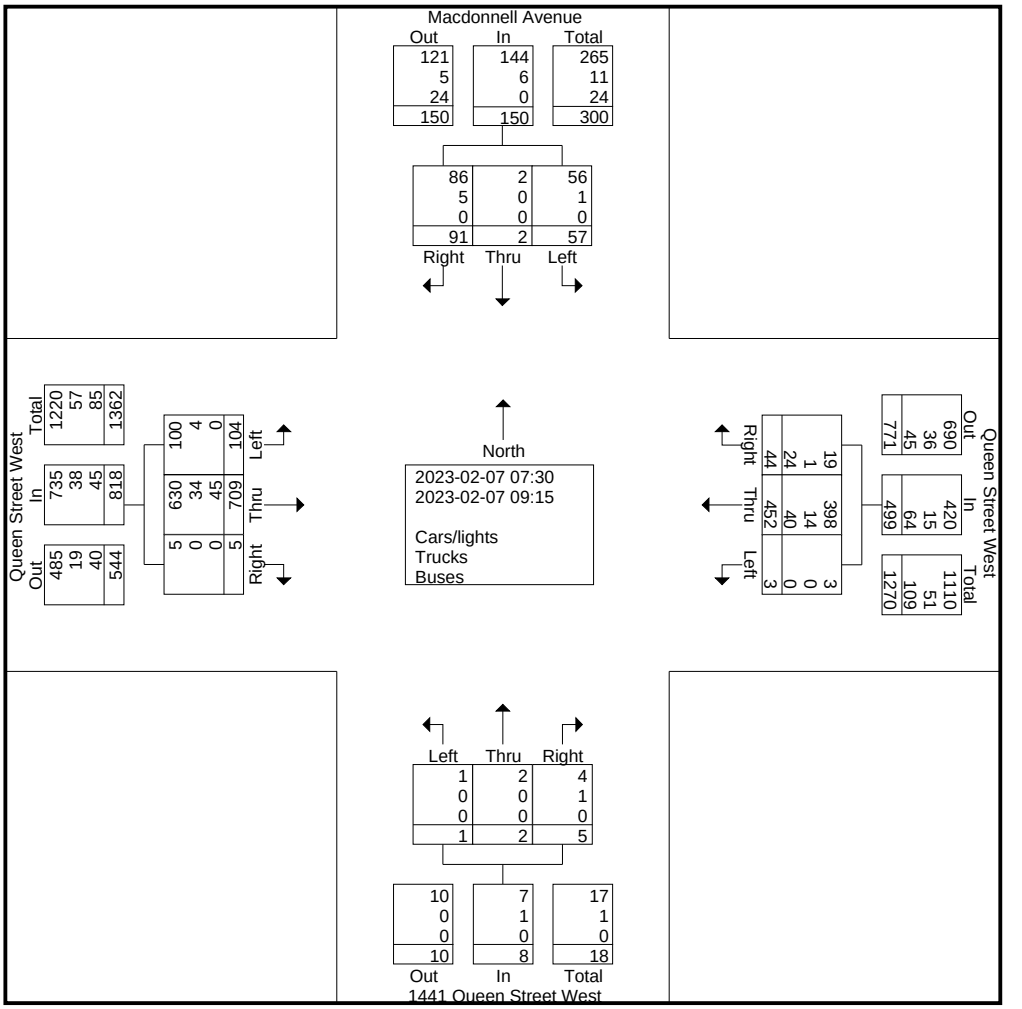
File Name : RAW_Macdonnel Ave & Queen St W - AM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 2



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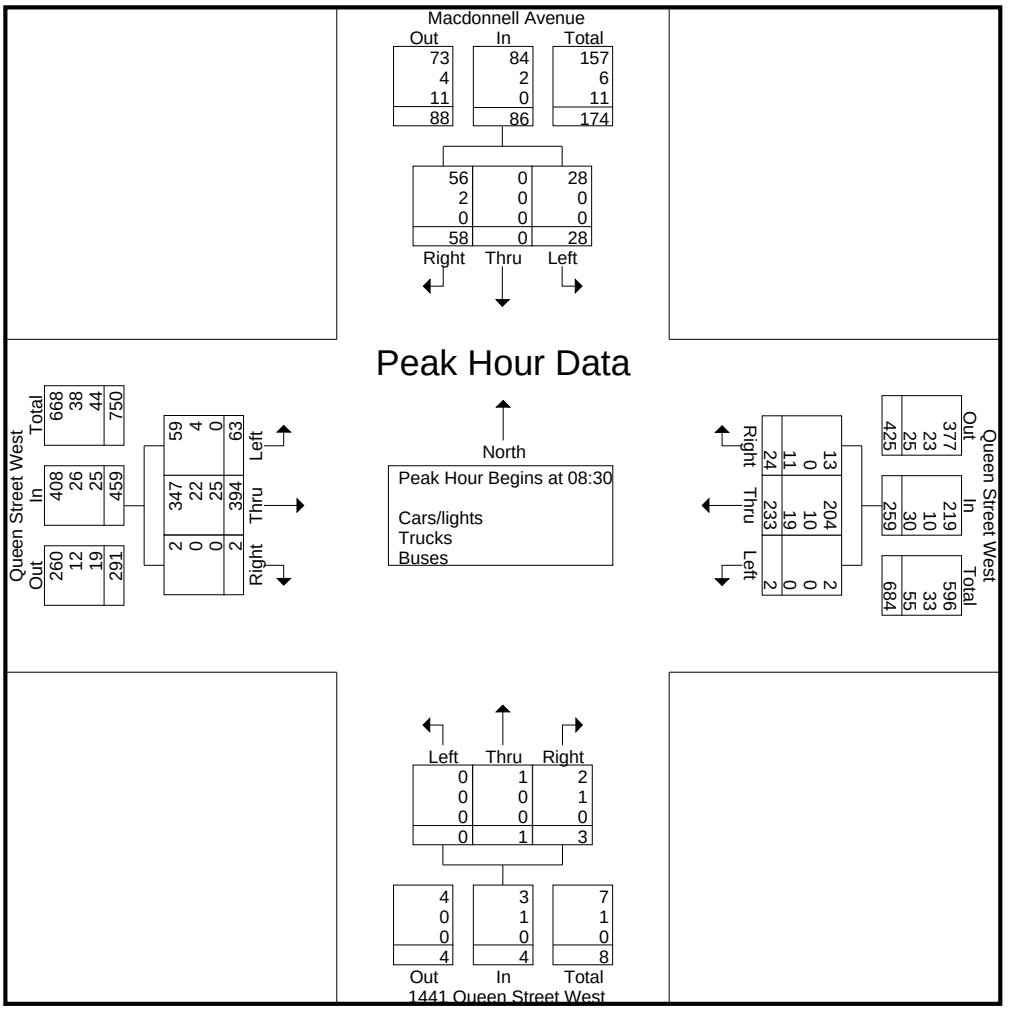
625 Cochrane Drive, 9th Floor
Markham, ON L3R 9R9

File Name : RAW_Macdonnel Ave & Queen St W - AM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 3

	Macdonnell Avenue Southbound				Queen Street West Westbound				1441 Queen Street West Northbound				Queen Street West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 to 09:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:30																	
08:30	6	0	16	22	0	47	**9**	56	0	0	0	0	**23**	107	**1**	**131**	209
08:45	7	0	12	19	0	65	5	70	0	0	0	0	14	83	1	98	187
09:00	7	0	9	16	**1**	**66**	7	**74**	0	**1**	1	**2**	15	**110**	0	125	**217**
09:15	**8**	0	**21**	**29**	1	55	3	59	0	0	**2**	2	11	94	0	105	195
Total Volume	28	0	58	86	2	233	24	259	0	1	3	4	63	394	2	459	808
% App. Total	32.6	0	67.4		0.8	90	9.3		0	25	75		13.7	85.8	0.4		
PHF	.875	.000	.690	.741	.500	.883	.667	.875	.000	.250	.375	.500	.685	.895	.500	.876	.931
Cars/lights	28	0	56	84	2	204	13	219	0	1	2	3	59	347	2	408	714
% Cars/lights	100	0	96.6	97.7	100	87.6	54.2	84.6	0	100	66.7	75.0	93.7	88.1	100	88.9	88.4
Trucks	0	0	2	2	0	10	0	10	0	0	1	1	4	22	0	26	39
% Trucks	0	0	3.4	2.3	0	4.3	0	3.9	0	0	33.3	25.0	6.3	5.6	0	5.7	4.8
Buses	0	0	0	0	0	19	11	30	0	0	0	0	0	25	0	25	55
% Buses	0	0	0	0	0	8.2	45.8	11.6	0	0	0	0	0	6.3	0	5.4	6.8



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Markham, ON L3R 9R9

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Project No.: 23322
Intersection: Macdonnell Ave & Queen St
Weather: Clear
Surveyor(s): ID

File Name : RAW_Macdonnel Ave & Queen St W - PM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 1

Groups Printed- Cars/lights - Trucks - Buses

	Macdonnell Avenue Southbound					Queen Street West Westbound					1441 Queen Street West Northbound					Queen Street West Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
16:30	5	0	16	[57]	21	2	111	6	[0]	119	0	0	2	[37]	2	10	73	0	[5]	83	99	225	324
16:45	7	0	17	[62]	24	2	101	8	[4]	111	0	1	5	[29]	6	8	58	0	[14]	66	109	207	316
Total	12	0	33	[{\fs1 5 11 9}]	45	4	212	14	[4]	230	0	1	7	[66]	8	18	131	0	[19]	149	208	432	640
17:00	4	0	21	[60]	25	1	77	6	[4]	84	1	0	0	[45]	1	11	51	0	[10]	62	119	172	291
17:15	2	0	22	[81]	24	1	102	8	[3]	111	2	2	1	[46]	5	22	61	2	[6]	85	136	225	361
17:30	4	0	28	[67]	32	2	101	7	[5]	110	0	0	4	[43]	4	11	63	2	[9]	76	124	222	346
17:45	4	0	28	[69]	32	2	113	7	[5]	122	2	2	0	[59]	4	19	74	0	[3]	93	136	251	387
Total	14	0	99	[{\fs1 5 27 7}]	113	6	393	28	[17]	427	5	4	5	[{\fs1 5 19 3}]	14	63	249	4	[28]	316	515	870	1385
18:00	0	0	17	[49]	17	1	88	9	[2]	98	1	0	0	[50]	1	22	90	1	[12]	113	113	229	342
18:15	6	0	21	[61]	27	1	87	8	[11]	96	0	0	4	[56]	4	16	65	1	[12]	82	140	209	349
Grand Total	32	0	170	[{\fs1 5 50 6}]	202	12	780	59	[34]	851	6	5	16	[{\fs1 5 36 5}]	27	119	535	6	[71]	660	976	1740	2716
Apprch %	15.8	0	84.2			1.4	91.7	6.9			22.2	18.5	59.3			18	81.1	0.9					
Total %	1.8	0	9.8		11.6	0.7	44.8	3.4		48.9	0.3	0.3	0.9		1.6	6.8	30.7	0.3		37.9	35.9	64.1	
Cars/lights	31	0	166		703	12	725	39		785	6	5	16		392	118	495	6		674	0	0	2554
% Cars/lights	96.9	0	97.6	100	99.3	100	92.9	66.1	26.5	88.7	100	100	100	100	100	99.2	92.5	100	77.5	92.2	0	0	94
Trucks	1	0	4		5	0	18	0		43	0	0	0		0	1	5	0		22	0	0	70
% Trucks	3.1	0	2.4	0	0.7	0	2.3	0	73.5	4.9	0	0	0	0	0	0.8	0.9	0	22.5	3	0	0	2.6
Buses	0	0	0		0	0	37	20		57	0	0	0		0	0	35	0		35	0	0	92
% Buses	0	0	0	0	0	0	4.7	33.9	0	6.4	0	0	0	0	0	0	6.5	0	0	4.8	0	0	3.4

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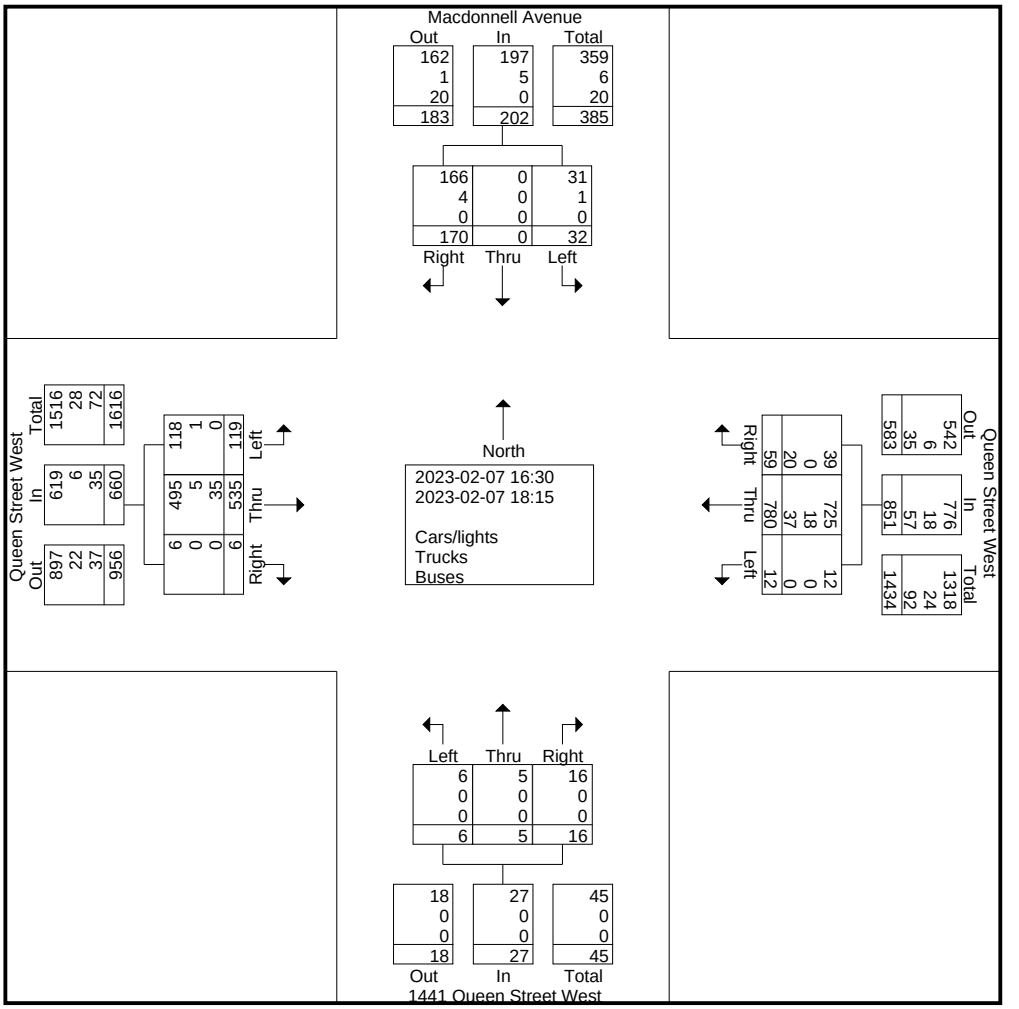
File Name : RAW_Macdonnel Ave & Queen St W - PM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 2



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625 Cochrane Drive, 9th Floor
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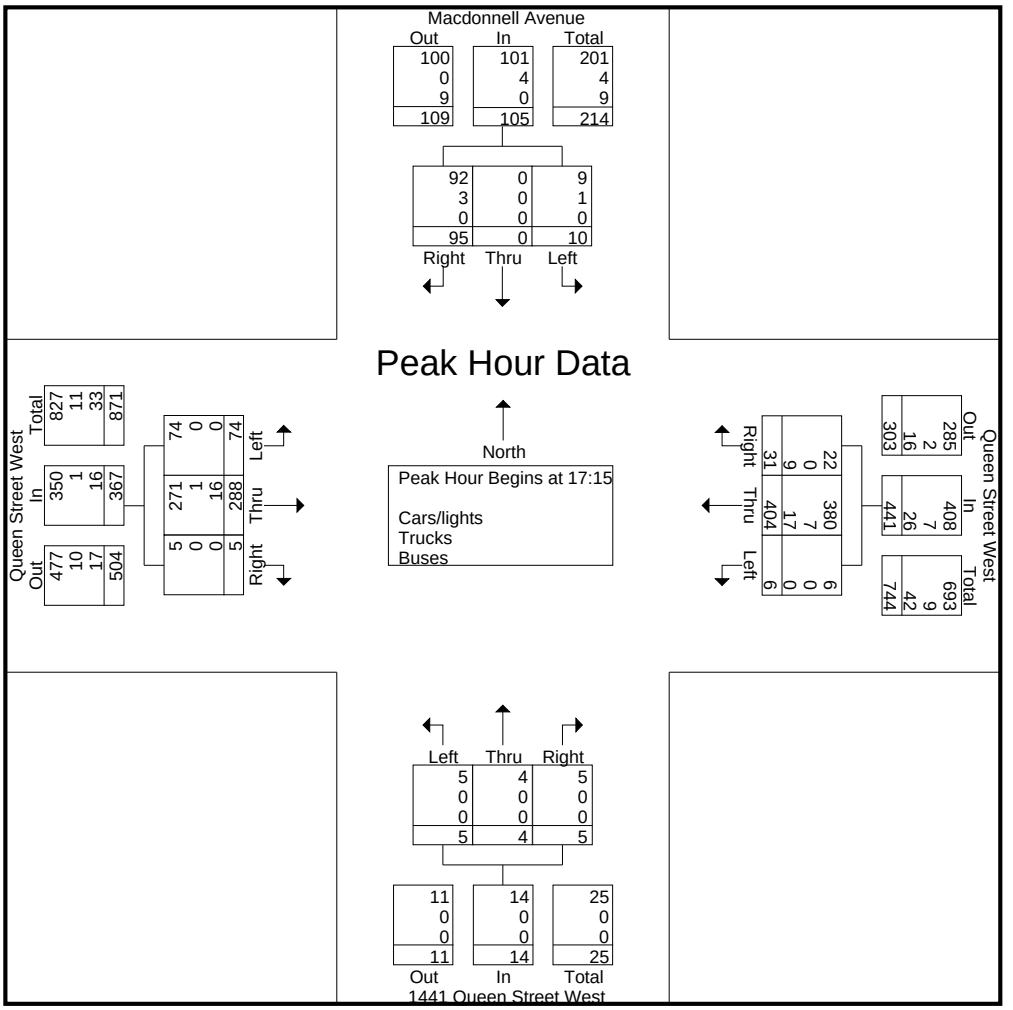
File Name : RAW_Macdonnel Ave & Queen St W - PM
Site Code : 00023322
Start Date : 2023-02-07
Page No : 3

	Macdonnell Avenue Southbound				Queen Street West Westbound				1441 Queen Street West Northbound				Queen Street West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:30 to 18:15 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:15																	
17:15	2	0	22	24	1	102	8	111	**2**	**2**	1	**5**	**22**	61	**2**	85	225
17:30	**4**	0	**28**	**32**	**2**	101	7	110	0	0	**4**	4	11	63	2	76	222
17:45	4	0	28	32	2	**113**	7	**122**	2	2	0	4	19	74	0	93	**251**
18:00	0	0	17	17	1	88	**9**	98	1	0	0	1	22	**90**	1	**113**	229
Total Volume	10	0	95	105	6	404	31	441	5	4	5	14	74	288	5	367	927
% App. Total	9.5	0	90.5		1.4	91.6	7		35.7	28.6	35.7		20.2	78.5	1.4		
PHF	.625	.000	.848	.820	.750	.894	.861	.904	.625	.500	.313	.700	.841	.800	.625	.812	.923
Cars/lights	9	0	92	101	6	380	22	408	5	4	5	14	74	271	5	350	873
% Cars/lights	90.0	0	96.8	96.2	100	94.1	71.0	92.5	100	100	100	100	100	94.1	100	95.4	94.2
Trucks	1	0	3	4	0	7	0	7	0	0	0	0	0	1	0	1	12
% Trucks	10.0	0	3.2	3.8	0	1.7	0	1.6	0	0	0	0	0	0.3	0	0.3	1.3
Buses	0	0	0	0	0	17	9	26	0	0	0	0	0	16	0	16	42
% Buses	0	0	0	0	0	4.2	29.0	5.9	0	0	0	0	0	5.6	0	4.4	4.5



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625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Sorauren Ave & Queen St W-AM
Site Code: 23322
Start Date: 02/07/2023

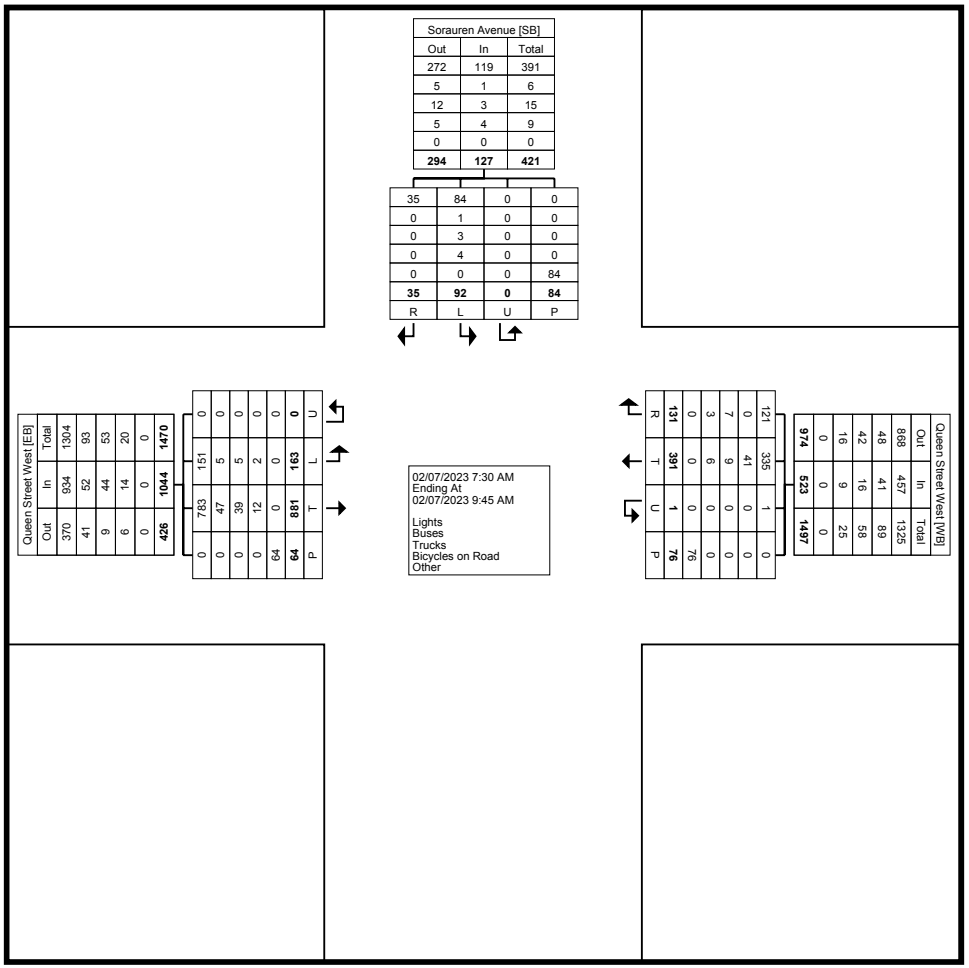
Turning Movement Data

Start Time	Sorauren Avenue Southbound					Queen Street West Westbound					Queen Street West Eastbound					
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:30 AM	3	10	0	11	13	16	41	0	4	57	103	12	0	5	115	185
7:45 AM	5	11	0	6	16	11	42	0	4	53	89	12	0	7	101	170
Hourly Total	8	21	0	17	29	27	83	0	8	110	192	24	0	12	216	355
8:00 AM	4	7	0	5	11	17	49	0	13	66	83	8	0	6	91	168
8:15 AM	3	8	0	7	11	13	59	0	7	72	103	15	0	12	118	201
8:30 AM	3	9	0	22	12	7	52	1	21	60	117	26	0	10	143	215
8:45 AM	4	14	0	12	18	21	55	0	8	76	128	34	0	12	162	256
Hourly Total	14	38	0	46	52	58	215	1	49	274	431	83	0	40	514	840
9:00 AM	9	22	0	12	31	24	43	0	12	67	144	26	0	10	170	268
9:15 AM	4	11	0	9	15	22	50	0	7	72	113	30	0	2	143	230
9:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	35	92	0	84	127	131	391	1	76	523	881	163	0	64	1044	1694
Approach %	27.6	72.4	0.0	-	-	25.0	74.8	0.2	-	-	84.4	15.6	0.0	-	-	-
Total %	2.1	5.4	0.0	-	7.5	7.7	23.1	0.1	-	30.9	52.0	9.6	0.0	-	61.6	-
Lights	35	84	0	-	119	121	335	1	-	457	783	151	0	-	934	1510
% Lights	100.0	91.3	-	-	93.7	92.4	85.7	100.0	-	87.4	88.9	92.6	-	-	89.5	89.1
Buses	0	1	0	-	1	0	41	0	-	41	47	5	0	-	52	94
% Buses	0.0	1.1	-	-	0.8	0.0	10.5	0.0	-	7.8	5.3	3.1	-	-	5.0	5.5
Trucks	0	3	0	-	3	7	9	0	-	16	39	5	0	-	44	63
% Trucks	0.0	3.3	-	-	2.4	5.3	2.3	0.0	-	3.1	4.4	3.1	-	-	4.2	3.7
Bicycles on Road	0	4	0	-	4	3	6	0	-	9	12	2	0	-	14	27
% Bicycles on Road	0.0	4.3	-	-	3.1	2.3	1.5	0.0	-	1.7	1.4	1.2	-	-	1.3	1.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	1.3	-	-	-	-	3.1	-	-
Pedestrians	-	-	-	84	-	-	-	-	75	-	-	-	-	62	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	98.7	-	-	-	-	96.9	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Sorauren Ave & Queen St W-AM
Site Code: 23322
Start Date: 02/07/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Sorauren Ave & Queen St W-AM
Site Code: 23322
Start Date: 02/07/2023

Turning Movement Peak Hour Data (8:30 AM)

Start Time	Sorauren Avenue Southbound					Queen Street West Westbound					Queen Street West Eastbound					
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Int. Total
8:30 AM	3	9	0	22	12	7	52	1	21	60	117	26	0	10	143	215
8:45 AM	4	14	0	12	18	21	55	0	8	76	128	34	0	12	162	256
9:00 AM	9	22	0	12	31	24	43	0	12	67	144	26	0	10	170	268
9:15 AM	4	11	0	9	15	22	50	0	7	72	113	30	0	2	143	230
Total	20	56	0	55	76	74	200	1	48	275	502	116	0	34	618	969
Approach %	26.3	73.7	0.0	-	-	26.9	72.7	0.4	-	-	81.2	18.8	0.0	-	-	-
Total %	2.1	5.8	0.0	-	7.8	7.6	20.6	0.1	-	28.4	51.8	12.0	0.0	-	63.8	-
PHF	0.556	0.636	0.000	-	0.613	0.771	0.909	0.250	-	0.905	0.872	0.853	0.000	-	0.909	0.904
Lights	20	51	0	-	71	66	174	1	-	241	443	110	0	-	553	865
% Lights	100.0	91.1	-	-	93.4	89.2	87.0	100.0	-	87.6	88.2	94.8	-	-	89.5	89.3
Buses	0	1	0	-	1	0	18	0	-	18	25	2	0	-	27	46
% Buses	0.0	1.8	-	-	1.3	0.0	9.0	0.0	-	6.5	5.0	1.7	-	-	4.4	4.7
Trucks	0	1	0	-	1	6	5	0	-	11	25	2	0	-	27	39
% Trucks	0.0	1.8	-	-	1.3	8.1	2.5	0.0	-	4.0	5.0	1.7	-	-	4.4	4.0
Bicycles on Road	0	3	0	-	3	2	3	0	-	5	9	2	0	-	11	19
% Bicycles on Road	0.0	5.4	-	-	3.9	2.7	1.5	0.0	-	1.8	1.8	1.7	-	-	1.8	2.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	2.1	-	-	-	-	5.9	-	-
Pedestrians	-	-	-	55	-	-	-	-	47	-	-	-	-	32	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	97.9	-	-	-	-	94.1	-	-

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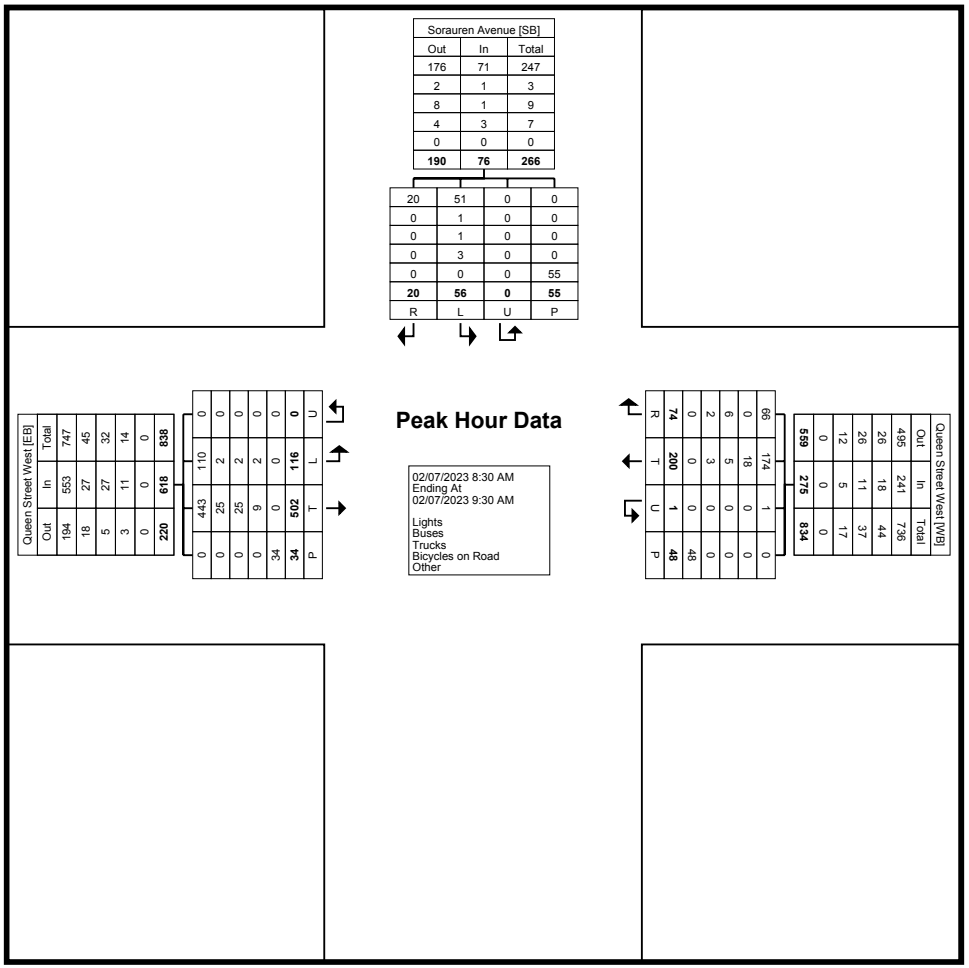
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Sorauren Ave & Queen St W-AM
Site Code: 23322
Start Date: 02/07/2023



Turning Movement Peak Hour Data Plot (8:30 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Sorauren Ave & Queen St W-PM
Site Code: 23322
Start Date: 02/07/2023

Turning Movement Data

Start Time	Sorauren Avenue Southbound					Queen Street West Westbound					Queen Street West Eastbound					
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Int. Total
4:30 PM	4	15	0	27	19	28	96	0	18	124	72	23	0	12	95	238
4:45 PM	5	19	0	19	24	22	88	0	18	110	93	24	0	8	117	251
Hourly Total	9	34	0	46	43	50	184	0	36	234	165	47	0	20	212	489
5:00 PM	8	12	0	18	20	22	77	0	24	99	83	32	0	12	115	234
5:15 PM	3	13	0	15	16	35	88	0	18	123	97	32	0	10	129	268
5:30 PM	6	15	0	23	21	27	92	0	25	119	82	34	0	20	116	256
5:45 PM	8	9	0	12	17	37	108	0	19	145	92	34	0	17	126	288
Hourly Total	25	49	0	68	74	121	365	0	86	486	354	132	0	59	486	1046
6:00 PM	10	12	0	15	22	36	76	0	12	112	122	33	0	12	155	289
6:15 PM	5	15	0	21	20	16	88	0	15	104	92	25	0	10	117	241
6:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	49	110	0	150	159	223	713	0	149	936	734	237	0	101	971	2066
Approach %	30.8	69.2	0.0	-	-	23.8	76.2	0.0	-	-	75.6	24.4	0.0	-	-	-
Total %	2.4	5.3	0.0	-	7.7	10.8	34.5	0.0	-	45.3	35.5	11.5	0.0	-	47.0	-
Lights	47	105	0	-	152	206	633	0	-	839	668	233	0	-	901	1892
% Lights	95.9	95.5	-	-	95.6	92.4	88.8	-	-	89.6	91.0	98.3	-	-	92.8	91.6
Buses	0	0	0	-	0	1	40	0	-	41	36	0	0	-	36	77
% Buses	0.0	0.0	-	-	0.0	0.4	5.6	-	-	4.4	4.9	0.0	-	-	3.7	3.7
Trucks	0	0	0	-	0	3	16	0	-	19	6	1	0	-	7	26
% Trucks	0.0	0.0	-	-	0.0	1.3	2.2	-	-	2.0	0.8	0.4	-	-	0.7	1.3
Bicycles on Road	2	5	0	-	7	13	24	0	-	37	24	3	0	-	27	71
% Bicycles on Road	4.1	4.5	-	-	4.4	5.8	3.4	-	-	4.0	3.3	1.3	-	-	2.8	3.4
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	6	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	1.3	-	-	-	-	4.0	-	-	-	-	2.0	-	-
Pedestrians	-	-	-	148	-	-	-	-	143	-	-	-	-	99	-	-
% Pedestrians	-	-	-	98.7	-	-	-	-	96.0	-	-	-	-	98.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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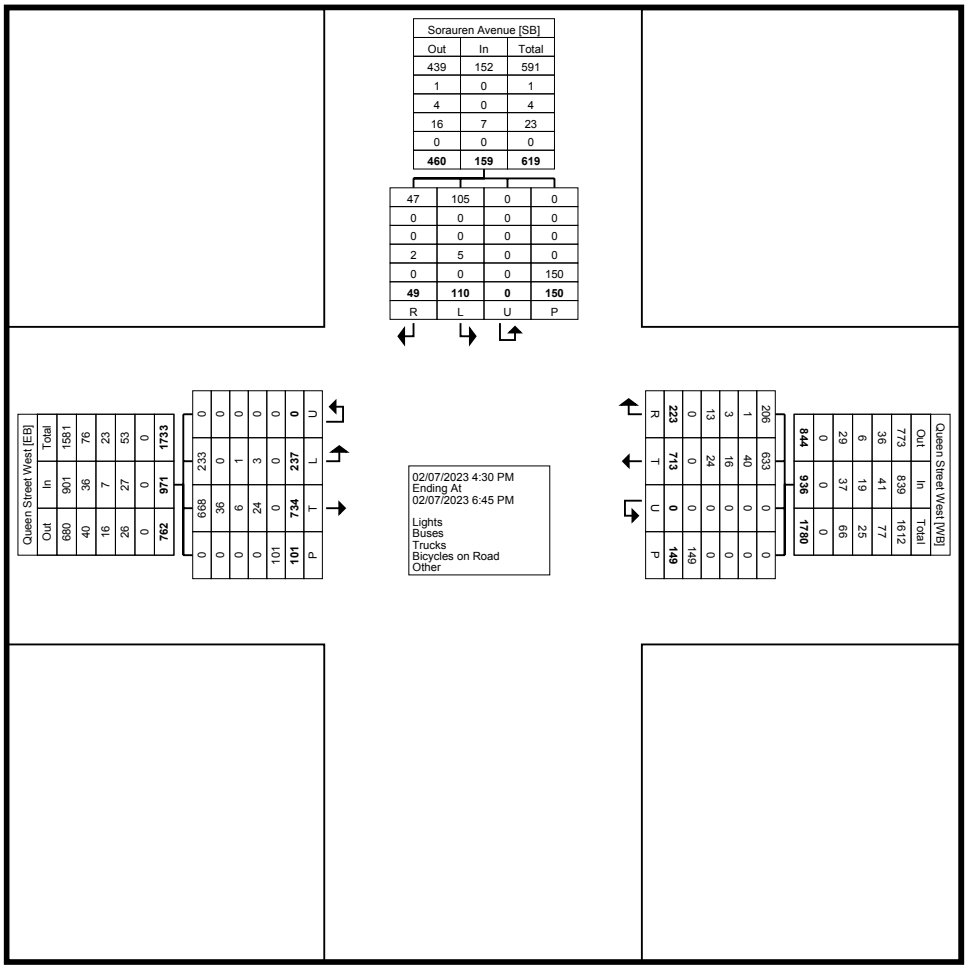
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Sorauren Ave & Queen St W-PM
Site Code: 23322
Start Date: 02/07/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Sorauren Ave & Queen St W-PM
Site Code: 23322
Start Date: 02/07/2023

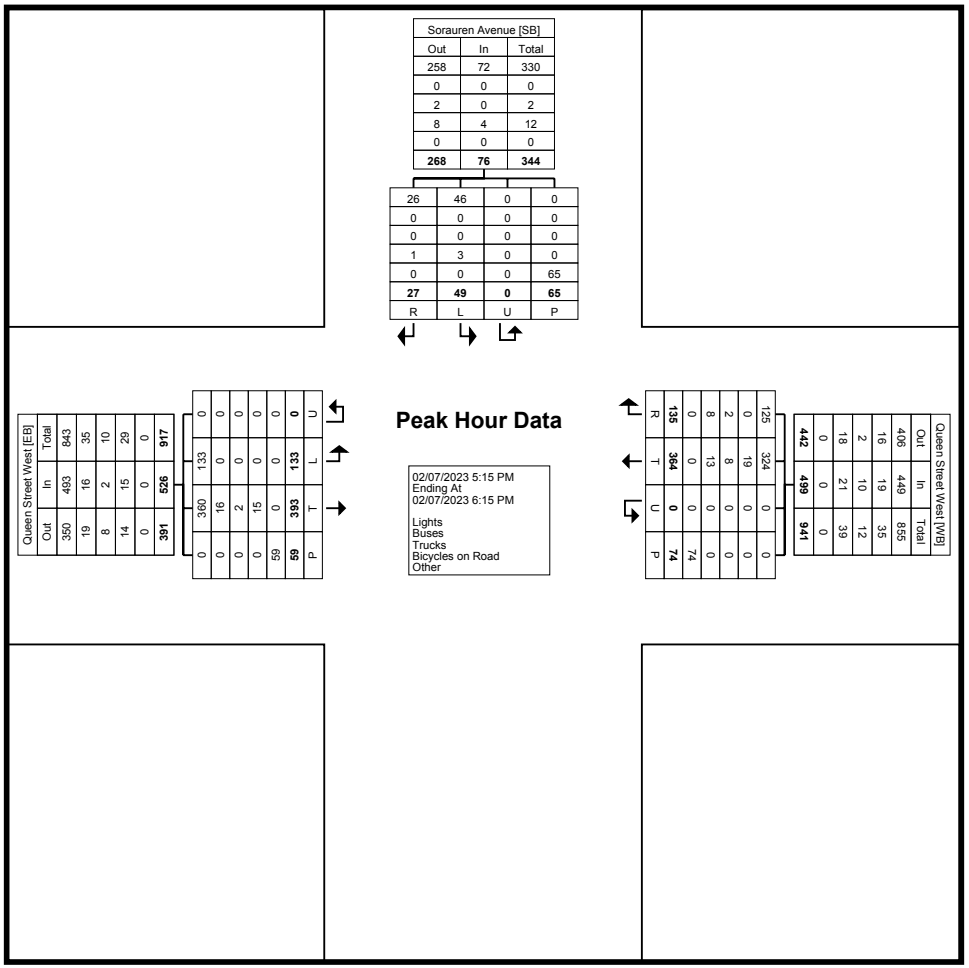
Turning Movement Peak Hour Data (5:15 PM)

Start Time	Sorauren Avenue Southbound					Queen Street West Westbound					Queen Street West Eastbound					
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Int. Total
5:15 PM	3	13	0	15	16	35	88	0	18	123	97	32	0	10	129	268
5:30 PM	6	15	0	23	21	27	92	0	25	119	82	34	0	20	116	256
5:45 PM	8	9	0	12	17	37	108	0	19	145	92	34	0	17	126	288
6:00 PM	10	12	0	15	22	36	76	0	12	112	122	33	0	12	155	289
Total	27	49	0	65	76	135	364	0	74	499	393	133	0	59	526	1101
Approach %	35.5	64.5	0.0	-	-	27.1	72.9	0.0	-	-	74.7	25.3	0.0	-	-	-
Total %	2.5	4.5	0.0	-	6.9	12.3	33.1	0.0	-	45.3	35.7	12.1	0.0	-	47.8	-
PHF	0.675	0.817	0.000	-	0.864	0.912	0.843	0.000	-	0.860	0.805	0.978	0.000	-	0.848	0.952
Lights	26	46	0	-	72	125	324	0	-	449	360	133	0	-	493	1014
% Lights	96.3	93.9	-	-	94.7	92.6	89.0	-	-	90.0	91.6	100.0	-	-	93.7	92.1
Buses	0	0	0	-	0	0	19	0	-	19	16	0	0	-	16	35
% Buses	0.0	0.0	-	-	0.0	0.0	5.2	-	-	3.8	4.1	0.0	-	-	3.0	3.2
Trucks	0	0	0	-	0	2	8	0	-	10	2	0	0	-	2	12
% Trucks	0.0	0.0	-	-	0.0	1.5	2.2	-	-	2.0	0.5	0.0	-	-	0.4	1.1
Bicycles on Road	1	3	0	-	4	8	13	0	-	21	15	0	0	-	15	40
% Bicycles on Road	3.7	6.1	-	-	5.3	5.9	3.6	-	-	4.2	3.8	0.0	-	-	2.9	3.6
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	2	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	1.5	-	-	-	-	2.7	-	-	-	-	3.4	-	-
Pedestrians	-	-	-	64	-	-	-	-	72	-	-	-	-	57	-	-
% Pedestrians	-	-	-	98.5	-	-	-	-	97.3	-	-	-	-	96.6	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 23322_Sorauren Ave & Queen St W-PM
Site Code: 23322
Start Date: 02/07/2023



Turning Movement Peak Hour Data Plot (5:15 PM)

Lane Utilization Factor with Streetcar Operations

Intersection: Queen St W & Jameson Ave
Purpose: Identify LUF given presence of streetcar operating in mixed traffic along Queen St W

Video File Location: I:\23322_1437 Queen St W
Camera Setup: Northeast corner of intersection

Time Periods
Weekday AM Peak Hour: 8:30 - 9:30 AM Peak 15-min: 9:00-9:15 AM
Weekday PM Peak Hour: 5:15 - 6:15 PM Peak 15-min: 5:45-6:00 PM

Formula for LUF:

$$f\,LU = \frac{\text{unadjusted volume for lane group}}{\text{(no. of lanes) * (unadjusted volume from the single lane with highest volume)}}$$

<-- calculate for the peak 15 min for each peak hour

Intersection Approach	Total Number of Lanes	Total Inbound Approach Volume		Peak Lane Volume		LUF	
		AM Peak 15-min	PM Peak 15-min	AM Peak 15-min	PM Peak 15-min	AM Peak 15-min	PM Peak 15-min
Eastbound	2	123	77	70	41	0.88	0.94
Westbound	2	102	153	55	77	0.93	0.99

Eastbound - AM Peak 15 mins

Cycle	Curb Lane Volumes --> Peak Lane	Inner Lane Volumes	Total Approach Volumes
1	8	1	9
2	11	8	19
3	8	6	14
4	9	8	17
5	6	3	9
6	6	1	7
7	4	10	14
8	6	10	16
9	12	6	18
SUM	***70***	***53***	***123***

Eastbound - PM Peak 15 mins

Cycle	Curb Lane Volumes	Inner Lane Volumes --> Peak Lane	Total Approach Volumes
1	3	6	9
2	8	1	9
3	3	6	9
4	5	1	6
5	1	10	11
6	3	4	7
7	2	3	5
8	5	4	9
9	6	6	12
SUM	***36***	***41***	***77***

Westbound - AM Peak 15 mins

Cycle	Curb Lane Volumes	Lane Volumes --> Peak	Total Approach Volumes
1	0	1	1
2	7	2	9
3	1	3	4
4	7	1	8
5	3	7	10
6	4	3	7
7	3	5	8
8	4	4	8
9	0	2	2
10	3	1	4
11	0	1	1
12	5	2	7
13	0	5	5
14	2	0	2
15	0	8	8
16	2	1	3
17	0	8	8
18	6	1	7
SUM	***47***	***55***	***102***

Westbound - PM Peak 15 mins

Cycle	Curb Lane Volumes	Inner Lane Volumes	Total Approach Volumes
1	1	8	9
2	6	2	8
3	2	6	8
4	5	6	11
5	5	5	10
6	8	2	10
7	2	6	8
8	7	3	10
9	2	4	6
10	7	1	8
11	3	4	7
12	7	5	12
13	2	8	10
14	10	3	13
15	0	6	6
16	4	0	4
17	1	5	6
18	5	2	7
SUM	***77***	***76***	***153***

Notes:
-There may be some discrepancies compared to the approach totals from Miovision due to camera angle obstructions (i.e. inner lane streetcar sometimes obstructed flow in outer lane for EB flow so tried to count total approach vehicles visible through streetcar window) and due to start/end time of count (i.e. based the start/end of the peak 15-mins on cycle rather than time stamp)
-WBL flow overlaps with both the through phase and the SB phase so it has more cycles to count

Queen Street West & Jameson Avenue Northbound Right Calibration Check

NBR at Queen St W and Jameson Ave indicates v/c ratio over 1.00 for PM with default synchro model parameters. The following work of reviewing video footage for the PM peak 15-minute period was done to get an idea of appropriate model calibration.

Intersection: Queen St W & Jameson Ave
Movement of focus: NBR
Weekday PM Peak Hour: 5:15 - 6:15 PM
PM Peak 15-min: 5:45 - 6:00 PM

From video footage for PM peak 15-min:

Cycle	NBR Volume	Note: queue at onset of red?
1	9	N
2	7	Y
3	6	Y
4	9	Y
5	5	Y
6	6	Y
7	8	Y
8	7	Y
9	8	Y
TOTAL	***65***	

For NBR capacity per cycle, assumed 8 vehicles rather than 9 vehicles to be conservative.

Queen St W & Jameson Ave

For NBR per cycle, assume capacity of:	8	vehicles
PM cycle length:	102	seconds
A 15 min period would have:	9	cycles
For the PM peak 15 min period for NBR:		
Assumed maximum capacity:	72	vehicles
Observed volumes from TMC data:	65	vehicles
Volume to capacity ratio:	**0.90**	

After model calibration for the PM, the NBR indicates v/c ratio of 0.93, which seems reasonable given this high-level review indicated a v/c ratio of 0.90 for the NBR for the PM peak 15-minutes.

APPENDIX C

Queue Survey

22332
Queen St & Macdonell Ave EBL
2023-02-07
JC
AM Peak

Queue	Time Start	Time End	Duration	# of Cars in LT Queue	Courtesy	Notes
1	7:31:09	7:31:12	0:00:03	0		
2	7:36:06	7:36:16	0:00:10	0		
3	7:37:40	7:38:11	0:00:31	0		
4	7:41:08	7:41:12	0:00:04	1		
5	7:41:11	7:41:14	0:00:03	0		
6	7:43:12	7:43:20	0:00:08	0		
7	7:44:36	7:44:48	0:00:12	0		
8	7:45:26	7:45:29	0:00:03	0		
9	7:46:01	7:46:03	0:00:02	0		
10	7:46:47	7:46:51	0:00:04	0		
11	7:49:34	7:49:50	0:00:16	1		
12	7:49:45	7:50:05	0:00:20	1		
13	7:49:56	7:50:08	0:00:12	0		
14	7:50:47	7:51:01	0:00:14	0		
15	7:53:01	7:53:04	0:00:03	0		
16	7:53:08	7:53:14	0:00:06	0		
17	7:54:38	7:54:42	0:00:04	3		
18	7:54:44	7:54:50	0:00:06	2		
19	7:54:54	7:54:58	0:00:04	1		
20	7:55:00	7:55:06	0:00:06	0		
21	7:56:59	7:57:39	0:00:40	0		
22	7:59:57	8:00:03	0:00:06	0		
23	8:01:09	8:01:13	0:00:04	0		
24	8:02:35	8:02:48	0:00:13	0		
25	8:04:55	8:04:58	0:00:03	0		
26	8:05:20	8:05:24	0:00:04	0		
27	8:06:59	8:07:03	0:00:04	0		
28	8:07:18	8:07:20	0:00:02	0		
29	8:08:19	8:08:37	0:00:18	1		
30	8:08:39	8:08:44	0:00:05	0		
31	8:08:55	8:09:04	0:00:09	0		
32	8:09:03	8:09:11	0:00:08	0		
33	8:10:23	8:10:27	0:00:04	0		
34	8:11:26	8:11:33	0:00:07	0		
35	8:11:43	8:11:48	0:00:05	0		
36	8:17:10	8:17:13	0:00:03	0		
37	8:18:16	8:18:20	0:00:04	0		
38	8:19:14	8:19:19	0:00:05	0		
39	8:20:33	8:20:38	0:00:05	0		
40	8:20:55	8:21:07	0:00:12	0		
41	8:22:01	8:22:16	0:00:15	1		

42	8:22:10	8:22:19	0:00:09	0	
43	8:23:17	8:23:21	0:00:04	0	
44	8:30:33	8:30:44	0:00:11	1	
45	8:30:56	8:30:59	0:00:03	0	
46	8:31:04	8:31:13	0:00:09	0	
47	8:33:57	8:34:01	0:00:04	0	
48	8:35:36	8:35:40	0:00:04	0	
49	8:37:08	8:37:17	0:00:09	1	
50	8:37:15	8:37:20	0:00:05	0	
51	8:37:37	8:37:46	0:00:09	0	
52	8:39:00	8:39:07	0:00:07	1	
53	8:39:07	8:39:11	0:00:04	0	
54	8:39:15	8:39:21	0:00:06	1	
55	8:39:16	8:39:23	0:00:07	0	
56	8:39:34	8:39:38	0:00:04	0	
57	8:39:45	8:39:48	0:00:03	1	
58	8:39:48	8:39:51	0:00:03	0	
59	8:40:44	8:40:53	0:00:09	0	
60	8:40:59	8:41:02	0:00:03	0	
61	8:42:01	8:42:04	0:00:03	0	
62	8:42:09	8:42:27	0:00:18	1	
63	8:42:17	8:42:30	0:00:13	0	
64	8:43:04	8:43:13	0:00:09	0	
65	8:43:56	8:44:07	0:00:11	1	
66	8:44:01	8:44:10	0:00:09	0	
67	8:45:40	8:45:42	0:00:02	0	
68	8:46:00	8:46:07	0:00:07	0	
69	8:46:25	8:46:33	0:00:08	0	
70	8:51:02	8:51:07	0:00:05	1	
71	8:51:05	8:51:09	0:00:04	0	
72	8:51:51	8:51:58	0:00:07	0	
73	8:52:31	8:52:35	0:00:04	0	
74	8:54:10	8:54:28	0:00:18	1	
75	8:54:34	8:54:37	0:00:03	0	
76	8:54:44	8:54:55	0:00:11	1	
77	8:54:45	8:54:57	0:00:12	0	
78	8:55:54	8:56:03	0:00:09	2	
79	8:55:59	8:56:21	0:00:22	1	
80	8:56:00	8:56:25	0:00:25	0	
81	9:01:30	9:01:38	0:00:08	0	
82	9:01:45	9:01:49	0:00:04	0	
83	9:02:44	9:03:06	0:00:22	3	
84	9:03:02	9:03:09	0:00:07	2	
85	9:03:09	9:03:12	0:00:03	1	
86	9:03:09	9:03:13	0:00:04	0	
87	9:04:27	9:04:32	0:00:05	1	
88	9:04:32	9:04:36	0:00:04	0	

89	9:06:15	9:06:22	0:00:07	0	
90	9:06:27	9:06:37	0:00:10	0	
91	9:07:54	9:07:57	0:00:03	1	
92	9:07:58	9:08:00	0:00:02	0	
93	9:08:13	9:08:16	0:00:03	0	
94	9:09:35	9:09:39	0:00:04	1	
95	9:09:41	9:09:45	0:00:04	0	
96	9:14:39	9:14:43	0:00:04	0	
97	9:16:23	9:16:31	0:00:08	0	
98	9:18:06	9:18:15	0:00:09	2	
99	9:18:13	9:18:25	0:00:12	1	
100	9:18:25	9:18:29	0:00:04	0	
101	9:21:21	9:21:25	0:00:04	0	
102	9:21:38	9:21:42	0:00:04	0	
103	9:21:45	9:21:50	0:00:05	0	
104	9:26:28	9:26:31	0:00:03	1	
105	9:26:30	9:26:35	0:00:05	0	
106	9:26:38	9:26:41	0:00:03	0	
107	9:29:58	9:30:02	0:00:04	0	

PM Peak

Queue	Time Start	Time End	Duration	# of Cars in LT Queue	SB Courtesy
1	4:30:48	4:31:04	0:00:16	0	
2	4:32:23	4:32:42	0:00:19	0	
3	4:37:39	4:37:43	0:00:04	4	
4	4:37:43	4:37:55	0:00:12	3	
5	4:37:53	4:37:58	0:00:05	2	
6	4:37:59	4:38:04	0:00:05	1	
7	4:38:02	4:38:05	0:00:03	0	
8	4:44:38	4:44:43	0:00:05	1	
9	4:44:43	4:44:47	0:00:04	0	
10	4:45:00	4:45:03	0:00:03	0	
11	4:46:11	4:46:19	0:00:08	0	
12	4:46:41	4:46:55	0:00:14	0	
13	4:49:33	4:49:37	0:00:04	0	
14	4:51:13	4:51:36	0:00:23	2	
15	4:51:14	4:51:38	0:00:24	1	
16	4:51:42	4:51:58	0:00:16	0	
17	4:53:00	4:53:07	0:00:07	0	
18	4:54:36	4:55:07	0:00:31	0	
19	4:56:38	4:56:41	0:00:03	0	
20	5:01:26	5:01:31	0:00:05	0	
21	5:01:51	5:01:54	0:00:03	0	
22	5:03:21	5:03:49	0:00:28	0	
23	5:06:12	5:06:19	0:00:07	0	
24	5:08:15	5:08:24	0:00:09	0	

25	5:08:29	5:08:34	0:00:05	0	
26	5:12:01	5:12:08	0:00:07	0	
27	5:13:22	5:13:35	0:00:13	2	
28	5:13:35	5:13:40	0:00:05	1	
29	5:13:45	5:13:50	0:00:05	0	
30	5:14:50	5:14:54	0:00:04	0	
31	5:17:02	5:17:06	0:00:04	0	
32	5:17:21	5:17:26	0:00:05	0	
33	5:17:28	5:17:31	0:00:03	1	
34	5:17:29	5:17:36	0:00:07	0	
35	5:18:05	5:18:10	0:00:05	0	
36	5:18:28	5:18:33	0:00:05	0	
37	5:18:59	5:19:04	0:00:05	0	
38	5:20:12	5:20:19	0:00:07	1	
39	5:20:17	5:20:28	0:00:11	0	
40	5:22:28	5:22:34	0:00:06	0	
41	5:23:34	5:23:40	0:00:06	3	
42	5:23:39	5:23:47	0:00:08	2	
43	5:23:50	5:24:01	0:00:11	1	
44	5:24:01	5:24:05	0:00:04	0	
45	5:24:10	5:24:20	0:00:10	0	
46	5:26:56	5:27:18	0:00:22	4	
47	5:26:57	5:27:24	0:00:27	3	
48	5:26:58	5:27:27	0:00:29	2	
49	5:27:27	5:27:47	0:00:20	1	
50	5:27:40	5:27:52	0:00:12	0	
51	5:28:04	5:28:13	0:00:09	1	
52	5:28:07	5:28:26	0:00:19	0	
53	5:29:26	5:29:43	0:00:17	0	
54	5:30:11	5:30:36	0:00:25	2	
55	5:30:12	5:30:39	0:00:27	1	
56	5:30:35	5:30:42	0:00:07	0	
57	5:34:05	5:34:16	0:00:11	1	
58	5:34:19	5:34:23	0:00:04	0	
59	5:34:50	5:34:58	0:00:08	1	
60	5:34:52	5:35:01	0:00:09	0	
61	5:37:15	5:37:24	0:00:09	0	
62	5:39:12	5:39:17	0:00:05	0	
63	5:40:55	5:41:04	0:00:09	0	
64	5:42:15	5:42:33	0:00:18	0	
65	5:46:47	5:46:54	0:00:07	1	
66	5:46:55	5:47:04	0:00:09	0	
67	5:47:25	5:47:42	0:00:17	0	
68	5:48:09	5:48:40	0:00:31	0	
69	5:50:31	5:50:34	0:00:03	0	
70	5:51:06	5:51:10	0:00:04	0	
71	5:51:14	5:51:17	0:00:03	1	

72	5:51:17	5:51:24	0:00:07	0	
73	5:52:26	5:52:34	0:00:08	2	
74	5:52:35	5:52:39	0:00:04	1	
75	5:52:38	5:52:42	0:00:04	0	
76	5:54:10	5:54:38	0:00:28	0	
77	5:55:48	5:56:05	0:00:17	0	
78	5:56:19	5:56:22	0:00:03	1	
79	5:56:22	5:56:26	0:00:04	0	
80	5:56:38	5:56:43	0:00:05	0	
81	5:57:29	5:57:32	0:00:03	0	
82	5:58:05	5:58:09	0:00:04	0	
83	5:58:37	5:58:47	0:00:10	1	
84	5:58:44	5:58:55	0:00:11	0	
85	5:59:42	5:59:50	0:00:08	0	
86	6:01:17	6:01:21	0:00:04	1	
87	6:01:23	6:01:27	0:00:04	0	
88	6:02:40	6:02:57	0:00:17	4	
89	6:02:41	6:03:00	0:00:19	3	
90	6:02:59	6:03:03	0:00:04	2	
91	6:03:00	6:03:08	0:00:08	1	
92	6:03:03	6:03:10	0:00:07	0	
93	6:03:20	6:03:25	0:00:05	2	
94	6:03:21	6:03:27	0:00:06	1	
95	6:03:26	6:03:31	0:00:05	0	
96	6:04:00	6:04:03	0:00:03	0	
97	6:04:37	6:04:44	0:00:07	0	
98	6:04:46	6:04:49	0:00:03	0	
99	6:05:06	6:05:11	0:00:05	0	
100	6:06:07	6:06:21	0:00:14	2	
101	6:06:08	6:06:25	0:00:17	1	
102	6:06:18	6:06:31	0:00:13	0	
103	6:07:38	6:07:54	0:00:16	0	
104	6:08:07	6:08:12	0:00:05	0	
105	6:08:35	6:08:40	0:00:05	0	
106	6:11:57	6:12:06	0:00:09	1	
107	6:11:58	6:12:08	0:00:10	0	
108	6:14:22	6:14:26	0:00:04	0	
109	6:15:36	6:15:47	0:00:11	0	
110	6:16:24	6:16:32	0:00:08	1	
111	6:16:31	6:16:37	0:00:06	0	
112	6:17:00	6:17:10	0:00:10	0	
113	6:19:52	6:19:59	0:00:07	0	
114	6:20:07	6:20:15	0:00:08	0	
115	6:21:01	6:21:04	0:00:03	0	
116	6:22:57	6:23:10	0:00:13	0	
117	6:25:06	6:25:15	0:00:09	0	
118	6:25:56	6:26:04	0:00:08	0	

119	6:27:51	6:27:55	0:00:04	0	
120	6:28:08	6:28:34	0:00:26	0	
121	6:29:31	6:29:37	0:00:06	1	
122	6:29:45	6:29:53	0:00:08	0	
123			0:00:00	0	
124			0:00:00	0	
125			0:00:00	0	

PROJECT #: 23322.000

DATE OF SURVEY: Tuesday, Feb 07, 2023
QUEUE ANALYSIS: Eastbound - Queen St & Jameson Ave

		ONSET RED in meters					ONSET GREEN in meters							
LANE		1	2	3	4	5	1	2	3	4	5	FOR CHART	MAX Q FOR ALL	
REAL TIME		Thru	Thru				Thru	Thru				REAL TIME	ONSET RED	ONSET GREEN
1	7:00											7:00		0
	7:01											7:01	0	
	7:02											7:02		0
	7:03											7:03	0	
	7:04											7:04		0
	7:05											7:05	0	
	7:06											7:06		0
	7:07											7:07	0	
	7:08											7:08		0
	7:09											7:09	0	
	7:10											7:10		0
	7:11											7:11	0	
	7:12											7:12		0
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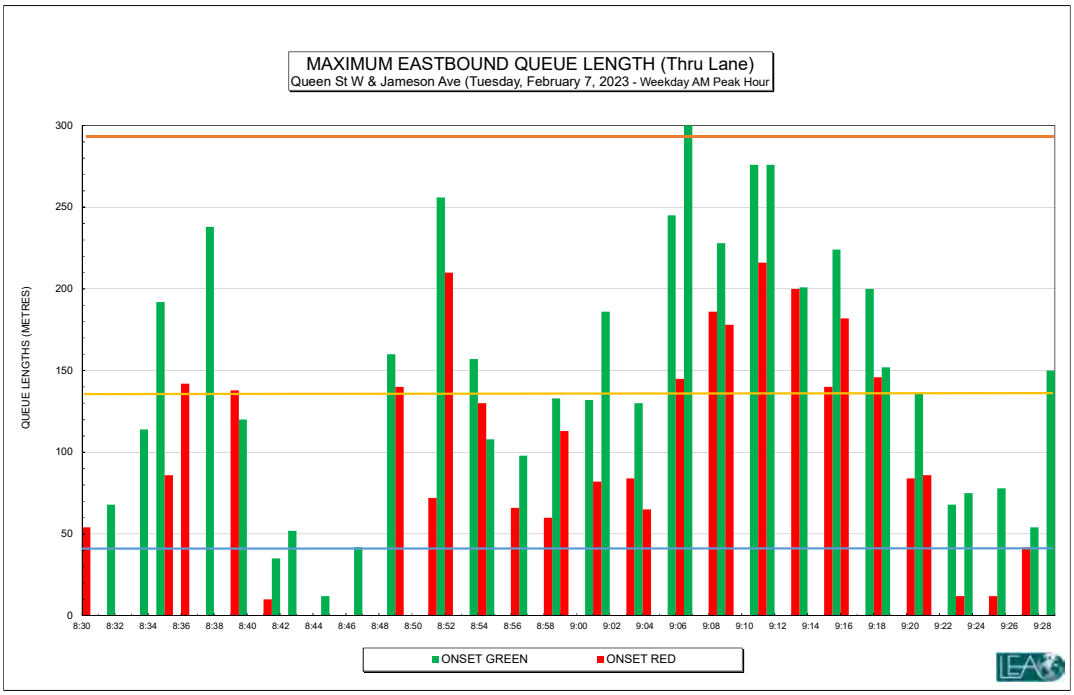
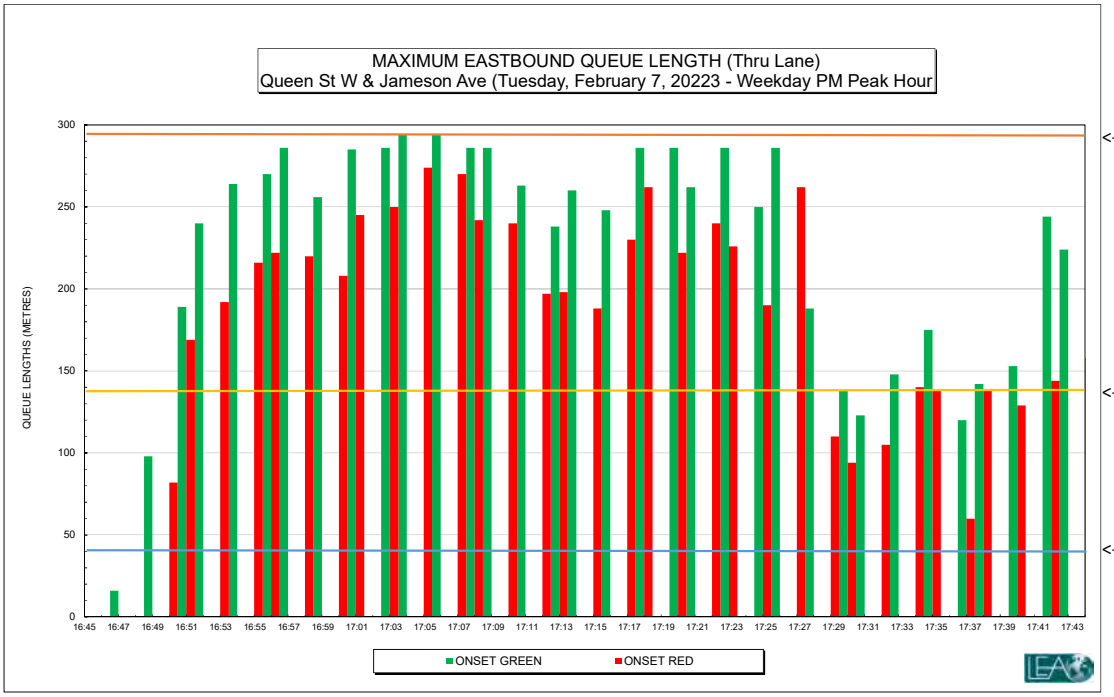
*Advance left signal was activated



<-- Sorauren Avenue

<-- Fuller Avenue

<-- Site Access Driveway



<-- Sorauren Avenue

<-- Fuller Avenue

<-- Site Access Driveway

APPENDIX D

Corridor Growth Calculations

	AM Peak Hour					PM Peak Hour				
	NB	SB	EB	WB	Overall	NB	SB	EB	WB	Overall
Lansdowne/Jameson Ave & Queen St W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%	0.00%
Sorauren Ave & Queen St W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%	0.00%

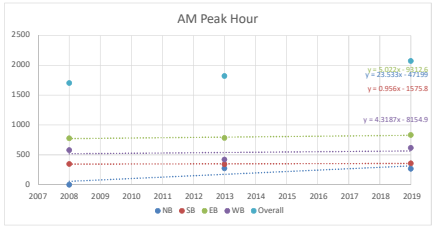
Assumptions and Reasonings:
-Only EB PM shows notable growth consistently at both locations. Remaining show either nearby zero or negative growth.
-For EB PM, apply 3% compound annual growth rate. Make sure to balance through corridor.
-Note that surrounding background development reports mostly assumed no growth for the study corridors, which aligns with the findings of our historical counts.

Lansdowne/Jameson Ave & Queen St W

Intersection	Index	Movement	City of Toronto (Wed, Sept. 17, 2008)					City of Toronto (Wed, May 15, 2013)					City of Toronto (Tues, Feb. 26, 2019)				
			AM Peak	PM Peak	Sat Peak	AM Corridor	PM Corridor	AM Peak	PM Peak	Sat Peak	AM Corridor	PM Corridor	AM Peak	PM Peak	Sat Peak	AM Corridor	PM Corridor
	1	NBL	0	0		0	0	72	71		273	208	42	74		268	325
	2	NBT	0	0				143	81				0	0			
	3	NBR	0	0				58	56				226	251			
	4	SBL	164	122		347	271	111	94		343	284	132	105		357	284
Lansdowne / Jameson Ave & Queen St W	5	SBT	0	0				99	87				0	0			
	6	SBR	183	149				133	103				225	179			
	7	EBL	123	100		779	426	151	244		783	692	217	227		833	660
	8	EBT	656	326				547	328				554	368			
	9	EBR	0	0				85	120				62	65			
	10	WBL	0	0		580	847	111	133		423	582	228	156		617	802
	11	WBT	452	722				230	365				283	553			
	12	WBR	128	125				82	84				106	93			

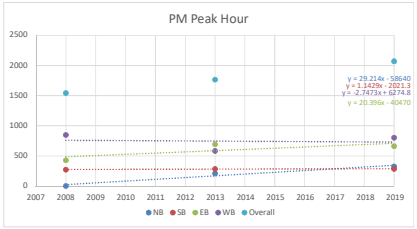
AM

	Lansdowne / Jameson Ave		Queen St W		
Year	NB	SB	EB	WB	Overall
2008	0	347	779	580	1706
2013	273	343	783	423	1822
2019	268	357	833	617	2075
Calculated Growth Rates:	8.78%	0.27%	0.60%	0.70%	1.63%
Applied Growth Rates:	0.0%	0.0%	0.0%	0.0%	



PM

	Lansdowne / Jameson Ave		Queen St W		
Year	NB	SB	EB	WB	Overall
2008	0	271	426	847	1544
2013	208	284	692	582	1766
2019	325	284	660	802	2071
Calculated Growth Rates:	8.99%	0.40%	3.09%	-0.34%	2.32%
Applied Growth Rates:	0.0%	0.0%	3.0%	0.0%	



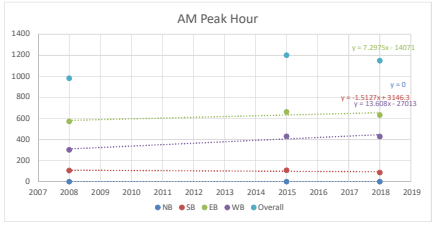
Sorauren Ave & Queen St W

Leave out summer count

Intersection	Index	Movement	City of Toronto (Wed, Aug 6, 2008)					City of Toronto (Tues, June 9, 2015)					City of Toronto (Wed, Nov 14, 2018)				
			AM Peak	PM Peak	Sat Peak	AM Corridor	PM Corridor	AM Peak	PM Peak	Sat Peak	AM Corridor	PM Corridor	AM Peak	PM Peak	Sat Peak	AM Corridor	PM Corridor
	1	NBL	0	0		0	0	0	0		0	0	0	0		0	0
	2	NBT	0	0				0	0				0	0			
	3	NBR	0	0				0	0				0	0			
	4	SBL	55	32		106	76	49	91		108	165	42	50		87	90
Sorauren Ave & Queen St W	5	SBT	9	6				10	4				0	0			
	6	SBR	42	38				49	70				45	40			
	7	EBL	28	70		573	396	8	20		663	430	53	108		634	585
	8	EBT	542	318				559	386				581	477			
	9	EBR	3	8				96	24				0	0			
	10	WBL	12	11		303	677	6	6		431	745	0	0		429	609
	11	WBT	256	562				341	673				368	520			
	12	WBR	35	104				84	66				61	89			

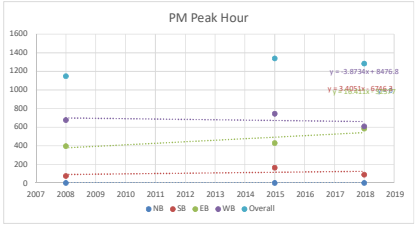
AM

	Sorauren Ave		Queen St W		
Year	NB	SB	EB	WB	Overall
2008	0	106	573	303	982
2015	0	108	663	431	1202
2018	0	87	634	429	1150
Calculated Growth Rates:		-8.05%	-1.52%	-0.16%	-1.51%
Applied Growth Rates:	0.0%	0.0%	0.0%	0.0%	



PM

	Sorauren Ave		Queen St W		
Year	NB	SB	EB	WB	Overall
2008	0	76	396	677	1149
2015	0	165	430	745	1340
2018	0	90	585	609	1284
Calculated Growth Rates:		-27.78%	8.83%	-7.44%	-1.45%
Applied Growth Rates:	0.0%	0.0%	3.0%	0.0%	



APPENDIX E

Background Developments

9.0 TRAVEL DEMAND FORECAST

9.1 MULTI-MODAL TRIP GENERATION

BA Group had forecast multi-modal travel demand based on a "first principles" approach that derives travel demand from the expected occupancy of the development from a person trip making perspective. The 2016 TTS was used to establish the expected number of people to live in the proposed development after buildout and to derive a peak hour factor for trip making by these new residents over the peak period, assuming all residents will make at least one trip. Directional and mode split are then applied to the resultant peak hour person trips to forecast travel demand for each mode.

Multi-modal trip generation for the proposed development is summarized in **Table 15**. TTS queries for trip generation assumptions and the detailed calculations are provided in **Appendix B** and **G,** respectively**.**

TABLE 15 TRIP GENERATION BY FIRST PRINCIPLES

	Weekday Peak Hour Travel Characteristics					
Proposed Residential Units	**78 units**[1]					
Building Occupancy (Person)	Assume 100% of units occupied at any given time @ Unit occupancy of 1.72 people / unit[2] **134 people**					
Peak Travel Demand	Assume all residents make a trip sometime throughout the day: 34% of residents to travel during the AM peak hour[3] **46 person trips during the AM peak hour** 25% of residents to travel during the PM peak hour[3] **33 person trips during the PM peak hour**					
Inbound / Outbound Distribution[4]	Assume inbound / outbound person-based trip distribution is consistent with inbound / outbound vehicle trip distribution					
	Weekday Morning 26% inbound / 74% outbound			Weekday Afternoon 61% inbound / 39% outbound		
Person Trips	12	34	46	20	13	33
Effective Person Trip Rates	0.15	0.44	0.59	0.26	0.17	0.42
Multi-Modal Trips[5]						
Transit Driver Passenger Walk Cycle	6 0 1 4 1	17 0 0 13 4	23 0 1 17 5	10 0 1 7 2	7 0 0 5 1	17 0 1 12 3

Notes:
1. Based on site statistics provided by Core Architects Inc., dated November 6, 2019
2. Based on average household occupancy for mid/high rise in the Sorauren Avenue / Queen Street West area from 2016 TTS
3. Based on peak hour travel patterns of home-based trips by residents in the Sorauren Avenue / Queen Street West area from 2016 TTS, assuming all residents make at least one trips throughout the day
4. Based on directional splits for vehicle trips provided in the ITE Trip Generation Manual 10th Edition LUC 221.
5. Based on application of mode splits presented in **Table 6**.

Based on the foregoing, the proposed development will generate in the order of 45 and 35 two-way person trips during the weekday morning and afternoon peak hours, respectively. Vehicle based trips are negligible as expected from the provision of zero parking.

Trip making will be made primary via transit and walking. The proposed development will generate in the order of 23 and 17 two-way transit trips in addition to 17 and 12 two-way walking trips during the weekday morning and afternoon peak hours, respectively. This level of traffic activity is low, particularly for the walking and cycling modes, and will not noticeably change the operating conditions of the area active transportation network with respect to existing conditions.

FIGURE H3-A: SITE TRAFFIC (PUDO) AM

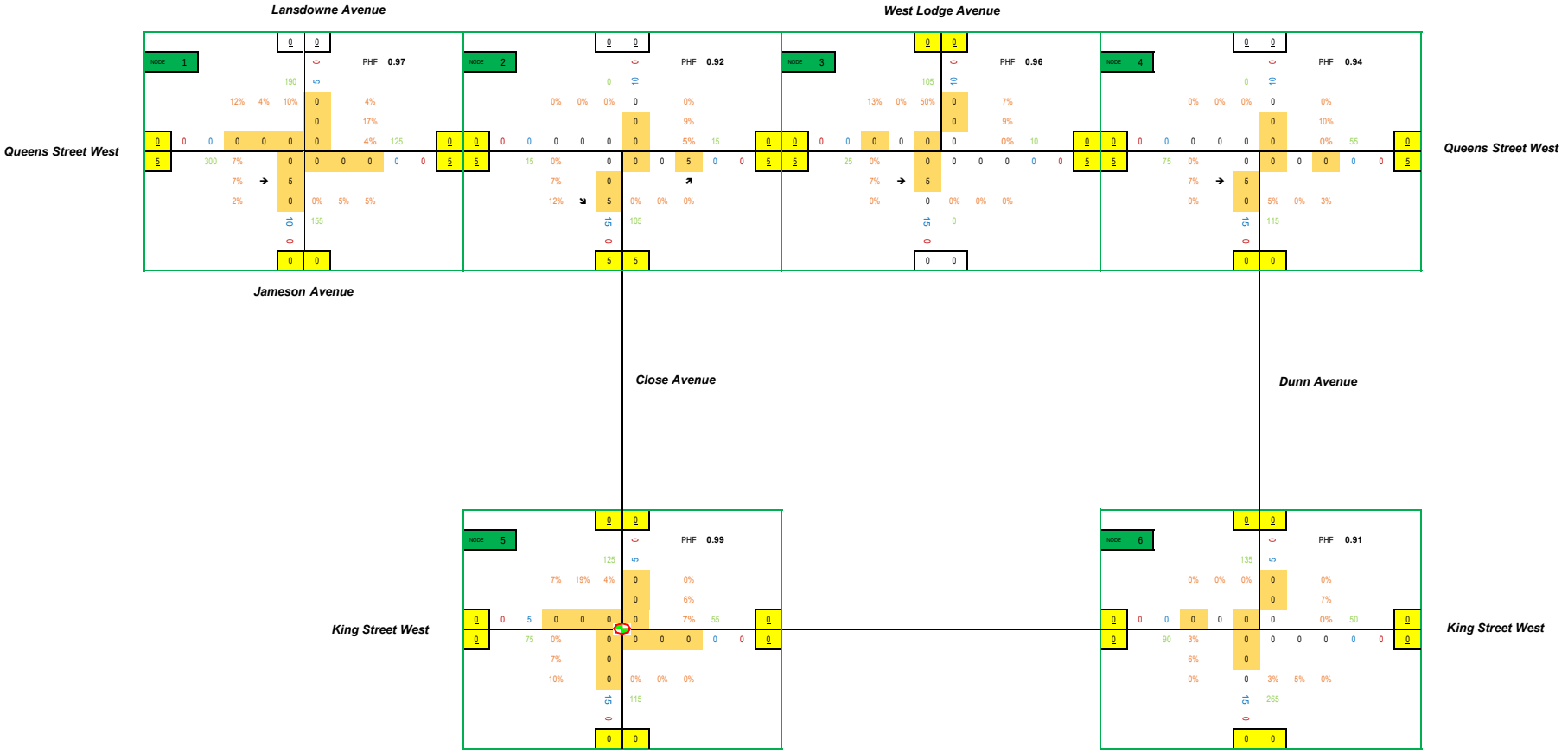
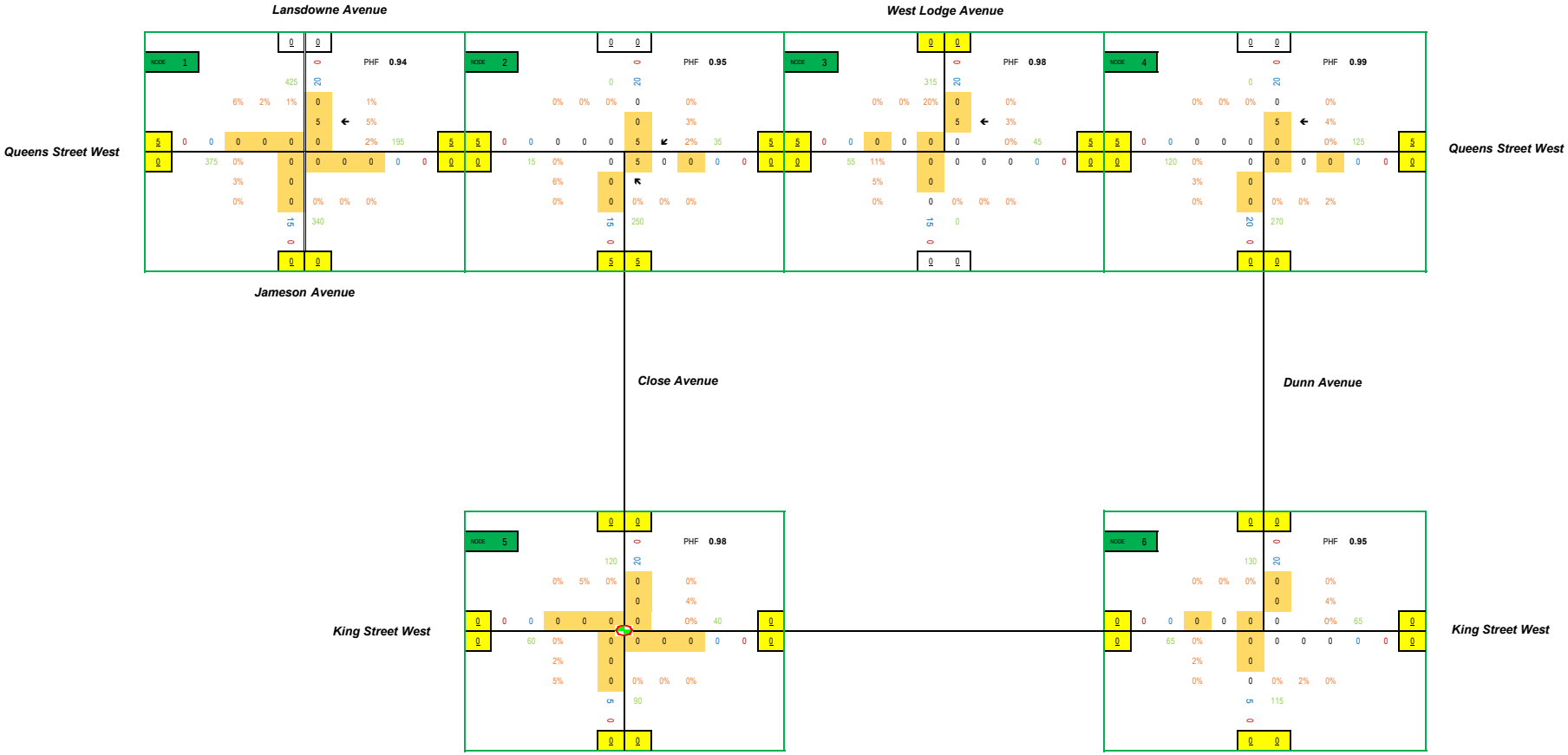


FIGURE H3-B: SITE TRAFFIC (PUDO) PM



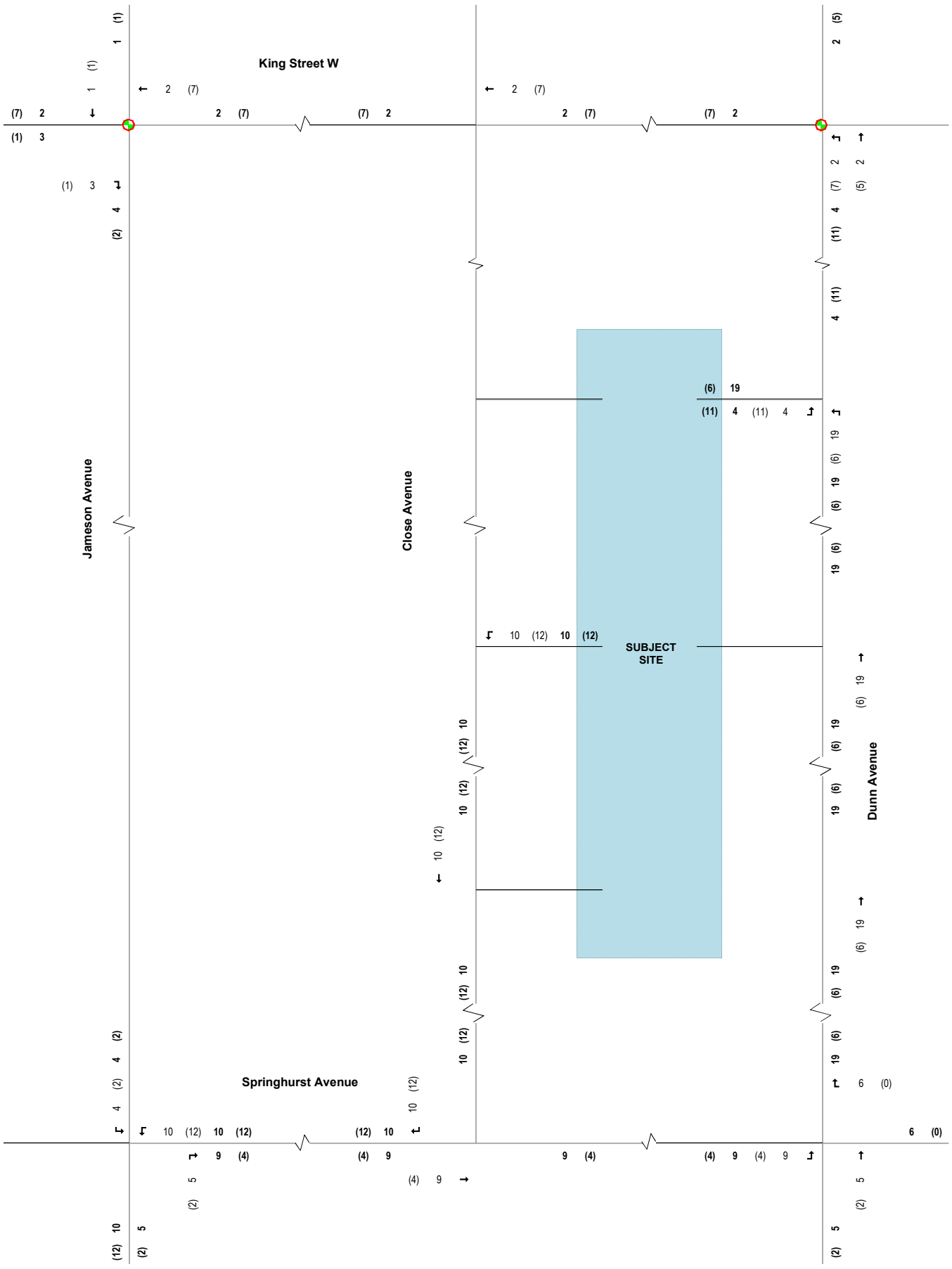


FIGURE 5-1
NEW SITE TRAFFIC

LEA Consulting Ltd.

NOT TO SCALE

LEGEND

X Weekday AM Peak Hour Volumes
(X) Weekday PM Peak Hour Volumes

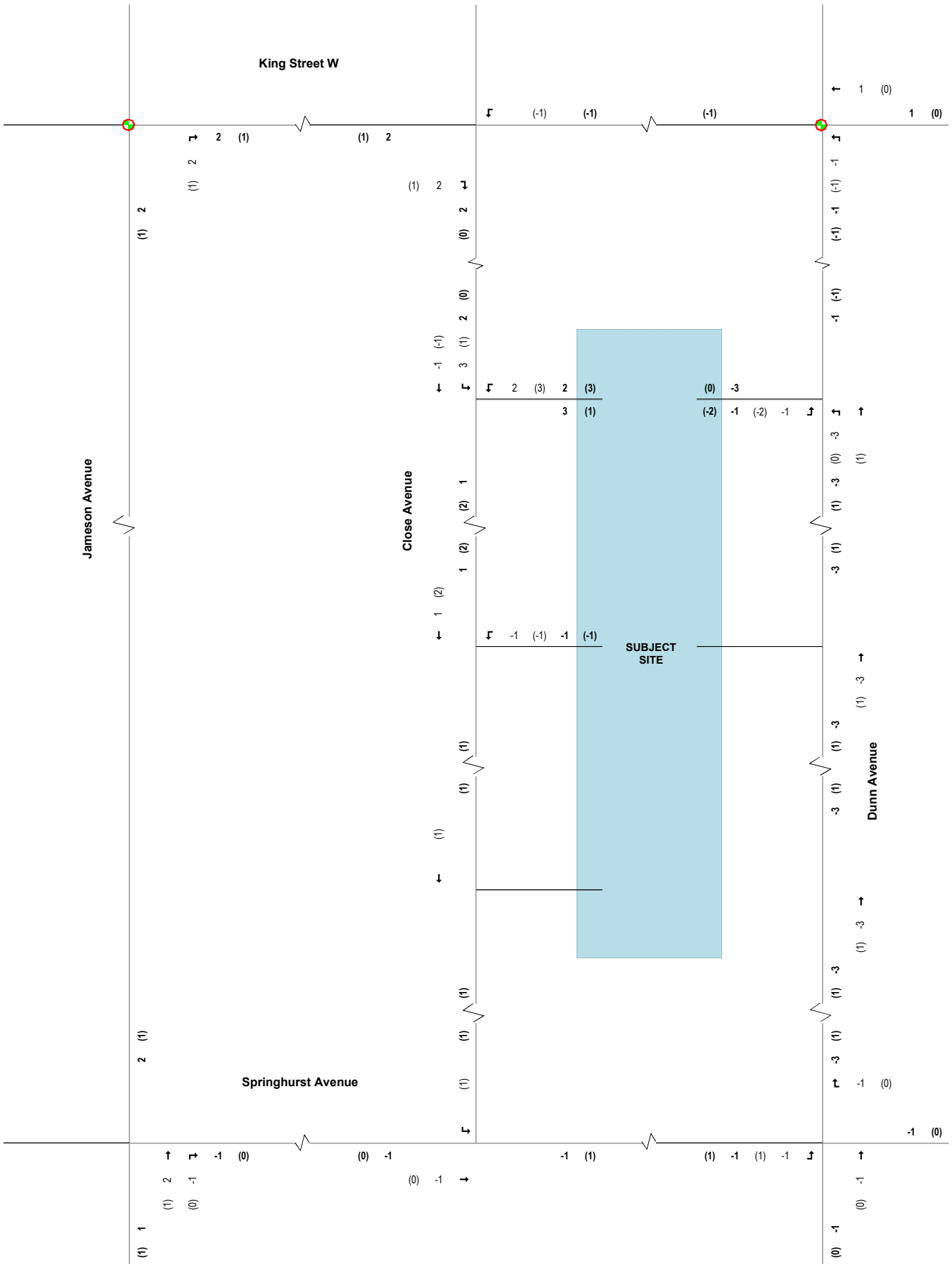


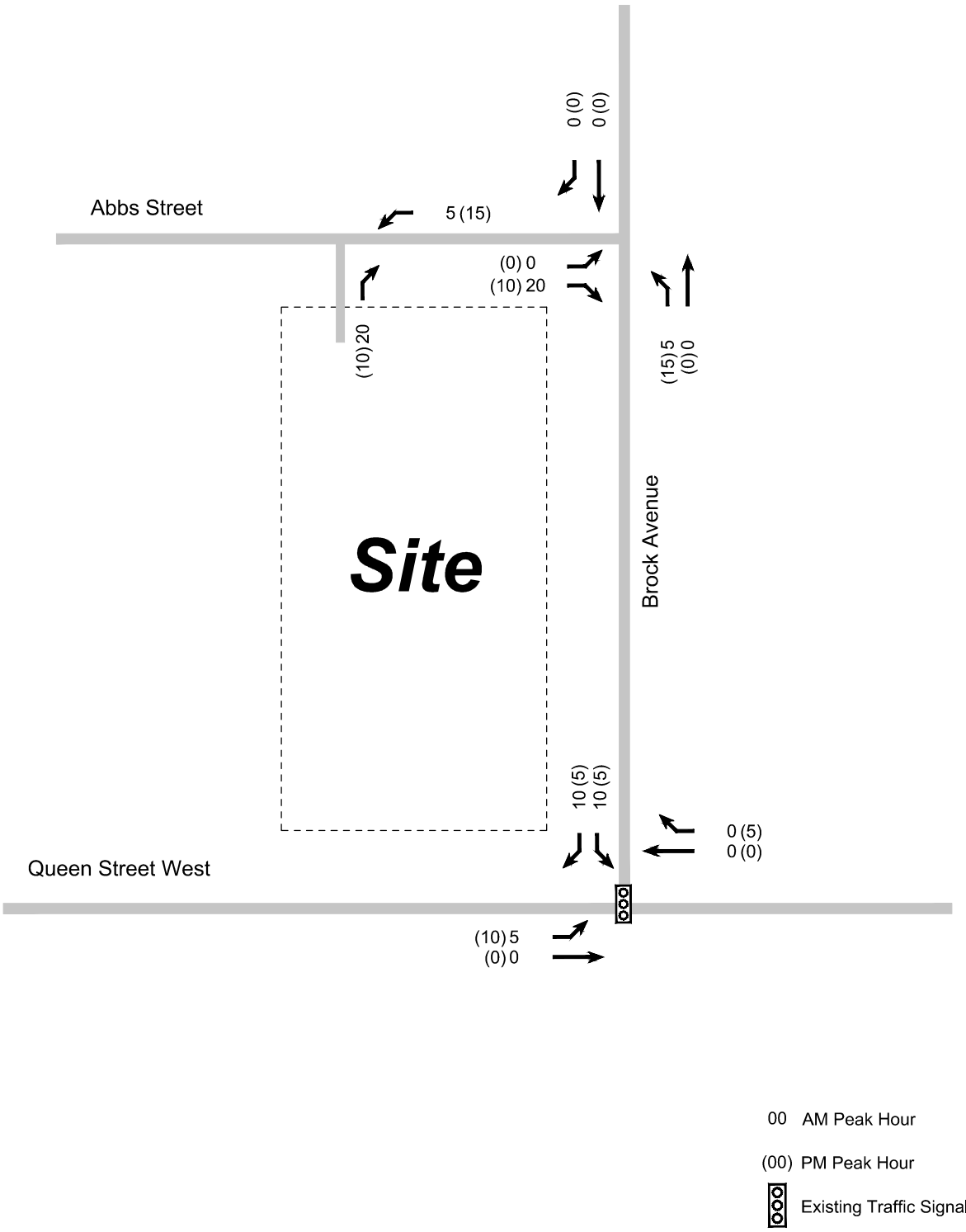
FIGURE 5-2
EXISTING SITE TRAFFIC REASSIGN

LEA Consulting Ltd.

NOT TO SCALE

LEGEND

X Weekday AM Peak Hour Volumes
(X) Weekday PM Peak Hour Volumes



Date Plotted: September 8, 2020 Filename: Fig13-ST Sep 2020

FIGURE 13 SITE TRAFFIC VOLUMES

APPENDIX F

Detailed TTS Calculations

TAZ Used: 89, 109, 110, 113
Thu Mar 02 2023 16:04:28 GMT-0500 (Eastern Standard Time) - Run Time: 2604ms

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 89, 109, 110, 113
and
Trip purpose - trip_purp In 1,)

Trip 2016
Table:

* * * * * Leave Out * * *

	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Joint GO rail and local transit	Motorcycle	Other	Auto passenger	Taxi passenger	Paid rideshare	Walk	Sum
House	1522	987	1695	9	0	24	0	180	59	0	580	5056
Apartment	12549	2409	7779	226	28	94	93	725	181	602	4083	28676
Townhouse	482	76	599	4	0	0	0	32	0	0	53	1246

Mode Split - Residential Trips	
Mode	**Residential**
Auto Driver	27%
Auto Passenger	5%
Transit	45%
Walk	14%
Cycle	8%
Total	**100%**

Wed Feb 01 2023 16:52:30 GMT-0500 (Eastern Standard Time) - Run Time: 2688ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone of destination - gta06_dest In 89, 109, 110, 113
and
Start time of trip - start_time In 1630-1830
and
Trip purpose of destination - purp_dest In H
and
Primary travel mode of trip - mode_prime In D, M)

Trip 2016
Table:

Origin	Destination				Total From Origin	Trip Distribution		Trip Assignment				
	89	109	110	113		%	Direction From	From North	From South	From East	From West	Predicted Route
PD 1 of Toronto	356	58	104	90	608	21%	E			21%		Queen St W WB
89	0	0	12	0	12	0%	E			0%		Jameson Ave NB
93	0	0	31	0	31	1%	NE	1%				Queen St W WB
							NE			1%		Queen St W WB
94	0	7	0	0	7	0%	NE	0%				Queen St W WB
95	0	0	7	0	7	0%	NE	0%				Queen St W WB
96	0	4	0	0	4	0%	E			0%		Queen St W WB
97	0	6	0	0	6	0%	E			0%		Queen St W WB
99	20	0	0	0	20	1%	N	1%				Queen St W WB
100	0	0	0	10	10	0%	NE			0%		Queen St W WB
101	24	8	37	0	69	2%	N	2%				Queen St W WB
106	0	7	0	0	7	0%	N	0%				Lansdowne Ave SB
108	0	7	0	0	7	0%	E	0%				Lansdowne Ave SB
109	0	17	0	0	17	1%	S		1%			Jameson Ave NB
110	0	0	6	0	6	0%	N	0%				Lansdowne Ave SB
113	0	0	0	10	10	0%	S		0%			Queen St W EB
114	0	6	0	15	21	1%	N	1%				Queen St W EB
120	0	30	0	0	30	1%	W				1%	Queen St W EB
122	0	0	0	16	16	1%	W				1%	Queen St W EB
123	11	0	0	0	11	0%	NW	0%				Queen St W WB
PD 3 of Toronto	62	0	37	0	99	3%	N	3%				Lansdowne Ave SB
PD 4 of Toronto	115	25	10	0	150	5%	NE	3%				Queen St W WB
							NE			3%		Queen St W WB
PD 5 of Toronto	48	0	44	0	92	3%	NE	2%				Queen St W WB
							NE			2%		Jameson Ave NB
PD 6 of Toronto	40	0	0	0	40	1%	E			1%		Queen St W WB
PD 7 of Toronto	41	22	23	0	86	3%	W				3%	Queen St W EB
PD 8 of Toronto	159	19	57	64	299	10%	W				8%	Queen St W EB
							W	2%				Queen St W EB
PD 9 of Toronto	27	7	0	0	34	1%	NW	1%				Queen St W WB
							NW				0%	Queen St W EB
PD 10 of Toronto	78	7	37	0	122	4%	N	2%				Queen St W WB
							N				2%	Queen St W EB
PD 11 of Toronto	0	0	23	0	23	1%	N	0%				Queen St W WB
							N			0%		Queen St W WB
PD 16 of Toronto	22	0	0	0	22	1%	NE	0%				Queen St W WB
							NE			0%		Jameson Ave NB
Whitby	27	0	0	0	27	1%	E			1%		Jameson Ave NB
Georgina	0	0	21	0	21	1%	N			1%		Jameson Ave NB
Richmond Hill	20	0	0	12	32	1%	N			1%		Jameson Ave NB
Markham	110	0	6	66	182	6%	N			6%		Jameson Ave NB
Vaughan	41	0	0	57	98	3%	N	3%				Lansdowne Ave SB
Caledon	20	0	0	0	20	1%	NW				1%	Jameson Ave NB
Brampton	62	0	109	8	179	6%	NW				6%	Jameson Ave NB
Mississauga	183	6	117	16	322	11%	W				11%	Jameson Ave NB
Halton Hills	27	0	0	0	27	1%	W				1%	Jameson Ave NB
Oakville	19	33	0	7	59	2%	W				2%	Jameson Ave NB
Burlington	24	0	0	4	28	1%	W				1%	Jameson Ave NB
Ancaster	20	0	0	0	20	1%	W				1%	Jameson Ave NB
Hamilton	0	0	6	0	6	0%	W				0%	Jameson Ave NB
Kitchener	31	0	0	0	31	1%	W				1%	Jameson Ave NB
				C	*2918*	*100%*		*22%*	*1%*	*38%*	*39%*	SUM: 100%

Res Out Detailed Summary		
Direction From	Predicted Route	%
N	Lansdowne Ave SB	7%
	Queen St W EB	3%
	Queen St W WB	6%
	Jameson Ave NB	8%
NE	Queen St W WB	9%
	Jameson Ave NB	2%
NW	Queen St W EB	0%
	Queen St W WB	1%
	Jameson Ave NB	7%
S	Queen St W EB	0%
	Jameson Ave NB	1%
E	Lansdowne Ave SB	0%
	Queen St W WB	23%
	Jameson Ave NB	1%
W	Queen St W EB	15%
	Jameson Ave NB	17%
Total		**100%**

Res In Summary	
Direction From	%
N	24%
NE	11%
NW	8%
S	1%
E	24%
W	32%
SUM	**100%**

Predicted Route Summary	
Lansdowne Ave SB	7%
Jameson Ave NB	36%
Queen St W EB	18%
Queen St W WB	39%
Total	100%

Row Labels	Sum of From North	Sum of From South	Sum of From East	Sum of From West
E	**0%**		**24%**	
Lansdowne Ave SE	0%			
Queen St W WB			23%	
Jameson Ave NB			1%	
N	**13%**		**8%**	**2%**
Lansdowne Ave SE	7%			
Queen St W EB	1%			2%
Queen St W WB	6%		0%	
Jameson Ave NB			8%	
NE	**5%**		**5%**	
Queen St W WB	5%		3%	
Jameson Ave NB			2%	
NW	**1%**			**7%**
Queen St W EB				0%
Queen St W WB	1%			
Jameson Ave NB				7%
S		**1%**		
Queen St W EB		0%		
Jameson Ave NB		1%		
W	**2%**			**30%**
Queen St W EB	2%			13%
Jameson Ave NB				17%
Grand Total	**22%**	**1%**	**38%**	**39%**

PD 2:
Thu Feb 02 2023 09:40:35 GMT-0500 (Eastern Standard Time) - Run Time: 2455ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone of destination - gta06_dest In 89, 109, 110, 113
and
Start time of trip - start_time In 1630-1830
and
Trip purpose of destination - purp_dest In H
and
Primary travel mode of trip - mode_prime In D, M
and
Planning district of origin - pd_orig In 2)

Trip 2016
Table:

	89	109	110	113
89	0	0	12	0
93	0	0	31	0
94	0	7	0	0
95	0	0	7	0
96	0	4	0	0
97	0	6	0	0
99	20	0	0	0
100	0	0	0	10
101	24	8	37	0
106	0	7	0	0
108	0	7	0	0
109	0	17	0	0
110	0	0	6	0
113	0	0	0	10
114	0	6	0	15
120	0	30	0	0
122	0	0	0	16
123	11	0	0	0

Wed Feb 01 2023 16:02:47 GMT-0500 (Eastern Standard Time) - Run Time: 2827ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone of origin - gta06_orig In 89, 109, 110, 113
and
Start time of trip - start_time In 730-930
and
Trip purpose of origin - purp_orig In H
and
Primary travel mode of trip - mode_prime In D, M)

Trip 2016
Table:

Destination	Origin				Total to Destination	Trip Distribution		Trip Assignment				
	89	109	110	113		%	Direction To	To North	To South	To East	To West	Predicted Route
PD 1 of Toronto	492	43	185	68	788	23%	E			23%		Queen St W EB
89	86	0	0	0	86	3%	E			3%		Queen St W EB
91	4	0	0	0	4	0%	E			0%		Queen St W EB
95	0	8	7	0	15	0%	NE	0%				Lansdowne Ave NB
97	0	6	0	0	6	0%	NE	0%				Lansdowne Ave NB
							NE			0%		Queen St W EB
98	0	15	0	0	15	0%	E			0%		Queen St W EB
101	0	0	66	0	66	2%	NE	2%				Queen St W EB
105	76	0	0	0	76	2%	N	2%				Queen St W EB
107	0	0	6	0	6	0%	N	0%				Lansdowne Ave NB
108	0	18	0	0	18	1%	N	1%				Lansdowne Ave NB
109	0	0	16	0	16	0%	NE	0%				Lansdowne Ave NB
110	0	8	249	0	257	8%	S		8%			Jameson Ave SB
113	0	10	27	7	44	1%	W				1%	Queen St W WB
114	0	0	12	31	43	1%	N	1%				Queen St W WB
115	27	0	0	12	39	1%	NW	0%				Queen St W WB
							NW				1%	King St W WB
116	0	0	0	12	12	0%	N	0%				Queen St W WB
122	0	0	0	16	16	0%	W				0%	Queen St W WB
124	0	0	0	10	10	0%	NW	0%				Queen St W WB
125	0	0	16	44	60	2%	NW	2%				Queen St W WB
PD 3 of Toronto	27	0	44	25	96	3%	N	3%				Queen St W EB
PD 4 of Toronto	38	106	12	17	173	5%	NE	5%				Queen St W EB
PD 5 of Toronto	27	22	44	21	114	3%	NE			3%		Jameson Ave SB
PD 6 of Toronto	51	0	0	0	51	2%	E			2%		Jameson Ave SB
PD 7 of Toronto	0	22	0	6	28	1%	W				1%	Jameson Ave SB
PD 8 of Toronto	95	0	57	33	185	6%	W				3%	Jameson Ave SB
							W	3%				Queen St W EB
PD 9 of Toronto	27	17	74	0	118	4%	NW	2%				Queen St W EB
							NW				2%	Jameson Ave SB
PD 10 of Toronto	41	7	37	0	85	3%	N	3%				Queen St W EB
PD 11 of Toronto	28	0	0	26	54	2%	N	2%				Queen St W EB
PD 12 of Toronto	17	0	84	0	101	3%	NE	2%				Queen St W EB
							NE			2%		Jameson Ave SB
PD 13 of Toronto	18	33	35	0	86	3%	E	1%				Queen St W EB
							E			1%		Jameson Ave SB
PD 16 of Toronto	22	0	0	0	22	1%	NE			1%		Jameson Ave SB
Ajax	18	0	0	0	18	1%	E			1%		Jameson Ave SB
Georgina	0	0	21	0	21	1%	N			1%		Jameson Ave SB
Richmond Hill	0	0	0	12	12	0%	N			0%		Jameson Ave SB
Markham	41	0	6	0	47	1%	N			1%		Jameson Ave SB
Vaughan	27	0	0	14	41	1%	N	1%				Queen St W WB
Brampton	41	0	49	15	105	3%	NW				3%	Jameson Ave SB
Mississauga	187	6	70	16	279	8%	W				8%	Jameson Ave SB
Milton	0	0	6	0	6	0%	W				0%	Jameson Ave SB
Oakville	19	0	0	0	19	1%	W				1%	Jameson Ave SB
Burlington	24	0	0	4	28	1%	W				1%	Jameson Ave SB
Hamilton	20	0	0	0	20	1%	W				1%	Jameson Ave SB
Niagara Falls	0	0	27	0	27	1%	W				1%	Jameson Ave SB
Waterloo	12	0	0	0	12	0%	W				0%	Jameson Ave SB
Kitchener	31	0	0	0	31	1%	W				1%	Jameson Ave SB
External	0	0	0	4	4	0%	N	0%				Jameson Ave SB
				C	*3360*	*100%*		*31%*	*8%*	*38%*	*24%*	SUM: 100%

Res Out Detailed Summary		
Direction To	Predicted Route	%
N	Lansdowne Ave NB	1%
	Queen St W EB	9%
	Queen St W WB	3%
	Jameson Ave SB	3%
NE	Lansdowne Ave NB	1%
	Queen St W EB	9%
	Jameson Ave SB	6%
NW	King St W WB	1%
	Queen St W EB	2%
	Queen St W WB	2%
	Jameson Ave SB	5%
S	Jameson Ave SB	8%
E	Queen St W EB	28%
	Jameson Ave SB	3%
W	Queen St W EB	3%
	Queen St W WB	2%
	Jameson Ave SB	16%
Total		100%

Res Out Summary	
Direction To	%
N	15%
NE	15%
NW	10%
S	8%
E	31%
W	21%
SUM	100%

Predicted Route Summary	
Lansdowne Ave NB	2%
Jameson Ave SB	40%
Queen St W EB	50%
Queen St W WB	8%
Total	100%

PD 2:
Thu Feb 02 2023 09:35:32 GMT-0500 (Eastern Standard Time) - Run Time: 3134ms

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
(2006 GTA zone of origin - gta06_orig In 89, 109, 110, 113
and
Start time of trip - start_time In 730-930
and
Trip purpose of origin - purp_orig In H
and
Primary travel mode of trip - mode_prime In D, M
and
Planning district of destination - pd_dest In 2)

Trip 2016
Table:

	89	109	110	113
89	86	0	0	0
91	4	0	0	0
95	0	8	7	0
97	0	6	0	0
98	0	15	0	0
101	0	0	66	0
105	76	0	0	0
107	0	0	6	0
108	0	18	0	0
109	0	0	16	0
110	0	8	249	0
113	0	10	27	7
114	0	0	12	31
115	27	0	0	12
116	0	0	0	12
122	0	0	0	16
124	0	0	0	10
125	0	0	16	44

APPENDIX G

Residential Trip Generation Proxy Surveys

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

2015 Residential Proxy Site Trip Generation

Proxy Site	No. of Units	Trip Rate					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
Auto Trip Generation Rates (per Unit)							
15 Stafford Street	142 Units	0.05	0.11	0.17	0.12	0.06	0.18
25 Stafford Street	104 Units	0.02	0.05	0.07	0.04	0.03	0.08
Pedestrian Trip Generation Rates (per Unit)							
15 Stafford Street	142 Units	0.05	0.15	0.20	0.14	0.07	0.21
25 Stafford Street	104 Units	0.04	0.12	0.16	0.07	0.05	0.11
Cyclist Trip Generation Rates (per Unit)							
15 Stafford Street	142 Units	0.00	0.03	0.03	0.01	0.00	0.01
25 Stafford Street	104 Units	0.00	0.02	0.03	0.01	0.00	0.01

2023 Residential Proxy Site Trip Generation

Proxy Site	No. of Units	Trip Rate					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
Auto Trip Generation Rates (per Unit)							
15 Stafford Street	142 Units	0.01	0.12	0.13	0.10	0.06	0.15
25 Stafford Street	104 Units	0.02	0.08	0.10	0.09	0.01	0.10
Pedestrian Trip Generation Rates (per Unit)							
15 Stafford Street	142 Units	0.06	0.10	0.15	0.13	0.08	0.21
25 Stafford Street	104 Units	0.12	0.24	0.36	0.22	0.13	0.35
Cyclist Trip Generation Rates (per Unit)							
15 Stafford Street	142 Units	0.00	0.00	0.00	0.00	0.00	0.00
25 Stafford Street	104 Units	0.00	0.00	0.00	0.01	0.01	0.02

Average Residential Proxy Site Trip Generation Applied Rates

Proxy Site	Average Trip Rate					
	Weekday AM			Weekday PM		
	In	Out	Total	In	Out	Total
Average Auto Trip Generation Rates (per Unit)						
15 & 25 Stafford Street (2023)	**0.02**	**0.10**	**0.11**	**0.09**	**0.03**	**0.13**
15 & 25 Stafford Street (2015)	0.04	0.08	0.12	0.08	0.05	0.13
Average Pedestrian Trip Generation Rates (per Unit)						
15 & 25 Stafford Street (2023)	**0.09**	**0.17**	**0.26**	**0.17**	**0.10**	**0.28**
15 & 25 Stafford Street (2015)	0.04	0.14	0.18	0.10	0.06	0.16
Average Cyclist Trip Generation Rates (per Unit)						
15 & 25 Stafford Street (2023)	0.00	0.00	0.00	0.00	0.00	0.01
15 & 25 Stafford Street (2015)	**0.00**	**0.03**	**0.03**	**0.01**	**0.00**	**0.01**

Of note, some rounding errors may occur for the total rates provided

15 Stafford Street Trip Generation										
AM Peak Hour (8:00 - 9:00a)										
	Inbound					*Outbound*				
Date	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
June 5th	3	9	0	0	0	9	12	5	0	0
June 6th	6	4	0	0	0	6	13	1	0	0
June 7th	2	0	0	0	0	9	4	0	0	0
June 8th	0	0	0	0	0	0	0	0	0	0
June 9th	8	1	0	0	0	29	18	5	0	0
June 10th	11	5	1	0	0	21	17	4	0	0
June 11th	4	6	0	1	0	30	16	4	1	0
June 12th	7	17	0	0	0	18	18	2	0	0
PM Peak Hour (5:00 - 6:00p)										
Date	*Inbound*					*Outbound*				
	Peds	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
June 5th	19	18	1	1	0	9	8	0	1	0
June 6th	16	16	0	0	0	17	8	2	0	0
June 7th	10	13	0	0	0	9	9	1	0	0
June 8th	11	25	2	1	0	10	5	0	1	0
June 9th	32	18	2	0	0	14	14	1	0	0
June 10th	34	19	2	0	0	8	9	0	0	0
June 11th	7	16	1	1	0	12	8	0	1	0
June 12th	7	11	0	0	0	6	4	0	0	0

Weekday
Weekend
N/A

Average Trip Gen (weekday)

AM Peak Hour (8:00 - 9:00a)									
Inbound					*Outbound*				
Peds	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
6.6	7.6	0.2	0.2	0	21.4	16.2	4	0.2	0
PM Peak Hour (5:00 - 6:00p)									
Inbound					*Outbound*				
Peds	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
19.8	16.4	1.2	0.4	0	9.8	8.6	0.2	0.4	0

Trip Gen Rate (per unit) 142

AM Peak Hour (8:00 - 9:00a)									
Inbound					*Outbound*				
Peds	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
0.05	0.05	0.00	0.00	0.00	0.15	0.11	0.03	0.00	0.00
PM Peak Hour (5:00 - 6:00p)									
Inbound					*Outbound*				
Peds	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
0.14	0.12	0.01	0.00	0.00	0.07	0.06	0.00	0.00	0.00

25 Stafford Street Trip Generation										
AM Peak Hour (8:00 - 9:00a)										
	Inbound					*Outbound*				
Date	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
June 5th	3	4	0	0	0	11	4	2	0	0
June 6th	1	3	0	0	0	6	6	0	0	0
June 7th	0	0	0	0	0	7	1	0	0	0
June 8th										
June 9th	8	2	0	0	0	12	6	3	0	0
June 10th	5	1	0	0	0	13	6	4	0	0
June 11th	5	0	1	0	0	13	2	2	0	0
June 12th	1	3	0	1	0	14	7	1	1	0
	PM Peak Hour (5:00 - 6:00p)									
	Inbound					*Outbound*				
Date	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
June 5th	8	7	1	0	0	3	6	0	0	0
June 6th	6	3	2	1	0	8	2	1	1	0
June 7th	6	3	2	0	0	4	2	0	0	0
June 8th	4	6	0	0	0	0	3	0	0	0
June 9th	10	7	1	0	0	3	3	0	0	0
June 10th	14	1	1	0	0	14	3	2	0	0
June 11th	0	3	0	0	0	3	5	0	0	0
June 12th	2	4	1	0	0	2	0	0	0	0

Weekday
Weekend
N/A

Average Trip Gen (weekday)

AM Peak Hour (8:00 - 9:00a)										
	Inbound					*Outbound*				
Peds	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
4.4	2	0.2	0.2	0	12.6	5	2.4	0.2	0
PM Peak Hour (5:00 - 6:00p)									
	Inbound					*Outbound*				
Peds	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
6.8	4.4	0.8	0	0	5	3.4	0.4	0	0

Trip Gen Rate (per unit) 104

AM Peak Hour (8:00 - 9:00a)										
	Inbound					*Outbound*				
Peds	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
0.04	0.02	0.00	0.00	0.00	0.12	0.05	0.02	0.00	0.00
PM Peak Hour (5:00 - 6:00p)										
	Inbound					*Outbound*				
Peds	*Auto*	Bicycle	*Taxi*	*Car Share*	*Peds*	*Auto*	Bicycle	*Taxi*	*Car Share*
0.07	0.04	0.01	0.00	0.00	0.05	0.03	0.00	0.00	0.00

TABULAR SUMMARY OF TRIP GENERATION COUNT

COUNT DATE: Tuesday, February 7, 2023
PROJECT #: 23322.000
OBSERVER: ID
WEATHER: Clear
LOCATION: 15 Stafford St, Toronto

TIME	UNDERGROUND DRIVEWAY				TOTAL			
	INBOUND		OUTBOUND					
	Left	Right	Left	Right	IB	OB	ALL	HOURLY
7:30	0	0	7	1	0	8	8	
7:45	1	0	0	0	1	0	1	
8:00	0	0	4	0	0	4	4	
8:15	1	0	5	0	1	5	6	19
8:30	3	0	1	0	3	1	4	15
8:45	0	0	3	0	0	3	3	17
9:00	0	0	0	0	0	0	0	13
9:15	0	0	0	0	0	0	0	7
TOTAL	5		20		5	21	26	
AM PEAK	5		10		5	10	15	

<-- Peak Ho

TIME	Main Entrance (Stafford St)				Side Entrance (Wellington St)				Back Entrance (Stanley Park)				TOTAL			
	PEDESTRIANS		CYCLISTS		PEDESTRIANS		CYCLISTS		PEDESTRIANS		CYCLISTS					
	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	IB	OB	ALL	HOURLY
7:30	2	0	0	0	0	0	0	0	0	3	0	0	2	3	5	
7:45	1	0	0	0	0	2	0	0	0	2	0	0	1	4	5	
8:00	1	0	0	0	0	1	0	0	1	5	0	0	2	6	8	
8:15	1	1	0	0	0	0	0	0	2	0	0	0	3	1	4	22
8:30	0	2	0	0	0	2	0	0	0	1	0	0	0	5	5	22
8:45	0	0	0	0	0	1	0	0	3	1	0	0	3	2	5	22
9:00	2	1	0	0	0	2	0	0	2	0	0	0	4	3	7	21
9:15	1	1	0	0	0	0	0	0	1	0	1	0	3	1	4	21
TOTAL	8	5	0	0	0	8	0	0	9	12	1	0	18	25	43	
AM PEAK	3	3	0	0	0	5	0	0	6	2	1	0	6	16	22	

<-- Peak Hour
<-- Peak Hour
<-- Peak Hour

Peak Hour Trip Gen

AM Peak Hour					
Inbound			*Outbound*		
Peds	*Auto*	Bicycle	*Peds*	*Auto*	Bicycle
8	2	0	14	17	0
PM Peak Hour					
Inbound			*Outbound*		
Peds	*Auto*	Bicycle	*Peds*	*Auto*	Bicycle
18	14	0	12	8	0

Trip Gen Rate (per unit) 142 units

AM Peak Hour					
Inbound			*Outbound*		
Peds	*Auto*	Bicycle	*Peds*	*Auto*	Bicycle
0.06	0.01	0.00	0.10	0.12	0.00
PM Peak Hour					
Inbound			*Outbound*		
Peds	*Auto*	Bicycle	*Peds*	*Auto*	Bicycle
0.13	0.10	0.00	0.08	0.06	0.00

TIME	UNDERGROUND DRIVEWAY				TOTAL			
	INBOUND		OUTBOUND					
	Left	Right	Left	Right	IB	OB	ALL	HOURLY
4:30	2	0	2	0	2	2	4	
4:45	1	0	0	1	1	1	2	
5:00	3	0	3	0	3	3	6	
5:15	3	0	2	0	3	2	5	17
5:30	3	0	1	1	3	2	5	18
5:45	5	0	1	0	5	1	6	22
6:00	1	0	4	0	1	4	5	21
6:15	1	0	0	0	1	0	1	17
TOTAL	19	0	13	2	19	15	34	
PM PEAK	10	0	6	2	10	8	18	

<-- Peak Ho

TIME	Main Entrance (Stafford St)				Side Entrance (Wellington St)				Back Entrance (Stanley Park)				TOTAL			
	PEDESTRIANS		CYCLISTS		PEDESTRIANS		CYCLISTS		PEDESTRIANS		CYCLISTS					
	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	IB	OB	ALL	HOURLY
4:30	1	1	0	0	0	0	0	0	1	2	0	0	2	3	5	
4:45	5	0	0	0	0	2	0	0	0	0	0	0	5	2	7	
5:00	0	0	0	0	0	0	0	0	2	0	0	0	2	0	2	
5:15	3	0	0	0	0	4	0	0	1	0	0	0	4	4	8	22
5:30	4	0	0	0	0	2	0	0	5	0	0	0	9	2	11	28
5:45	1	2	0	0	0	2	0	0	1	0	0	0	2	4	6	27
6:00	1	1	0	0	0	0	0	0	2	1	0	0	3	2	5	30
6:15	1	0	0	0	0	2	0	0	1	1	0	0	2	3	5	27
TOTAL	16	4	0	0	0	12	0	0	13	4	0	0	29	20	49	
PM PEAK	8	2	0	0	0	6	0	0	9	2	0	0	20	8	28	

<-- Peak Hour

TABULAR SUMMARY OF TRIP GENERATION COUNT

COUNT DATE: Tuesday, February 7, 2023
PROJECT #: 23322.000
OBSERVER: ID
WEATHER: Clear
LOCATION: 25 Stafford St, Toronto

TIME	UNDERGROUND DRIVEWAY				TOTAL				
	INBOUND		OUTBOUND						
	Left	Right	Left	Right	IB	OB	ALL	HOURLY	
7:30	0	0	0	1	0	1	1		
7:45	0	0	2	0	0	2	2		
8:00	0	0	1	0	0	1	1		
8:15	0	0	2	0	0	2	2	6	
8:30	1	0	2	0	1	2	3	8	
8:45	1	0	3	0	1	3	4	10	<-- Peak Hour
9:00	0	0	0	0	0	0	0	9	
9:15	0	0	0	1	0	1	1	8	
TOTAL	2		10		2	12	14		
AM PEAK	1		7		1	7	8		

TIME	Main Entrance (Stafford St)				Back Entrance (Stanley Park)				TOTAL			
	PEDESTRIANS		CYCLISTS		PEDESTRIANS		CYCLISTS					
	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	IB	OB	ALL	HOURLY
7:30	0	1	0	0	0	2	0	0	0	3	3	
7:45	2	3	0	0	1	0	0	0	3	3	6	
8:00	2	3	0	0	0	5	0	0	2	8	10	
8:15	1	1	0	0	3	2	0	0	4	3	7	26
8:30	1	6	0	0	2	5	0	0	3	11	14	37
8:45	2	1	0	0	0	2	0	0	2	3	5	36
9:00	2	3	0	0	2	2	0	0	4	5	9	35
9:15	3	1	0	0	0	2	0	0	3	3	6	34
TOTAL	13	19	0	0	8	20	0	0	21	39	60	
AM PEAK	8	11	0	0	4	11	0	0	12	25	37	

<-- Peak Hour

Peak Hour Trip Gen

AM Peak Hour					
Inbound			*Outbound*		
Peds	*Auto*	Bicycle	*Peds*	*Auto*	Bicycle
12	2	0	25	8	0
PM Peak Hour					
Inbound			*Outbound*		
Peds	*Auto*	Bicycle	*Peds*	*Auto*	Bicycle
23	9	1	13	1	1

Trip Gen Rate (per unit) 104 units

AM Peak Hour					
Inbound			*Outbound*		
Peds	*Auto*	Bicycle	*Peds*	*Auto*	Bicycle
0.12	0.02	0.00	0.24	0.08	0.00
PM Peak Hour					
Inbound			*Outbound*		
Peds	*Auto*	Bicycle	*Peds*	*Auto*	Bicycle
0.22	0.09	0.01	0.13	0.01	0.01

TIME	UNDERGROUND DRIVEWAY				TOTAL				
	INBOUND		OUTBOUND						
	Left	Right	Left	Right	IB	OB	ALL	HOURLY	
16:30	1	0	1	0	1	1	2		
16:45	1	0	0	0	1	0	1		
17:00	1	0	0	0	1	0	1		
17:15	1	0	0	0	1	0	1	5	
17:30	4	0	1	0	4	1	5	8	
17:45	3	0	0	0	3	0	3	10	<-- Peak Hour
18:00	1	0	0	0	1	0	1	10	<-- Peak Hour
18:15	2	0	1	0	2	1	3	12	
TOTAL	14	0	3	0	14	3	17		
PM PEAK	7	0	1	0	7	1	8		

TIME	Main Entrance (Stafford St)				Back Entrance (Stanley Park)				TOTAL			
	PEDESTRIANS		CYCLISTS		PEDESTRIANS		CYCLISTS					
	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	IB	OB	ALL	HOURLY
16:30	3	1	0	0	0	0	0	0	3	1	4	
16:45	1	1	0	0	0	2	0	0	1	3	4	
17:00	2	4	0	0	4	1	0	0	6	5	11	
17:15	4	3	0	1	5	1	0	0	9	5	14	33
17:30	3	0	1	0	4	1	0	0	8	1	9	38
17:45	0	0	0	0	1	0	0	0	1	0	1	35
18:00	2	0	0	0	0	1	0	0	2	1	3	27
18:15	1	2	0	0	0	0	0	0	1	2	3	16
TOTAL	16	11	1	1	14	6	0	0	31	18	49	
PM PEAK	6	2	1	0	5	2	0	0	24	14	38	

<-- Peak Hour

APPENDIX H

Existing Conditions Intersection Capacity Analysis

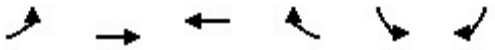
AM Peak Hour

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	146	412	262	111	140
Future Volume (vph)	146	412	262	111	140
Lane Group Flow (vph)	0	588	358	117	147
Turn Type	pm+pt	NA	NA	Perm	Perm
Protected Phases	7	2	6		
Permitted Phases	2			8	8
Minimum Split (s)	32.0	34.0	34.0	32.0	32.0
Total Split (s)	32.0	38.0	38.0	32.0	32.0
Total Split (%)	31.4%	37.3%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		10.0	10.0	10.0	10.0
Lead/Lag	Lead			Lag	Lag
Lead-Lag Optimize?					
v/c Ratio		0.56	0.61	0.58	0.67
Control Delay		4.9	33.9	48.7	53.7
Queue Delay		0.8	0.0	0.0	0.0
Total Delay		5.7	33.9	48.7	53.7
Queue Length 50th (m)		6.0	31.3	22.0	28.3
Queue Length 95th (m)		m10.7	47.9	42.1	#56.5
Internal Link Dist (m)		27.5	139.1	205.4	
Turn Bay Length (m)					45.0
Base Capacity (vph)		1045	591	202	218
Starvation Cap Reductn		198	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.69	0.61	0.58	0.67

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 99 (97%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Queen St W & Lansdowne Ave



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	146	412	262	78	111	140
Future Volume (vph)	146	412	262	78	111	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		10.0	10.0		10.0	10.0
Lane Util. Factor		*0.88	*0.93		1.00	1.00
Frpb, ped/bikes		1.00	0.90		1.00	0.98
Flpb, ped/bikes		0.95	1.00		0.74	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2425	2060		941	1015
Flt Permitted		0.75	1.00		0.95	1.00
Satd. Flow (perm)		1838	2060		941	1015
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	434	276	82	117	147
RTOR Reduction (vph)	0	0	26	0	0	0
Lane Group Flow (vph)	0	588	332	0	117	147
Confl. Peds. (#/hr)	197			197	180	4
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	7%	9%	14%	8%	7%	13%
Bus Blockages (#/hr)	0	0	25	0	0	11
Parking (#/hr)			0		0	0
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	7	2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		48.0	27.0		21.0	21.0
Effective Green, g (s)		50.0	28.0		22.0	22.0
Actuated g/C Ratio		0.49	0.27		0.22	0.22
Clearance Time (s)		11.0	11.0		11.0	11.0
Lane Grp Cap (vph)		1027	565		202	218
v/s Ratio Prot		c0.12	c0.16			
v/s Ratio Perm		0.16			0.12	c0.14
v/c Ratio		0.57	0.59		0.58	0.67
Uniform Delay, d1		18.4	32.0		35.9	36.7
Progression Factor		0.24	1.00		1.00	1.00
Incremental Delay, d2		1.6	4.4		11.6	15.5
Delay (s)		6.1	36.4		47.4	52.2
Level of Service		A	D		D	D
Approach Delay (s)		6.1	36.4		50.1	
Approach LOS		A	D		D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	377	186	209	55	181
Future Volume (vph)	377	186	209	55	181
Lane Group Flow (vph)	431	0	425	59	195
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	8	6		
Permitted Phases		6		7	7
Minimum Split (s)	34.0	32.0	34.0	32.0	32.0
Total Split (s)	38.0	32.0	38.0	32.0	32.0
Total Split (%)	37.3%	31.4%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	10.0		10.0	10.0	10.0
Lead/Lag		Lag		Lead	Lead
Lead-Lag Optimize?					
v/c Ratio	0.66		0.43	0.26	0.81
Control Delay	31.5		3.3	37.0	63.8
Queue Delay	0.0		0.5	0.0	0.0
Total Delay	31.5		3.7	37.0	63.8
Queue Length 50th (m)	36.3		2.6	10.3	38.8
Queue Length 95th (m)	51.9		5.2	22.5	#77.0
Internal Link Dist (m)	32.9		27.5	333.3	
Turn Bay Length (m)				15.0	
Base Capacity (vph)	656		978	225	242
Starvation Cap Reductn	0		215	0	0
Spillback Cap Reductn	0		0	0	0
Storage Cap Reductn	0		0	0	0
Reduced v/c Ratio	0.66		0.56	0.26	0.81

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 99 (97%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Jameson Ave & Queen St W

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	377	24	186	209	55	181
Future Volume (vph)	377	24	186	209	55	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)	10.0			10.0	10.0	10.0
Lane Util. Factor	*0.88			*0.93	1.00	1.00
Frpb, ped/bikes	0.98			1.00	1.00	0.97
Flpb, ped/bikes	1.00			0.95	0.69	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			0.98	0.95	1.00
Satd. Flow (prot)	2377			2451	1044	1126
Flt Permitted	1.00			0.63	0.95	1.00
Satd. Flow (perm)	2377			1584	1044	1126
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	405	26	200	225	59	195
RTOR Reduction (vph)	4	0	0	0	0	0
Lane Group Flow (vph)	427	0	0	425	59	195
Confl. Peds. (#/hr)		160	160		246	8
Confl. Bikes (#/hr)		11				8
Heavy Vehicles (%)	10%	0%	4%	19%	0%	5%
Bus Blockages (#/hr)	22	0	0	0	0	0
Parking (#/hr)						0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		8	6		
Permitted Phases			6		7	7
Actuated Green, G (s)	27.0			48.0	21.0	21.0
Effective Green, g (s)	28.0			50.0	22.0	22.0
Actuated g/C Ratio	0.27			0.49	0.22	0.22
Clearance Time (s)	11.0			11.0	11.0	11.0
Lane Grp Cap (vph)	652			963	225	242
v/s Ratio Prot	c0.18			c0.10		
v/s Ratio Perm				0.12	0.06	c0.17
v/c Ratio	0.65			0.44	0.26	0.81
Uniform Delay, d1	32.7			16.9	33.3	38.0
Progression Factor	0.82			0.19	1.00	1.00
Incremental Delay, d2	4.7			1.1	2.8	24.2
Delay (s)	31.5			4.4	36.1	62.1
Level of Service	C			A	D	E
Approach Delay (s)	31.5			4.4	56.1	
Approach LOS	C			A	E	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	394	2	2	233	24	0	1	3	28	0	58
Future Vol, veh/h	63	394	2	2	233	24	0	1	3	28	0	58
Conflicting Peds, #/hr	174	0	98	98	0	174	13	0	11	11	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	6	12	0	0	12	46	0	0	33	0	0	3
Mvmt Flow	68	424	2	2	251	26	0	1	3	30	0	62

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	451	0	0	524	0	0	802	1114	322	802	1102	326
Stage 1	-	-	-	-	-	-	659	659	-	442	442	-
Stage 2	-	-	-	-	-	-	143	455	-	360	660	-
Critical Hdwy	4.22	-	-	4.1	-	-	7.5	6.5	7.56	7.5	6.5	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.26	-	-	2.2	-	-	3.5	4	3.63	3.5	4	3.33
Pot Cap-1 Maneuver	1078	-	-	1053	-	-	279	210	591	279	213	667
Stage 1	-	-	-	-	-	-	424	464	-	570	580	-
Stage 2	-	-	-	-	-	-	851	572	-	636	463	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	866	-	-	937	-	-	199	134	522	202	136	531
Mov Cap-2 Maneuver	-	-	-	-	-	-	199	134	-	202	136	-
Stage 1	-	-	-	-	-	-	338	370	-	411	465	-
Stage 2	-	-	-	-	-	-	742	459	-	561	369	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.1	17.1	19.1
HCM LOS			C	C

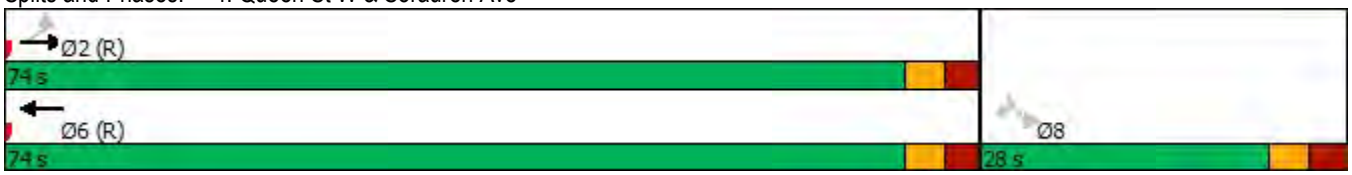
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	303	866	-	-	937	-	-	347
HCM Lane V/C Ratio	0.014	0.078	-	-	0.002	-	-	0.266
HCM Control Delay (s)	17.1	9.5	0.4	-	8.9	0	-	19.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	1.1

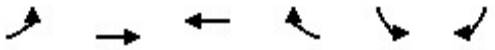
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	114	493	197	53	20
Future Volume (vph)	114	493	197	53	20
Lane Group Flow (vph)	0	675	299	59	22
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	24.0	24.0	24.0	21.0	21.0
Minimum Split (s)	29.7	29.7	29.7	27.1	27.1
Total Split (s)	74.0	74.0	74.0	28.0	28.0
Total Split (%)	72.5%	72.5%	72.5%	27.5%	27.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.7	2.7	2.7	3.1	3.1
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		4.7	4.7	5.1	5.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio		0.49	0.17	0.22	0.08
Control Delay		8.4	6.0	35.7	13.7
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		8.4	6.0	35.7	13.7
Queue Length 50th (m)		34.8	8.6	10.2	0.0
Queue Length 95th (m)		50.1	17.8	22.1	6.6
Internal Link Dist (m)		195.6	227.3	112.1	
Turn Bay Length (m)					35.0
Base Capacity (vph)		1379	1721	273	302
Starvation Cap Reductn		0	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.49	0.17	0.22	0.07

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 70 (69%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 4: Queen St W & Sorauren Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	114	493	197	72	53	20
Future Volume (vph)	114	493	197	72	53	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		4.7	4.7		5.1	5.1
Lane Util. Factor		*0.88	*0.93		1.00	1.00
Frpb, ped/bikes		1.00	0.96		1.00	0.94
Flpb, ped/bikes		0.99	1.00		0.93	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2264	2266		1220	1270
Flt Permitted		0.80	1.00		0.95	1.00
Satd. Flow (perm)		1837	2266		1220	1270
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	127	548	219	80	59	22
RTOR Reduction (vph)	0	0	22	0	0	18
Lane Group Flow (vph)	0	675	277	0	59	4
Confl. Peds. (#/hr)	55			55	48	34
Confl. Bikes (#/hr)				5		3
Heavy Vehicles (%)	4%	10%	12%	8%	4%	0%
Bus Blockages (#/hr)	0	27	18	0	0	0
Parking (#/hr)		0	0		0	
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		73.4	73.4		16.8	16.8
Effective Green, g (s)		74.4	74.4		17.8	17.8
Actuated g/C Ratio		0.73	0.73		0.17	0.17
Clearance Time (s)		5.7	5.7		6.1	6.1
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1339	1652		212	221
v/s Ratio Prot			0.12			
v/s Ratio Perm		c0.37			c0.05	0.00
v/c Ratio		0.50	0.17		0.28	0.02
Uniform Delay, d1		5.9	4.3		36.5	34.9
Progression Factor		1.00	1.51		1.00	1.00
Incremental Delay, d2		1.4	0.2		0.7	0.0
Delay (s)		7.3	6.6		37.2	34.9
Level of Service		A	A		D	C
Approach Delay (s)		7.3	6.6		36.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

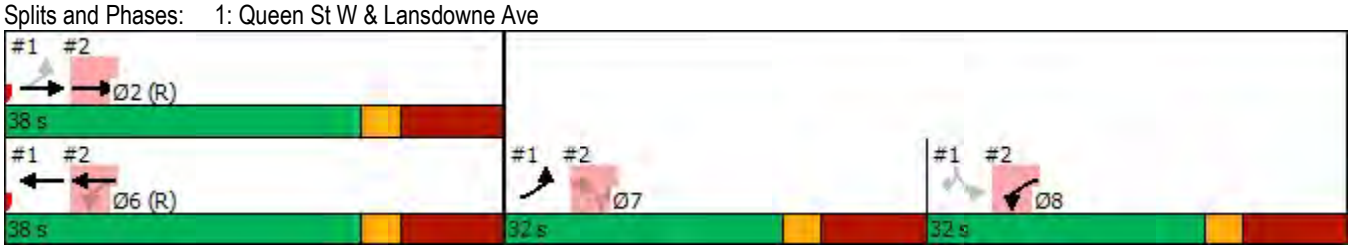
c Critical Lane Group

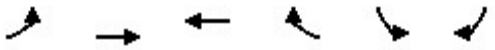
PM Peak Hour

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	196	333	369	87	159
Future Volume (vph)	196	333	369	87	159
Lane Group Flow (vph)	0	540	457	89	162
Turn Type	pm+pt	NA	NA	Perm	Perm
Protected Phases	7	2	6		
Permitted Phases	2			8	8
Minimum Split (s)	32.0	34.0	34.0	32.0	32.0
Total Split (s)	32.0	38.0	38.0	32.0	32.0
Total Split (%)	31.4%	37.3%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		10.0	10.0	10.0	10.0
Lead/Lag	Lead			Lag	Lag
Lead-Lag Optimize?					
v/c Ratio		0.50	0.67	0.43	0.71
Control Delay		5.7	36.6	42.0	55.8
Queue Delay		0.6	0.0	0.0	0.0
Total Delay		6.2	36.6	42.0	55.8
Queue Length 50th (m)		6.2	40.3	16.1	31.4
Queue Length 95th (m)		m9.3	57.9	32.3	#62.3
Internal Link Dist (m)		27.5	139.5	205.4	
Turn Bay Length (m)					45.0
Base Capacity (vph)		1089	682	208	228
Starvation Cap Reductn		228	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.63	0.67	0.43	0.71

Intersection Summary
Cycle Length: 102
Actuated Cycle Length: 102
Offset: 47 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Queen St W & Lansdowne Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	196	333	369	78	87	159
Future Volume (vph)	196	333	369	78	87	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		10.0	10.0		10.0	10.0
Lane Util. Factor		*0.94	*0.99		1.00	1.00
Frpb, ped/bikes		1.00	0.90		1.00	0.97
Flpb, ped/bikes		0.93	1.00		0.72	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		0.98	1.00		0.95	1.00
Satd. Flow (prot)		2638	2416		967	1058
Flt Permitted		0.67	1.00		0.95	1.00
Satd. Flow (perm)		1811	2416		967	1058
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	200	340	377	80	89	162
RTOR Reduction (vph)	0	0	19	0	0	0
Lane Group Flow (vph)	0	540	438	0	89	162
Confl. Peds. (#/hr)	340			340	190	10
Confl. Bikes (#/hr)				23		3
Heavy Vehicles (%)	2%	5%	6%	1%	2%	8%
Bus Blockages (#/hr)	0	0	17	0	0	9
Parking (#/hr)			0		0	0
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	7	2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		48.0	27.0		21.0	21.0
Effective Green, g (s)		50.0	28.0		22.0	22.0
Actuated g/C Ratio		0.49	0.27		0.22	0.22
Clearance Time (s)		11.0	11.0		11.0	11.0
Lane Grp Cap (vph)		1066	663		208	228
v/s Ratio Prot		c0.11	c0.18			
v/s Ratio Perm		0.14			0.09	c0.15
v/c Ratio		0.51	0.66		0.43	0.71
Uniform Delay, d1		17.6	32.8		34.6	37.1
Progression Factor		0.33	1.00		1.00	1.00
Incremental Delay, d2		1.2	5.1		6.3	17.1
Delay (s)		7.1	37.9		40.9	54.2
Level of Service		A	D		D	D
Approach Delay (s)		7.1	37.9		49.5	
Approach LOS		A	D		D	

Intersection Summary			
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	272	163	364	79	256
Future Volume (vph)	272	163	364	79	256
Lane Group Flow (vph)	322	0	560	84	272
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	8	6		
Permitted Phases		6		7	7
Minimum Split (s)	34.0	32.0	34.0	32.0	32.0
Total Split (s)	38.0	32.0	38.0	32.0	32.0
Total Split (%)	37.3%	31.4%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0
Total Lost Time (s)	10.0		10.0	10.0	9.0
Lead/Lag		Lag		Lead	Lead
Lead-Lag Optimize?					
v/c Ratio	0.45		0.48	0.40	0.93
Control Delay	26.4		3.6	40.9	78.1
Queue Delay	0.0		0.6	0.0	0.0
Total Delay	26.4		4.1	40.9	78.1
Queue Length 50th (m)	19.4		3.6	15.1	55.8
Queue Length 95th (m)	31.7		5.9	30.7	#106.3
Internal Link Dist (m)	32.9		27.5	337.8	
Turn Bay Length (m)				15.0	
Base Capacity (vph)	709		1170	212	292
Starvation Cap Reductn	0		269	0	0
Spillback Cap Reductn	0		0	0	0
Storage Cap Reductn	0		0	0	0
Reduced v/c Ratio	0.45		0.62	0.40	0.93

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 47 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Jameson Ave & Queen St W

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	272	31	163	364	79	256
Future Volume (vph)	272	31	163	364	79	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	2100
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)	10.0			10.0	10.0	9.0
Lane Util. Factor	*0.94			*0.99	1.00	1.00
Frpb, ped/bikes	0.94			1.00	1.00	0.97
Flpb, ped/bikes	1.00			0.92	0.67	1.00
Frt	0.98			1.00	1.00	0.85
Flt Protected	1.00			0.98	0.95	1.00
Satd. Flow (prot)	2553			2698	987	1296
Flt Permitted	1.00			0.74	0.95	1.00
Satd. Flow (perm)	2553			2030	987	1296
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	289	33	173	387	84	272
RTOR Reduction (vph)	9	0	0	0	0	0
Lane Group Flow (vph)	313	0	0	560	84	272
Confl. Peds. (#/hr)		298	298		308	9
Confl. Bikes (#/hr)		15				5
Heavy Vehicles (%)	6%	3%	1%	9%	3%	1%
Bus Blockages (#/hr)	16	0	0	0	0	0
Parking (#/hr)						0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		8	6		
Permitted Phases			6		7	7
Actuated Green, G (s)	27.0			48.0	21.0	21.0
Effective Green, g (s)	28.0			50.0	22.0	23.0
Actuated g/C Ratio	0.27			0.49	0.22	0.23
Clearance Time (s)	11.0			11.0	11.0	11.0
Lane Grp Cap (vph)	700			1139	212	292
v/s Ratio Prot	0.12			c0.11		
v/s Ratio Perm				c0.13	0.09	c0.21
v/c Ratio	0.45			0.49	0.40	0.93
Uniform Delay, d1	30.6			17.5	34.3	38.7
Progression Factor	0.82			0.22	1.00	1.00
Incremental Delay, d2	2.0			1.1	5.5	37.7
Delay (s)	27.0			4.9	39.8	76.4
Level of Service	C			A	D	E
Approach Delay (s)	27.0			4.9	67.8	
Approach LOS	C			A	E	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	74	288	5	6	404	31	5	4	5	10	0	95
Future Vol, veh/h	74	288	5	6	404	31	5	4	5	10	0	95
Conflicting Peds, #/hr	266	0	198	198	0	266	30	0	15	15	0	30
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	6	0	0	6	29	0	0	0	10	0	3
Mvmt Flow	80	313	5	7	439	34	5	4	5	11	0	103

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	739	0	0	516	0	0	938	1427	372	1070	1412	533
Stage 1	-	-	-	-	-	-	674	674	-	736	736	-
Stage 2	-	-	-	-	-	-	264	753	-	334	676	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.7	6.5	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.7	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.7	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.6	4	3.33
Pot Cap-1 Maneuver	876	-	-	1060	-	-	222	136	631	165	139	489
Stage 1	-	-	-	-	-	-	415	457	-	359	428	-
Stage 2	-	-	-	-	-	-	724	420	-	632	456	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	613	-	-	823	-	-	101	61	485	93	63	335
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	61	-	93	63	-
Stage 1	-	-	-	-	-	-	271	298	-	211	296	-
Stage 2	-	-	-	-	-	-	484	291	-	512	298	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.8	0.2	42.1	28
HCM LOS			E	D

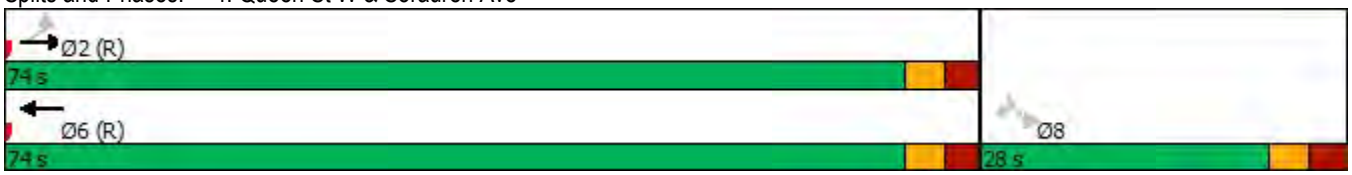
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	112	613	-	-	823	-	-	268
HCM Lane V/C Ratio	0.136	0.131	-	-	0.008	-	-	0.426
HCM Control Delay (s)	42.1	11.8	0.6	-	9.4	0.1	-	28
HCM Lane LOS	E	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.5	0.5	-	-	0	-	-	2

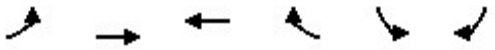
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	133	378	351	46	26
Future Volume (vph)	133	378	351	46	26
Lane Group Flow (vph)	0	538	503	48	27
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	24.0	24.0	24.0	21.0	21.0
Minimum Split (s)	29.7	29.7	29.7	27.1	27.1
Total Split (s)	74.0	74.0	74.0	28.0	28.0
Total Split (%)	72.5%	72.5%	72.5%	27.5%	27.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.7	2.7	2.7	3.1	3.1
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		4.7	4.7	5.1	5.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio		0.39	0.26	0.18	0.10
Control Delay		7.2	6.6	34.9	12.8
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		7.2	6.6	34.9	12.8
Queue Length 50th (m)		23.1	18.1	8.2	0.0
Queue Length 95th (m)		33.4	26.2	18.7	7.3
Internal Link Dist (m)		192.9	227.3	112.1	
Turn Bay Length (m)					35.0
Base Capacity (vph)		1393	1900	273	295
Starvation Cap Reductn		0	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.39	0.26	0.18	0.09

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 19 (19%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 4: Queen St W & Sorauren Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	133	378	351	127	46	26
Future Volume (vph)	133	378	351	127	46	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		4.7	4.7		5.1	5.1
Lane Util. Factor		*0.94	*0.99		1.00	1.00
Frpb, ped/bikes		1.00	0.96		1.00	0.90
Flpb, ped/bikes		0.98	1.00		0.89	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2580	2492		1217	1220
Flt Permitted		0.71	1.00		0.95	1.00
Satd. Flow (perm)		1855	2492		1217	1220
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	140	398	369	134	48	27
RTOR Reduction (vph)	0	0	33	0	0	22
Lane Group Flow (vph)	0	538	470	0	48	5
Confl. Peds. (#/hr)	65			65	74	59
Confl. Bikes (#/hr)				21		4
Heavy Vehicles (%)	0%	5%	8%	2%	0%	0%
Bus Blockages (#/hr)	0	16	19	0	0	0
Parking (#/hr)		0	0		0	
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		73.4	73.4		16.8	16.8
Effective Green, g (s)		74.4	74.4		17.8	17.8
Actuated g/C Ratio		0.73	0.73		0.17	0.17
Clearance Time (s)		5.7	5.7		6.1	6.1
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1353	1817		212	212
v/s Ratio Prot			0.19			
v/s Ratio Perm		c0.29			c0.04	0.00
v/c Ratio		0.40	0.26		0.23	0.02
Uniform Delay, d1		5.3	4.6		36.2	34.9
Progression Factor		1.00	1.54		1.00	1.00
Incremental Delay, d2		0.9	0.3		0.5	0.0
Delay (s)		6.1	7.4		36.7	34.9
Level of Service		A	A		D	C
Approach Delay (s)		6.1	7.4		36.1	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX I

2028 Future Background Intersection Capacity Analysis

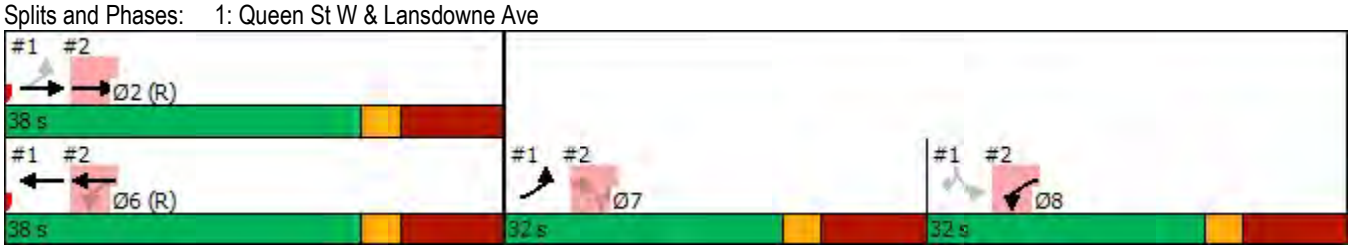
AM Peak Hour

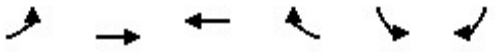
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	146	422	273	111	140
Future Volume (vph)	146	422	273	111	140
Lane Group Flow (vph)	0	598	369	117	147
Turn Type	pm+pt	NA	NA	Perm	Perm
Protected Phases	7	2	6		
Permitted Phases	2			8	8
Minimum Split (s)	32.0	34.0	34.0	32.0	32.0
Total Split (s)	32.0	38.0	38.0	32.0	32.0
Total Split (%)	31.4%	37.3%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		10.0	10.0	10.0	10.0
Lead/Lag	Lead			Lag	Lag
Lead-Lag Optimize?					
v/c Ratio		0.57	0.62	0.58	0.67
Control Delay		5.0	34.7	48.7	53.7
Queue Delay		0.8	0.0	0.0	0.0
Total Delay		5.9	34.7	48.7	53.7
Queue Length 50th (m)		6.3	32.7	22.0	28.3
Queue Length 95th (m)		m12.0	49.7	42.1	#56.5
Internal Link Dist (m)		27.5	140.2	205.4	
Turn Bay Length (m)					45.0
Base Capacity (vph)		1046	592	202	218
Starvation Cap Reductn		199	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.71	0.62	0.58	0.67

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 99 (97%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Queen St W & Lansdowne Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	146	422	273	78	111	140
Future Volume (vph)	146	422	273	78	111	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		10.0	10.0		10.0	10.0
Lane Util. Factor		*0.88	*0.93		1.00	1.00
Frpb, ped/bikes		1.00	0.90		1.00	0.98
Flpb, ped/bikes		0.95	1.00		0.74	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2430	2069		941	1015
Flt Permitted		0.75	1.00		0.95	1.00
Satd. Flow (perm)		1838	2069		941	1015
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	444	287	82	117	147
RTOR Reduction (vph)	0	0	25	0	0	0
Lane Group Flow (vph)	0	598	344	0	117	147
Confl. Peds. (#/hr)	197			197	180	4
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	7%	9%	14%	8%	7%	13%
Bus Blockages (#/hr)	0	0	25	0	0	11
Parking (#/hr)			0		0	0
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	7	2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		48.0	27.0		21.0	21.0
Effective Green, g (s)		50.0	28.0		22.0	22.0
Actuated g/C Ratio		0.49	0.27		0.22	0.22
Clearance Time (s)		11.0	11.0		11.0	11.0
Lane Grp Cap (vph)		1028	567		202	218
v/s Ratio Prot		c0.13	c0.17			
v/s Ratio Perm		0.16			0.12	c0.14
v/c Ratio		0.58	0.61		0.58	0.67
Uniform Delay, d1		18.5	32.2		35.9	36.7
Progression Factor		0.24	1.00		1.00	1.00
Incremental Delay, d2		1.7	4.8		11.6	15.5
Delay (s)		6.2	37.0		47.4	52.2
Level of Service		A	D		D	D
Approach Delay (s)		6.2	37.0		50.1	
Approach LOS		A	D		D	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	387	187	219	55	181
Future Volume (vph)	387	187	219	55	181
Lane Group Flow (vph)	442	0	436	59	195
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	8	6		
Permitted Phases		6		7	7
Minimum Split (s)	34.0	32.0	34.0	32.0	32.0
Total Split (s)	38.0	32.0	38.0	32.0	32.0
Total Split (%)	37.3%	31.4%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	10.0		10.0	10.0	10.0
Lead/Lag		Lag		Lead	Lead
Lead-Lag Optimize?					
v/c Ratio	0.67		0.45	0.26	0.81
Control Delay	31.9		3.5	37.0	63.8
Queue Delay	0.0		0.5	0.0	0.0
Total Delay	31.9		4.0	37.0	63.8
Queue Length 50th (m)	37.3		2.7	10.3	38.8
Queue Length 95th (m)	53.1		5.1	22.5	#77.0
Internal Link Dist (m)	32.9		27.5	340.3	
Turn Bay Length (m)				15.0	
Base Capacity (vph)	657		976	225	242
Starvation Cap Reductn	0		214	0	0
Spillback Cap Reductn	0		0	0	0
Storage Cap Reductn	0		0	0	0
Reduced v/c Ratio	0.67		0.57	0.26	0.81

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 99 (97%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Jameson Ave & Queen St W

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	387	24	187	219	55	181
Future Volume (vph)	387	24	187	219	55	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)	10.0			10.0	10.0	10.0
Lane Util. Factor	*0.88			*0.93	1.00	1.00
Frpb, ped/bikes	0.98			1.00	1.00	0.97
Flpb, ped/bikes	1.00			0.95	0.69	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			0.98	0.95	1.00
Satd. Flow (prot)	2379			2455	1044	1126
Flt Permitted	1.00			0.63	0.95	1.00
Satd. Flow (perm)	2379			1577	1044	1126
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	416	26	201	235	59	195
RTOR Reduction (vph)	4	0	0	0	0	0
Lane Group Flow (vph)	438	0	0	436	59	195
Confl. Peds. (#/hr)		160	160		246	8
Confl. Bikes (#/hr)		11				8
Heavy Vehicles (%)	10%	0%	4%	19%	0%	5%
Bus Blockages (#/hr)	22	0	0	0	0	0
Parking (#/hr)						0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		8	6		
Permitted Phases			6		7	7
Actuated Green, G (s)	27.0			48.0	21.0	21.0
Effective Green, g (s)	28.0			50.0	22.0	22.0
Actuated g/C Ratio	0.27			0.49	0.22	0.22
Clearance Time (s)	11.0			11.0	11.0	11.0
Lane Grp Cap (vph)	653			962	225	242
v/s Ratio Prot	c0.18			c0.10		
v/s Ratio Perm				0.12	0.06	c0.17
v/c Ratio	0.67			0.45	0.26	0.81
Uniform Delay, d1	32.9			17.0	33.3	38.0
Progression Factor	0.82			0.21	1.00	1.00
Incremental Delay, d2	5.0			1.2	2.8	24.2
Delay (s)	31.8			4.8	36.1	62.1
Level of Service	C			A	D	E
Approach Delay (s)	31.8			4.8	56.1	
Approach LOS	C			A	E	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	404	2	2	243	24	0	1	3	28	0	58
Future Vol, veh/h	63	404	2	2	243	24	0	1	3	28	0	58
Conflicting Peds, #/hr	174	0	98	98	0	174	13	0	11	11	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	6	12	0	0	12	46	0	0	33	0	0	3
Mvmt Flow	68	434	2	2	261	26	0	1	3	30	0	62

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	461	0	0	534	0	0	817	1134	327	817	1122	331
Stage 1	-	-	-	-	-	-	669	669	-	452	452	-
Stage 2	-	-	-	-	-	-	148	465	-	365	670	-
Critical Hdwy	4.22	-	-	4.1	-	-	7.5	6.5	7.56	7.5	6.5	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.26	-	-	2.2	-	-	3.5	4	3.63	3.5	4	3.33
Pot Cap-1 Maneuver	1069	-	-	1044	-	-	272	204	586	272	208	662
Stage 1	-	-	-	-	-	-	418	459	-	562	574	-
Stage 2	-	-	-	-	-	-	845	566	-	632	459	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	859	-	-	929	-	-	194	130	517	197	133	527
Mov Cap-2 Maneuver	-	-	-	-	-	-	194	130	-	197	133	-
Stage 1	-	-	-	-	-	-	333	365	-	404	460	-
Stage 2	-	-	-	-	-	-	736	454	-	556	365	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.1	17.3	19.4
HCM LOS			C	C

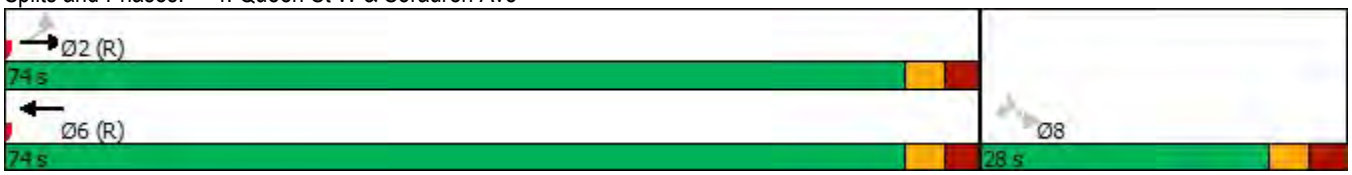
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	296	859	-	-	929	-	-	341
HCM Lane V/C Ratio	0.015	0.079	-	-	0.002	-	-	0.271
HCM Control Delay (s)	17.3	9.5	0.4	-	8.9	0	-	19.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	1.1

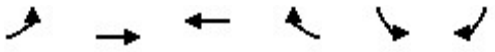
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	114	503	207	53	20
Future Volume (vph)	114	503	207	53	20
Lane Group Flow (vph)	0	686	310	59	22
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	24.0	24.0	24.0	21.0	21.0
Minimum Split (s)	29.7	29.7	29.7	27.1	27.1
Total Split (s)	74.0	74.0	74.0	28.0	28.0
Total Split (%)	72.5%	72.5%	72.5%	27.5%	27.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.7	2.7	2.7	3.1	3.1
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		4.7	4.7	5.1	5.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio		0.50	0.18	0.22	0.08
Control Delay		8.6	6.3	35.7	13.7
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		8.6	6.3	35.7	13.7
Queue Length 50th (m)		35.7	11.9	10.2	0.0
Queue Length 95th (m)		51.4	18.9	22.1	6.6
Internal Link Dist (m)		201.5	227.3	112.1	
Turn Bay Length (m)					35.0
Base Capacity (vph)		1375	1724	273	302
Starvation Cap Reductn		0	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.50	0.18	0.22	0.07

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 70 (69%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 4: Queen St W & Sorauren Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	114	503	207	72	53	20
Future Volume (vph)	114	503	207	72	53	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		4.7	4.7		5.1	5.1
Lane Util. Factor		*0.88	*0.93		1.00	1.00
Frpb, ped/bikes		1.00	0.96		1.00	0.94
Flpb, ped/bikes		0.99	1.00		0.93	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2265	2272		1220	1270
Flt Permitted		0.80	1.00		0.95	1.00
Satd. Flow (perm)		1834	2272		1220	1270
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	127	559	230	80	59	22
RTOR Reduction (vph)	0	0	22	0	0	18
Lane Group Flow (vph)	0	686	288	0	59	4
Confl. Peds. (#/hr)	55			55	48	34
Confl. Bikes (#/hr)				5		3
Heavy Vehicles (%)	4%	10%	12%	8%	4%	0%
Bus Blockages (#/hr)	0	27	18	0	0	0
Parking (#/hr)		0	0		0	
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		73.4	73.4		16.8	16.8
Effective Green, g (s)		74.4	74.4		17.8	17.8
Actuated g/C Ratio		0.73	0.73		0.17	0.17
Clearance Time (s)		5.7	5.7		6.1	6.1
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1337	1657		212	221
v/s Ratio Prot			0.13			
v/s Ratio Perm		c0.37			c0.05	0.00
v/c Ratio		0.51	0.17		0.28	0.02
Uniform Delay, d1		6.0	4.3		36.5	34.9
Progression Factor		1.00	1.57		1.00	1.00
Incremental Delay, d2		1.4	0.2		0.7	0.0
Delay (s)		7.4	6.9		37.2	34.9
Level of Service		A	A		D	C
Approach Delay (s)		7.4	6.9		36.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

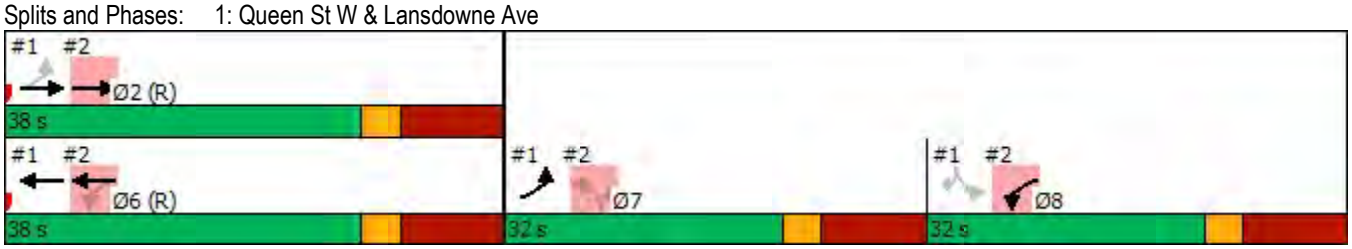
PM Peak Hour

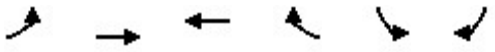
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	196	403	380	87	159
Future Volume (vph)	196	403	380	87	159
Lane Group Flow (vph)	0	611	468	89	162
Turn Type	pm+pt	NA	NA	Perm	Perm
Protected Phases	7	2	6		
Permitted Phases	2			8	8
Minimum Split (s)	32.0	34.0	34.0	32.0	32.0
Total Split (s)	32.0	38.0	38.0	32.0	32.0
Total Split (%)	31.4%	37.3%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		10.0	10.0	10.0	10.0
Lead/Lag	Lead			Lag	Lag
Lead-Lag Optimize?					
v/c Ratio		0.55	0.69	0.43	0.71
Control Delay		5.8	37.2	42.0	55.8
Queue Delay		0.8	0.0	0.0	0.0
Total Delay		6.7	37.2	42.0	55.8
Queue Length 50th (m)		6.1	41.7	16.1	31.4
Queue Length 95th (m)		m9.2	59.5	32.3	#62.3
Internal Link Dist (m)		27.5	147.3	205.4	
Turn Bay Length (m)					45.0
Base Capacity (vph)		1102	683	208	228
Starvation Cap Reductn		230	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.70	0.69	0.43	0.71

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 47 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Queen St W & Lansdowne Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	196	403	380	78	87	159
Future Volume (vph)	196	403	380	78	87	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		10.0	10.0		10.0	10.0
Lane Util. Factor		*0.94	*0.99		1.00	1.00
Frpb, ped/bikes		1.00	0.90		1.00	0.97
Flpb, ped/bikes		0.94	1.00		0.72	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		0.98	1.00		0.95	1.00
Satd. Flow (prot)		2665	2424		967	1058
Flt Permitted		0.68	1.00		0.95	1.00
Satd. Flow (perm)		1849	2424		967	1058
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	200	411	388	80	89	162
RTOR Reduction (vph)	0	0	18	0	0	0
Lane Group Flow (vph)	0	611	450	0	89	162
Confl. Peds. (#/hr)	340			340	190	10
Confl. Bikes (#/hr)				23		3
Heavy Vehicles (%)	2%	5%	6%	1%	2%	8%
Bus Blockages (#/hr)	0	0	17	0	0	9
Parking (#/hr)			0		0	0
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	7	2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		48.0	27.0		21.0	21.0
Effective Green, g (s)		50.0	28.0		22.0	22.0
Actuated g/C Ratio		0.49	0.27		0.22	0.22
Clearance Time (s)		11.0	11.0		11.0	11.0
Lane Grp Cap (vph)		1082	665		208	228
v/s Ratio Prot		c0.12	c0.19			
v/s Ratio Perm		0.16			0.09	c0.15
v/c Ratio		0.56	0.68		0.43	0.71
Uniform Delay, d1		18.3	33.0		34.6	37.1
Progression Factor		0.31	1.00		1.00	1.00
Incremental Delay, d2		1.5	5.5		6.3	17.1
Delay (s)		7.1	38.4		40.9	54.2
Level of Service		A	D		D	D
Approach Delay (s)		7.1	38.4		49.5	
Approach LOS		A	D		D	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	342	164	374	79	256
Future Volume (vph)	342	164	374	79	256
Lane Group Flow (vph)	397	0	572	84	272
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	8	6		
Permitted Phases		6		7	7
Minimum Split (s)	34.0	32.0	34.0	32.0	32.0
Total Split (s)	38.0	32.0	38.0	32.0	32.0
Total Split (%)	37.3%	31.4%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0
Total Lost Time (s)	10.0		10.0	10.0	9.0
Lead/Lag		Lag		Lead	Lead
Lead-Lag Optimize?					
v/c Ratio	0.55		0.49	0.40	0.93
Control Delay	28.4		4.1	40.9	78.1
Queue Delay	0.0		0.6	0.0	0.0
Total Delay	28.4		4.7	40.9	78.1
Queue Length 50th (m)	26.7		3.6	15.1	55.8
Queue Length 95th (m)	40.4		7.1	30.7	#106.3
Internal Link Dist (m)	32.9		27.5	336.5	
Turn Bay Length (m)				15.0	
Base Capacity (vph)	717		1160	212	292
Starvation Cap Reductn	0		269	0	0
Spillback Cap Reductn	0		0	0	0
Storage Cap Reductn	0		0	0	0
Reduced v/c Ratio	0.55		0.64	0.40	0.93

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 47 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Jameson Ave & Queen St W

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	342	31	164	374	79	256
Future Volume (vph)	342	31	164	374	79	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	2100
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)	10.0			10.0	10.0	9.0
Lane Util. Factor	*0.94			*0.99	1.00	1.00
Frpb, ped/bikes	0.95			1.00	1.00	0.97
Flpb, ped/bikes	1.00			0.93	0.67	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			0.99	0.95	1.00
Satd. Flow (prot)	2588			2729	987	1296
Flt Permitted	1.00			0.72	0.95	1.00
Satd. Flow (perm)	2588			1991	987	1296
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	364	33	174	398	84	272
RTOR Reduction (vph)	7	0	0	0	0	0
Lane Group Flow (vph)	390	0	0	572	84	272
Confl. Peds. (#/hr)		298	298		308	9
Confl. Bikes (#/hr)		15				5
Heavy Vehicles (%)	6%	3%	1%	9%	3%	1%
Bus Blockages (#/hr)	16	0	0	0	0	0
Parking (#/hr)						0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		8	6		
Permitted Phases			6		7	7
Actuated Green, G (s)	27.0			48.0	21.0	21.0
Effective Green, g (s)	28.0			50.0	22.0	23.0
Actuated g/C Ratio	0.27			0.49	0.22	0.23
Clearance Time (s)	11.0			11.0	11.0	11.0
Lane Grp Cap (vph)	710			1135	212	292
v/s Ratio Prot	c0.15			c0.11		
v/s Ratio Perm				0.14	0.09	c0.21
v/c Ratio	0.55			0.50	0.40	0.93
Uniform Delay, d1	31.6			17.6	34.3	38.7
Progression Factor	0.81			0.25	1.00	1.00
Incremental Delay, d2	2.9			1.2	5.5	37.7
Delay (s)	28.6			5.7	39.8	76.4
Level of Service	C			A	D	E
Approach Delay (s)	28.6			5.7	67.8	
Approach LOS	C			A	E	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	74	358	5	6	414	31	5	4	5	10	0	95
Future Vol, veh/h	74	358	5	6	414	31	5	4	5	10	0	95
Conflicting Peds, #/hr	266	0	198	198	0	266	30	0	15	15	0	30
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	6	0	0	6	29	0	0	0	10	0	3
Mvmt Flow	80	389	5	7	450	34	5	4	5	11	0	103

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	750	0	0	592	0	0	1019	1514	410	1119	1499	538
Stage 1	-	-	-	-	-	-	750	750	-	747	747	-
Stage 2	-	-	-	-	-	-	269	764	-	372	752	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.7	6.5	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.7	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.7	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.6	4	3.33
Pot Cap-1 Maneuver	868	-	-	994	-	-	194	121	596	152	123	485
Stage 1	-	-	-	-	-	-	374	422	-	353	423	-
Stage 2	-	-	-	-	-	-	719	416	-	599	421	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	607	-	-	772	-	-	88	54	458	84	55	332
Mov Cap-2 Maneuver	-	-	-	-	-	-	88	54	-	84	55	-
Stage 1	-	-	-	-	-	-	241	272	-	205	293	-
Stage 2	-	-	-	-	-	-	479	288	-	479	272	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.6	0.2	47.9	29.4
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	99	607	-	-	772	-	-	259
HCM Lane V/C Ratio	0.154	0.133	-	-	0.008	-	-	0.441
HCM Control Delay (s)	47.9	11.8	0.7	-	9.7	0.1	-	29.4
HCM Lane LOS	E	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.5	0.5	-	-	0	-	-	2.1

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	74	358	5	6	414	31	5	4	5	10	0	95
Future Vol, veh/h	74	358	5	6	414	31	5	4	5	10	0	95
Conflicting Peds, #/hr	266	0	198	198	0	266	30	0	15	15	0	30
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	6	0	0	6	29	0	0	0	10	0	3
Mvmt Flow	80	389	5	7	450	34	5	4	5	11	0	103

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	750	0	0	592	0	0	1019	1514	410	1119	1499	538
Stage 1	-	-	-	-	-	-	750	750	-	747	747	-
Stage 2	-	-	-	-	-	-	269	764	-	372	752	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.7	6.5	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.7	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.7	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.6	4	3.33
Pot Cap-1 Maneuver	868	-	-	994	-	-	194	121	596	152	123	485
Stage 1	-	-	-	-	-	-	374	422	-	353	423	-
Stage 2	-	-	-	-	-	-	719	416	-	599	421	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	607	-	-	772	-	-	88	54	458	84	55	332
Mov Cap-2 Maneuver	-	-	-	-	-	-	88	54	-	84	55	-
Stage 1	-	-	-	-	-	-	241	272	-	205	293	-
Stage 2	-	-	-	-	-	-	479	288	-	479	272	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.6	0.2	47.9	29.4
HCM LOS			E	D

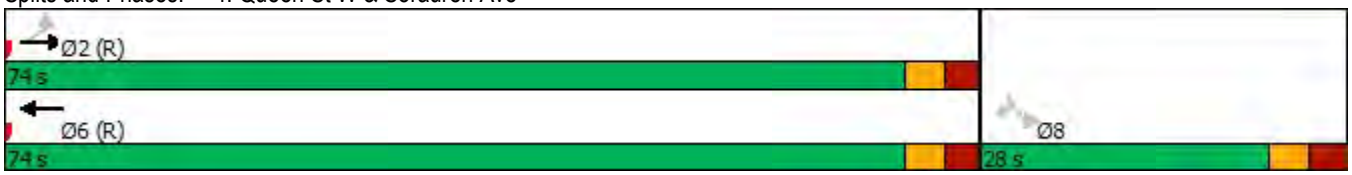
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	99	607	-	-	772	-	-	259
HCM Lane V/C Ratio	0.154	0.133	-	-	0.008	-	-	0.441
HCM Control Delay (s)	47.9	11.8	0.7	-	9.7	0.1	-	29.4
HCM Lane LOS	E	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.5	0.5	-	-	0	-	-	2.1

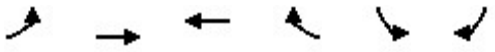
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	133	448	361	46	26
Future Volume (vph)	133	448	361	46	26
Lane Group Flow (vph)	0	612	514	48	27
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	24.0	24.0	24.0	21.0	21.0
Minimum Split (s)	29.7	29.7	29.7	27.1	27.1
Total Split (s)	74.0	74.0	74.0	28.0	28.0
Total Split (%)	72.5%	72.5%	72.5%	27.5%	27.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.7	2.7	2.7	3.1	3.1
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		4.7	4.7	5.1	5.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio		0.43	0.27	0.18	0.10
Control Delay		7.6	6.9	34.9	12.8
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		7.6	6.9	34.9	12.8
Queue Length 50th (m)		27.6	19.5	8.2	0.0
Queue Length 95th (m)		39.5	26.3	18.7	7.3
Internal Link Dist (m)		196.4	227.3	112.1	
Turn Bay Length (m)					35.0
Base Capacity (vph)		1418	1901	273	295
Starvation Cap Reductn		0	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.43	0.27	0.18	0.09

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 19 (19%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 4: Queen St W & Sorauren Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	133	448	361	127	46	26
Future Volume (vph)	133	448	361	127	46	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		4.7	4.7		5.1	5.1
Lane Util. Factor		*0.94	*0.99		1.00	1.00
Frpb, ped/bikes		1.00	0.96		1.00	0.90
Flpb, ped/bikes		0.98	1.00		0.89	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2586	2495		1217	1220
Flt Permitted		0.72	1.00		0.95	1.00
Satd. Flow (perm)		1889	2495		1217	1220
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	140	472	380	134	48	27
RTOR Reduction (vph)	0	0	32	0	0	22
Lane Group Flow (vph)	0	612	482	0	48	5
Confl. Peds. (#/hr)	65			65	74	59
Confl. Bikes (#/hr)				21		4
Heavy Vehicles (%)	0%	5%	8%	2%	0%	0%
Bus Blockages (#/hr)	0	16	19	0	0	0
Parking (#/hr)		0	0		0	
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		73.4	73.4		16.8	16.8
Effective Green, g (s)		74.4	74.4		17.8	17.8
Actuated g/C Ratio		0.73	0.73		0.17	0.17
Clearance Time (s)		5.7	5.7		6.1	6.1
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1377	1819		212	212
v/s Ratio Prot			0.19			
v/s Ratio Perm		c0.32			c0.04	0.00
v/c Ratio		0.44	0.27		0.23	0.02
Uniform Delay, d1		5.5	4.6		36.2	34.9
Progression Factor		1.00	1.56		1.00	1.00
Incremental Delay, d2		1.0	0.3		0.5	0.0
Delay (s)		6.6	7.6		36.7	34.9
Level of Service		A	A		D	C
Approach Delay (s)		6.6	7.6		36.1	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX J

2028 Future Total Intersection Capacity Analysis

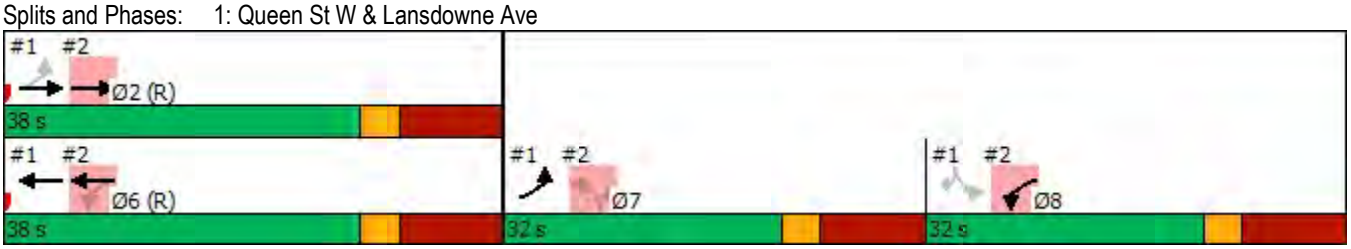
AM Peak Hour

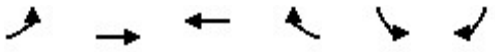
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	146	435	275	111	140
Future Volume (vph)	146	435	275	111	140
Lane Group Flow (vph)	0	612	371	117	147
Turn Type	pm+pt	NA	NA	Perm	Perm
Protected Phases	7	2	6		
Permitted Phases	2			8	8
Minimum Split (s)	32.0	34.0	34.0	32.0	32.0
Total Split (s)	32.0	38.0	38.0	32.0	32.0
Total Split (%)	31.4%	37.3%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		10.0	10.0	10.0	10.0
Lead/Lag	Lead			Lag	Lag
Lead-Lag Optimize?					
v/c Ratio		0.58	0.63	0.58	0.67
Control Delay		4.9	34.8	48.7	53.7
Queue Delay		0.9	0.0	0.0	0.0
Total Delay		5.8	34.8	48.7	53.7
Queue Length 50th (m)		5.6	33.0	22.0	28.3
Queue Length 95th (m)		m13.9	50.0	42.1	#56.5
Internal Link Dist (m)		27.5	136.3	205.4	
Turn Bay Length (m)					45.0
Base Capacity (vph)		1049	593	202	218
Starvation Cap Reductn		200	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.72	0.63	0.58	0.67

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 99 (97%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Queen St W & Lansdowne Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	146	435	275	78	111	140
Future Volume (vph)	146	435	275	78	111	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		10.0	10.0		10.0	10.0
Lane Util. Factor		*0.88	*0.93		1.00	1.00
Frpb, ped/bikes		1.00	0.90		1.00	0.98
Flpb, ped/bikes		0.95	1.00		0.74	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2433	2070		941	1015
Flt Permitted		0.75	1.00		0.95	1.00
Satd. Flow (perm)		1845	2070		941	1015
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	458	289	82	117	147
RTOR Reduction (vph)	0	0	25	0	0	0
Lane Group Flow (vph)	0	612	346	0	117	147
Confl. Peds. (#/hr)	197			197	180	4
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	7%	9%	14%	8%	7%	13%
Bus Blockages (#/hr)	0	0	25	0	0	11
Parking (#/hr)			0		0	0
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	7	2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		48.0	27.0		21.0	21.0
Effective Green, g (s)		50.0	28.0		22.0	22.0
Actuated g/C Ratio		0.49	0.27		0.22	0.22
Clearance Time (s)		11.0	11.0		11.0	11.0
Lane Grp Cap (vph)		1031	568		202	218
v/s Ratio Prot		c0.13	c0.17			
v/s Ratio Perm		0.16			0.12	c0.14
v/c Ratio		0.59	0.61		0.58	0.67
Uniform Delay, d1		18.7	32.2		35.9	36.7
Progression Factor		0.24	1.00		1.00	1.00
Incremental Delay, d2		1.6	4.8		11.6	15.5
Delay (s)		6.1	37.1		47.4	52.2
Level of Service		A	D		D	D
Approach Delay (s)		6.1	37.1		50.1	
Approach LOS		A	D		D	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	400	187	221	56	181
Future Volume (vph)	400	187	221	56	181
Lane Group Flow (vph)	467	0	439	60	195
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	8	6		
Permitted Phases		6		7	7
Minimum Split (s)	34.0	32.0	34.0	32.0	32.0
Total Split (s)	38.0	32.0	38.0	32.0	32.0
Total Split (%)	37.3%	31.4%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	10.0		10.0	10.0	10.0
Lead/Lag		Lag		Lead	Lead
Lead-Lag Optimize?					
v/c Ratio	0.72		0.45	0.27	0.81
Control Delay	33.7		3.8	37.1	63.8
Queue Delay	0.0		0.5	0.0	0.0
Total Delay	33.7		4.3	37.1	63.8
Queue Length 50th (m)	41.4		2.7	10.5	38.8
Queue Length 95th (m)	58.4		5.1	22.7	#77.0
Internal Link Dist (m)	32.9		27.5	338.4	
Turn Bay Length (m)				15.0	
Base Capacity (vph)	652		969	225	242
Starvation Cap Reductn	0		215	0	0
Spillback Cap Reductn	0		0	0	0
Storage Cap Reductn	0		0	0	0
Reduced v/c Ratio	0.72		0.58	0.27	0.81

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 99 (97%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Jameson Ave & Queen St W

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	400	34	187	221	56	181
Future Volume (vph)	400	34	187	221	56	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)	10.0			10.0	10.0	10.0
Lane Util. Factor	*0.88			*0.93	1.00	1.00
Frpb, ped/bikes	0.97			1.00	1.00	0.97
Flpb, ped/bikes	1.00			0.95	0.69	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			0.98	0.95	1.00
Satd. Flow (prot)	2357			2465	1044	1126
Flt Permitted	1.00			0.62	0.95	1.00
Satd. Flow (perm)	2357			1552	1044	1126
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	430	37	201	238	60	195
RTOR Reduction (vph)	6	0	0	0	0	0
Lane Group Flow (vph)	461	0	0	439	60	195
Confl. Peds. (#/hr)		160	160		246	8
Confl. Bikes (#/hr)		11				8
Heavy Vehicles (%)	10%	0%	4%	19%	0%	5%
Bus Blockages (#/hr)	22	0	0	0	0	0
Parking (#/hr)						0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		8	6		
Permitted Phases			6		7	7
Actuated Green, G (s)	27.0			48.0	21.0	21.0
Effective Green, g (s)	28.0			50.0	22.0	22.0
Actuated g/C Ratio	0.27			0.49	0.22	0.22
Clearance Time (s)	11.0			11.0	11.0	11.0
Lane Grp Cap (vph)	647			957	225	242
v/s Ratio Prot	c0.20			c0.10		
v/s Ratio Perm				0.13	0.06	c0.17
v/c Ratio	0.71			0.46	0.27	0.81
Uniform Delay, d1	33.4			17.1	33.3	38.0
Progression Factor	0.82			0.23	1.00	1.00
Incremental Delay, d2	6.1			1.2	2.9	24.2
Delay (s)	33.6			5.2	36.2	62.1
Level of Service	C			A	D	E
Approach Delay (s)	33.6			5.2	56.0	
Approach LOS	C			A	E	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	63	427	246	24	28	58
Future Vol, veh/h	63	427	246	24	28	58
Conflicting Peds, #/hr	174	0	0	174	11	13
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	93	93	93	93	93	93
Heavy Vehicles, %	6	11	12	46	0	3
Mvmt Flow	68	459	265	26	30	62

Major/Minor	Major1			Major2		
Conflicting Flow All	465	0	-	0	829	333
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	377	-
Critical Hdwy	4.22	-	-	-	6.8	6.96
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.26	-	-	-	3.5	3.33
Pot Cap-1 Maneuver	1065	-	-	-	313	660
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	934	-	-	-	217	574
Mov Cap-2 Maneuver	-	-	-	-	217	-
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	587	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	17.8
HCM LOS			C

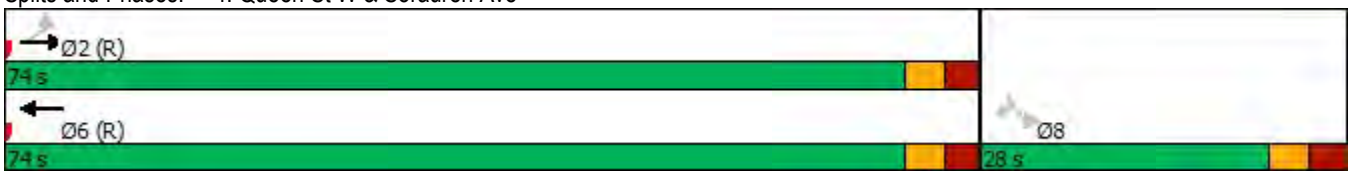
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	934	-	-	-	374
HCM Lane V/C Ratio	0.073	-	-	-	0.247
HCM Control Delay (s)	9.2	0.3	-	-	17.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1

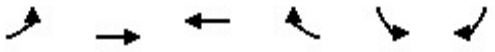
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	114	504	209	53	20
Future Volume (vph)	114	504	209	53	20
Lane Group Flow (vph)	0	687	312	59	22
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	24.0	24.0	24.0	21.0	21.0
Minimum Split (s)	29.7	29.7	29.7	27.1	27.1
Total Split (s)	74.0	74.0	74.0	28.0	28.0
Total Split (%)	72.5%	72.5%	72.5%	27.5%	27.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.7	2.7	2.7	3.1	3.1
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		4.7	4.7	5.1	5.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio		0.50	0.18	0.22	0.08
Control Delay		8.6	6.3	35.7	13.7
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		8.6	6.3	35.7	13.7
Queue Length 50th (m)		35.8	12.2	10.2	0.0
Queue Length 95th (m)		51.5	18.6	22.1	6.6
Internal Link Dist (m)		195.5	184.4	112.1	
Turn Bay Length (m)					35.0
Base Capacity (vph)		1375	1726	273	302
Starvation Cap Reductn		0	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.50	0.18	0.22	0.07

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 70 (69%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

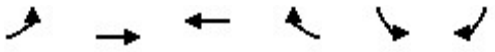
Splits and Phases: 4: Queen St W & Sorauren Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	114	504	209	72	53	20
Future Volume (vph)	114	504	209	72	53	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		4.7	4.7		5.1	5.1
Lane Util. Factor		*0.88	*0.93		1.00	1.00
Frpb, ped/bikes		1.00	0.96		1.00	0.94
Flpb, ped/bikes		0.99	1.00		0.93	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2265	2273		1220	1270
Flt Permitted		0.80	1.00		0.95	1.00
Satd. Flow (perm)		1833	2273		1220	1270
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	127	560	232	80	59	22
RTOR Reduction (vph)	0	0	22	0	0	18
Lane Group Flow (vph)	0	687	290	0	59	4
Confl. Peds. (#/hr)	55			55	48	34
Confl. Bikes (#/hr)				5		3
Heavy Vehicles (%)	4%	10%	12%	8%	4%	0%
Bus Blockages (#/hr)	0	27	18	0	0	0
Parking (#/hr)		0	0		0	
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		73.4	73.4		16.8	16.8
Effective Green, g (s)		74.4	74.4		17.8	17.8
Actuated g/C Ratio		0.73	0.73		0.17	0.17
Clearance Time (s)		5.7	5.7		6.1	6.1
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1337	1657		212	221
v/s Ratio Prot			0.13			
v/s Ratio Perm		c0.37			c0.05	0.00
v/c Ratio		0.51	0.18		0.28	0.02
Uniform Delay, d1		6.0	4.3		36.5	34.9
Progression Factor		1.00	1.57		1.00	1.00
Incremental Delay, d2		1.4	0.2		0.7	0.0
Delay (s)		7.4	7.0		37.2	34.9
Level of Service		A	A		D	C
Approach Delay (s)		7.4	7.0		36.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	114	504	209	72	53	20
Future Volume (vph)	114	504	209	72	53	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		4.7	4.7		5.1	5.1
Lane Util. Factor		*0.88	*0.93		1.00	1.00
Frpb, ped/bikes		1.00	0.96		1.00	0.94
Flpb, ped/bikes		0.99	1.00		0.93	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2265	2273		1220	1270
Flt Permitted		0.80	1.00		0.95	1.00
Satd. Flow (perm)		1833	2273		1220	1270
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	127	560	232	80	59	22
RTOR Reduction (vph)	0	0	22	0	0	18
Lane Group Flow (vph)	0	687	290	0	59	4
Confl. Peds. (#/hr)	55			55	48	34
Confl. Bikes (#/hr)				5		3
Heavy Vehicles (%)	4%	10%	12%	8%	4%	0%
Bus Blockages (#/hr)	0	27	18	0	0	0
Parking (#/hr)		0	0		0	
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		73.4	73.4		16.8	16.8
Effective Green, g (s)		74.4	74.4		17.8	17.8
Actuated g/C Ratio		0.73	0.73		0.17	0.17
Clearance Time (s)		5.7	5.7		6.1	6.1
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1337	1657		212	221
v/s Ratio Prot			0.13			
v/s Ratio Perm		c0.37			c0.05	0.00
v/c Ratio		0.51	0.18		0.28	0.02
Uniform Delay, d1		6.0	4.3		36.5	34.9
Progression Factor		1.00	1.57		1.00	1.00
Incremental Delay, d2		1.4	0.2		0.7	0.0
Delay (s)		7.4	7.0		37.2	34.9
Level of Service		A	A		D	C
Approach Delay (s)		7.4	7.0		36.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	469	1	3	301	2	23
Future Vol, veh/h	469	1	3	301	2	23
Conflicting Peds, #/hr	0	98	98	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	510	1	3	327	2	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	609	0	779	354
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	170	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	966	-	333	642
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	843	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	899	-	309	598
Mov Cap-2 Maneuver	-	-	-	-	309	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	840	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.8
HCM LOS			B

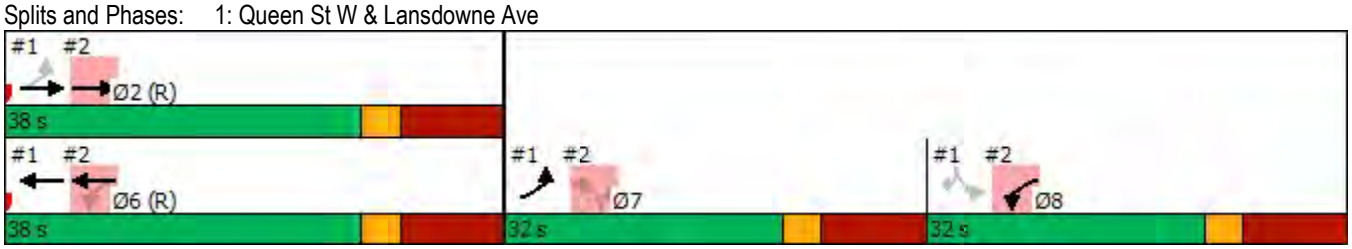
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	556	-	-	899	-
HCM Lane V/C Ratio	0.049	-	-	0.004	-
HCM Control Delay (s)	11.8	-	-	9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

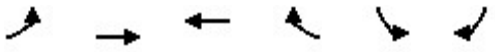
PM Peak Hour

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	196	407	389	87	161
Future Volume (vph)	196	407	389	87	161
Lane Group Flow (vph)	0	615	477	89	164
Turn Type	pm+pt	NA	NA	Perm	Perm
Protected Phases	7	2	6		
Permitted Phases	2			8	8
Minimum Split (s)	32.0	34.0	34.0	32.0	32.0
Total Split (s)	32.0	38.0	38.0	32.0	32.0
Total Split (%)	31.4%	37.3%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		10.0	10.0	10.0	10.0
Lead/Lag	Lead			Lag	Lag
Lead-Lag Optimize?					
v/c Ratio		0.56	0.70	0.43	0.72
Control Delay		5.9	37.8	42.0	56.5
Queue Delay		0.9	0.0	0.0	0.0
Total Delay		6.7	37.8	42.0	56.5
Queue Length 50th (m)		6.2	42.7	16.1	31.9
Queue Length 95th (m)		m9.2	61.0	32.3	#63.6
Internal Link Dist (m)		27.5	139.1	205.4	
Turn Bay Length (m)					45.0
Base Capacity (vph)		1101	684	208	228
Starvation Cap Reductn		230	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.71	0.70	0.43	0.72

Intersection Summary
Cycle Length: 102
Actuated Cycle Length: 102
Offset: 47 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Queen St W & Lansdowne Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	196	407	389	78	87	161
Future Volume (vph)	196	407	389	78	87	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		10.0	10.0		10.0	10.0
Lane Util. Factor		*0.94	*0.99		1.00	1.00
Frpb, ped/bikes		1.00	0.90		1.00	0.97
Flpb, ped/bikes		0.94	1.00		0.72	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		0.98	1.00		0.95	1.00
Satd. Flow (prot)		2670	2430		967	1058
Flt Permitted		0.68	1.00		0.95	1.00
Satd. Flow (perm)		1841	2430		967	1058
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	200	415	397	80	89	164
RTOR Reduction (vph)	0	0	17	0	0	0
Lane Group Flow (vph)	0	615	460	0	89	164
Confl. Peds. (#/hr)	340			340	190	10
Confl. Bikes (#/hr)				23		3
Heavy Vehicles (%)	2%	5%	6%	1%	2%	8%
Bus Blockages (#/hr)	0	0	17	0	0	9
Parking (#/hr)			0		0	0
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	7	2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		48.0	27.0		21.0	21.0
Effective Green, g (s)		50.0	28.0		22.0	22.0
Actuated g/C Ratio		0.49	0.27		0.22	0.22
Clearance Time (s)		11.0	11.0		11.0	11.0
Lane Grp Cap (vph)		1081	667		208	228
v/s Ratio Prot		c0.12	c0.19			
v/s Ratio Perm		0.16			0.09	c0.16
v/c Ratio		0.57	0.69		0.43	0.72
Uniform Delay, d1		18.4	33.1		34.6	37.1
Progression Factor		0.31	1.00		1.00	1.00
Incremental Delay, d2		1.5	5.7		6.3	17.7
Delay (s)		7.1	38.8		40.9	54.9
Level of Service		A	D		D	D
Approach Delay (s)		7.1	38.8		50.0	
Approach LOS		A	D		D	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	346	164	385	88	256
Future Volume (vph)	346	164	385	88	256
Lane Group Flow (vph)	404	0	584	94	272
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	8	6		
Permitted Phases		6		7	7
Minimum Split (s)	34.0	32.0	34.0	32.0	32.0
Total Split (s)	38.0	32.0	38.0	32.0	32.0
Total Split (%)	37.3%	31.4%	37.3%	31.4%	31.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	8.0	8.0	8.0	8.0	8.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0
Total Lost Time (s)	10.0		10.0	10.0	9.0
Lead/Lag		Lag		Lead	Lead
Lead-Lag Optimize?					
v/c Ratio	0.57		0.50	0.44	0.93
Control Delay	28.6		4.3	42.4	78.1
Queue Delay	0.0		0.7	0.0	0.0
Total Delay	28.6		4.9	42.4	78.1
Queue Length 50th (m)	27.2		3.7	17.1	55.8
Queue Length 95th (m)	41.0		8.0	33.8	#106.3
Internal Link Dist (m)	32.9		27.5	338.6	
Turn Bay Length (m)				15.0	
Base Capacity (vph)	714		1161	212	292
Starvation Cap Reductn	0		269	0	0
Spillback Cap Reductn	0		0	0	0
Storage Cap Reductn	0		0	0	0
Reduced v/c Ratio	0.57		0.65	0.44	0.93

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 47 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Jameson Ave & Queen St W

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	346	34	164	385	88	256
Future Volume (vph)	346	34	164	385	88	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	2100
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)	10.0			10.0	10.0	9.0
Lane Util. Factor	*0.94			*0.99	1.00	1.00
Frpb, ped/bikes	0.95			1.00	1.00	0.97
Flpb, ped/bikes	1.00			0.94	0.67	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			0.99	0.95	1.00
Satd. Flow (prot)	2577			2735	987	1296
Flt Permitted	1.00			0.72	0.95	1.00
Satd. Flow (perm)	2577			1995	987	1296
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	368	36	174	410	94	272
RTOR Reduction (vph)	7	0	0	0	0	0
Lane Group Flow (vph)	397	0	0	584	94	272
Confl. Peds. (#/hr)		298	298		308	9
Confl. Bikes (#/hr)		15				5
Heavy Vehicles (%)	6%	3%	1%	9%	3%	1%
Bus Blockages (#/hr)	16	0	0	0	0	0
Parking (#/hr)						0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		8	6		
Permitted Phases			6		7	7
Actuated Green, G (s)	27.0			48.0	21.0	21.0
Effective Green, g (s)	28.0			50.0	22.0	23.0
Actuated g/C Ratio	0.27			0.49	0.22	0.23
Clearance Time (s)	11.0			11.0	11.0	11.0
Lane Grp Cap (vph)	707			1137	212	292
v/s Ratio Prot	c0.15			c0.11		
v/s Ratio Perm				0.14	0.10	c0.21
v/c Ratio	0.56			0.51	0.44	0.93
Uniform Delay, d1	31.7			17.7	34.7	38.7
Progression Factor	0.81			0.27	1.00	1.00
Incremental Delay, d2	3.0			1.2	6.6	37.7
Delay (s)	28.8			5.9	41.3	76.4
Level of Service	C			A	D	E
Approach Delay (s)	28.8			5.9	67.4	
Approach LOS	C			A	E	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	74	365	434	31	10	95
Future Vol, veh/h	74	365	434	31	10	95
Conflicting Peds, #/hr	266	0	0	266	15	30
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	92	92	92	92	92	92
Heavy Vehicles, %	0	6	6	29	10	3
Mvmt Flow	80	397	472	34	11	103

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	772	0	-	0	1129	549
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	374	-
Critical Hdwy	4.1	-	-	-	7	6.96
Critical Hdwy Stg 1	-	-	-	-	6	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	2.2	-	-	-	3.6	3.33
Pot Cap-1 Maneuver	852	-	-	-	186	477
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	643	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	692	-	-	-	105	379
Mov Cap-2 Maneuver	-	-	-	-	105	-
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	522	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	23.8
HCM LOS			C

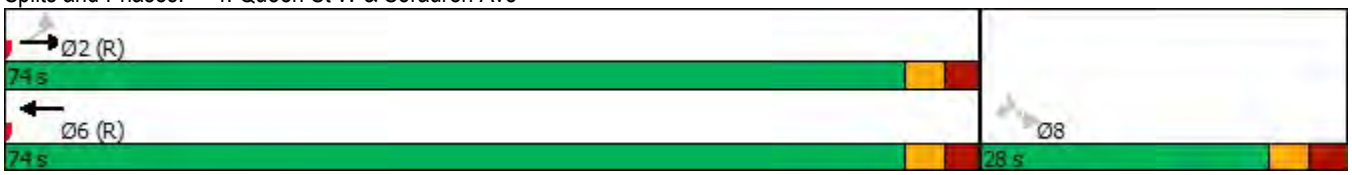
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	692	-	-	-	304
HCM Lane V/C Ratio	0.116	-	-	-	0.375
HCM Control Delay (s)	10.9	0.6	-	-	23.8
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	1.7

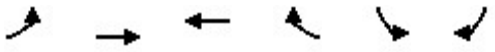
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	133	452	362	46	26
Future Volume (vph)	133	452	362	46	26
Lane Group Flow (vph)	0	616	515	48	27
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	24.0	24.0	24.0	21.0	21.0
Minimum Split (s)	29.7	29.7	29.7	27.1	27.1
Total Split (s)	74.0	74.0	74.0	28.0	28.0
Total Split (%)	72.5%	72.5%	72.5%	27.5%	27.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.7	2.7	2.7	3.1	3.1
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		4.7	4.7	5.1	5.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio		0.43	0.27	0.18	0.10
Control Delay		7.7	7.0	34.9	12.8
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		7.7	7.0	34.9	12.8
Queue Length 50th (m)		27.9	20.6	8.2	0.0
Queue Length 95th (m)		39.8	25.6	18.7	7.3
Internal Link Dist (m)		198.6	184.4	112.1	
Turn Bay Length (m)					35.0
Base Capacity (vph)		1420	1901	273	295
Starvation Cap Reductn		0	0	0	0
Spillback Cap Reductn		0	0	0	0
Storage Cap Reductn		0	0	0	0
Reduced v/c Ratio		0.43	0.27	0.18	0.09

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 102
Offset: 19 (19%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 4: Queen St W & Sorauren Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	133	452	362	127	46	26
Future Volume (vph)	133	452	362	127	46	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)		4.7	4.7		5.1	5.1
Lane Util. Factor		*0.94	*0.99		1.00	1.00
Frpb, ped/bikes		1.00	0.96		1.00	0.90
Flpb, ped/bikes		0.98	1.00		0.89	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		2586	2496		1217	1220
Flt Permitted		0.72	1.00		0.95	1.00
Satd. Flow (perm)		1891	2496		1217	1220
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	140	476	381	134	48	27
RTOR Reduction (vph)	0	0	32	0	0	22
Lane Group Flow (vph)	0	616	483	0	48	5
Confl. Peds. (#/hr)	65			65	74	59
Confl. Bikes (#/hr)				21		4
Heavy Vehicles (%)	0%	5%	8%	2%	0%	0%
Bus Blockages (#/hr)	0	16	19	0	0	0
Parking (#/hr)		0	0		0	
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)		73.4	73.4		16.8	16.8
Effective Green, g (s)		74.4	74.4		17.8	17.8
Actuated g/C Ratio		0.73	0.73		0.17	0.17
Clearance Time (s)		5.7	5.7		6.1	6.1
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1379	1820		212	212
v/s Ratio Prot			0.19			
v/s Ratio Perm		c0.33			c0.04	0.00
v/c Ratio		0.45	0.27		0.23	0.02
Uniform Delay, d1		5.5	4.6		36.2	34.9
Progression Factor		1.00	1.58		1.00	1.00
Incremental Delay, d2		1.0	0.3		0.5	0.0
Delay (s)		6.6	7.6		36.7	34.9
Level of Service		A	A		D	C
Approach Delay (s)		6.6	7.6		36.1	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	437	4	20	514	1	7
Future Vol, veh/h	437	4	20	514	1	7
Conflicting Peds, #/hr	0	198	198	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	475	4	22	559	1	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	677	0	999	438
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	911	-	240	567
Stage 1	-	-	-	-	467	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	784	-	198	488
Mov Cap-2 Maneuver	-	-	-	-	198	-
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	676	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	412	-	-	784	-
HCM Lane V/C Ratio	0.021	-	-	0.028	-
HCM Control Delay (s)	13.9	-	-	9.7	0.2
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

APPENDIX K

MMLOS Guidelines

Exhibit 16 – TLOS Signalized Intersection Evaluation Table

Delay	Typical Location	LOS
0	Grade Separation	A
≤10 sec	High Level TSP	B
≤20 sec		C
≤30 sec		D
≤40 sec	TSP & long cycle length	E
>40 sec	No TSP & long cycle length	F

Note: Delay includes travel time from end of queue to entering the intersection

5 Truck Level of Service (TkLOS)

5.1 Intent

Motor vehicle LOS accounts for trucks by considering the percent of trucks and buses in the traffic volume. However, some elements of roadway segments and intersections clearly affect the ability of trucks to operate with ease. The intent of the truck level of service (TkLOS) is to complement motor vehicle LOS by considering the physical space available for trucks to negotiate corners quickly and easily, and to operate safely within travelled lanes.

The objective of evaluating TkLOS is to facilitate goods movement within the City of Ottawa – however, unlike other modes, the TkLOS need only be applied along truck routes, arterial roads and key delivery access routes, since trucks are not intended to operate on every street. An exception would be within employment or enterprise areas where targets are set for trucks on all streets in these areas, as laid out in Section 7.

Care should be taken when considering the trade-offs between truck level of service and pedestrian/bicycle level of service with respect to the corner radii and turning speed. There is potential for trucks to encroach on pedestrian and cycling facilities if trucks are not accommodated appropriately, which can put vulnerable users at risk. As mentioned in Section 1.2, the MMLOS guidelines do not replace safety or geometric guidance.

5.2 Data Requirements

A summary of the data required to evaluate the truck level of service is provided in Exhibit 17.

Exhibit 17 - Data Requirements for Truck Level of Service

SEGMENTS	SIGNALIZED INTERSECTIONS
» Street width (number of through lanes per direction) » Curb lane width (m)	» Effective radius » Number of receiving lanes on departing leg

Note that effective radius is the same as corner radius where trucks must turn from the curbside lane into a departing curbside lane, however where parking lanes or on-street parking lanes are provided adjacent to the travel / turn lanes the effective radius can be determined by placing a simple or compound radius between the edge of the travel lane on the approach and departing legs – refer to Exhibit 18 below.

		EXISTING				FUTURE BACKGROUND				FUTURE TOTAL			
Signalized Intersection	**Side of Intersection**	**AM Delay (sec)**	**PM Delay (sec)**	**Worst Delay (sec)**	**TLOS**	**AM Delay (sec)**	**PM Delay (sec)**	**Worst Delay (sec)**	**TLOS**	**AM Delay (sec)**	**PM Delay (sec)**	**Worst Delay (sec)**	**TLOS**
Lansdowne Ave & Queen St W	North	52	54	54	F	52	54	54	F	52	55	55	F
	South	-	-	-	-	-	-	-	-	-	-	-	-
	East	36	38	38	E	37	38	38	E	37	39	39	E
	West	-	-	-	-	-	-	-	-	-	-	-	-
Jameson Ave & Queen St W	North	-	-	-	-	-	-	-	-	-	-	-	-
	South	-	-	-	-	-	-	-	-	-	-	-	-
	East	-	-	-	-	-	-	-	-	-	-	-	-
	West	32	27	32	E	32	29	32	E	34	29	34	E

Exhibit 4 – PLOS Segment Evaluation Table

Sidewalk Width (m)	Boulevard Width (m)	Motor Vehicle Traffic Volume (AADT)	Presence of On-street Parking	Segment PLOS			
				Operating Speed (km/h)			
				≤30	>30 or 50	>50 or 60	>60 [1]
2.0 or more	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	B	N/A
			No	A	B	C	D
	0.5 to 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0	≤ 3000	NA	A	B	C	D
		> 3000	Yes	B	B	D	N/A
			No	B	C	E	F
1.8	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0.5 to 2	≤ 3000	N/A	A	B	B	D
		> 3000	Yes	A	C	C	N/A
			No	B	C	E	E
	0	≤ 3000	N/A	A	B	C	D
		> 3000	Yes	B	C	D	N/A
			No	C	D	F	F
1.5	> 2	≤ 3000	N/A	C	C	C	C
		> 3000	Yes	C	C	D	N/A
			No	C	D	E	E
	0.5 to 2	≤ 3000	N/A	C	C	C	D
		> 3000	Yes	C	C	D	N/A
			No	D	E	E	E
	0	N/A		D	E	F [2]	F [2]
<1.5	N/A			F [3]	F [3]	F [3]	F [3]
No sidewalk	N/A			C [4]	F [3]	F [3]	F [3]

Notes:
1. On-street parking not provided on roadways with posted speed of 70 km/h or more
2. Sidewalk must be 1.8 m wide if no separation is provided (curb-face sidewalk) where speeds are high
3. Sidewalk must be 1.5 m wide to meet Provincial accessiblity standards
4. Ottawa Pedestrian Plan, 2014: “all new and reconstructed urban local roads where pedestrian facilities are required in accordance with these policies but no dedicated pedestrian facility is provided, require that roads be designed for a speed of 30 km/h or lower (pending development of a new 30 km/h roadway design standard).” Where a roadway is specifically designed as 'shared space', with appropriate design controls and features, it can achieve LOS A.
5. Where a multi-use path is provided in lieu of sidewalks, the MUP can be evaluated using the same methodology.

EXISTING

Segment	From	To	Side	Sidewalk width	Blvd Width	AADT per lane	On-Street Parking?	Speed	Segment PLOS
Queen St W	Macdonell Ave	Lansdowne Ave	North	2.0	1.0	> 3000	no	30 km/h - 50 km/h	C
			South	2.0	1.0	> 3000	no	30 km/h - 50 km/h	C

Exhibit 11 – BLOS Segment Evaluation Table

Type of Bikeway		LOS
Physically Separated Bikeway (cycle tracks, protected bike lanes and multi-use paths). Physical separation refers to, but is not limited to, curbs, raised medians, bollards and parking lanes (adjacent to the bike lane along the travelled way i.e. not curbside).		A
Bike Lanes Not Adjacent Parking Lane - Select Worst Scoring Criteria		
No. of Travel Lanes	1 travel lane in each direction	A
	2 travel lanes in each direction separated by a raised median	B
	2 travel lanes in each direction without a separating median	C
	More than 2 travel lanes in each direction	D
Bike Lane Width	≥ 1.8 m wide bike lane (includes marked buffer and paved gutter width)	A
	≥1.5 m to <1.8 m wide bike lane (includes marked buffer and paved gutter width)	B
	≥1.2 m to <1.5 m wide bike lane (includes marked buffer and paved gutter width)	C
Operating Speed	≤ 50 km/h operating speed	A
	60 km/h operating speed	C
	≥ 70 km/h operating speed	E
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
Bike Lanes Adjacent to curbside Parking Lane - Select Worst Scoring Criteria		
No. of Travel Lanes	1 travel lane in each direction	A
	2 or more travel lanes in each direction	C
Bike Lane and Parking Lane Width	4.5 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	A
	4.25 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	B
	≤ 4.0 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	C
Operating Speed	≤ 40 km/h operating speed	A
	50 km/h operating speed	B
	60 km/h operating speed	D
	≥ 70 km/h operating speed	F
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
Mixed Traffic		
No. of Travel Lanes and Operating Speed	2 travel lanes; ≤ 40 km/h; no marked centerline or classified as residential	A
	2 to 3 travel lanes; ≤ 40 km/h	B
	2 travel lanes; 50 km/h; no marked centerline or classified as residential	B
	2 to 3 travel lanes; 50 km/h	D
	4 to 5 travel lanes; ≤ 40 km/h	D
	4 to 5 travel lanes; ≥ 50 km/h	E
	6 or more travel lanes; ≤ 40 km/h	E
	≥ 60 km/h	F
Unsignalized Crossing along Route: no median refuge		
No. of Travel Lanes on Side Street and Operating Speed	3 or less lanes being crossed; ≤ 40 km/h	A
	4 to 5 lanes being crossed; ≤ 40 km/h	B
	3 or less lanes being crossed; 50 km/h	B
	4 to 5 lanes being crossed; 50 km/h	C
	3 or less lanes being crossed; 60 km/h	C
	4 to 5 lanes being crossed; 60 km/h	D
	6 or more lanes being crossed; ≤ 40 km/h	E
	3 or less lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 50 km/h	F
	4 to 5 lanes being crossed; ≥ 65 km/h	F
Unsignalized Crossing along Route: with median refuge (≥ 1.8 m wide)		
No. of Travel Lanes on Side Street and Operating Speed	5 or less lanes being crossed; ≤ 40 km/h	A
	3 or less lanes being crossed; 50 km/h	A
	6 or more lanes being crossed; ≤ 40 km/h	B
	4 to 5 lanes being crossed; 50 km/h	B
	3 or less lanes being crossed; 60 km/h	B
	6 or more lanes being crossed; 50 km/h	C
	4 to 5 lanes being crossed; 60 km/h	C
	3 or less lanes being crossed; ≥ 65 km/h	D
	6 or more lanes being crossed; 60 km/h	E
	4 to 5 lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 65 km/h	F

EXISTING

Segment	From	To	Side	Type	No. of Lanes	Operating Speed	No Centreline/Residential?	Segment BLOS
Queen St W	Macdonell Ave	Lansdowne Ave	North	Mixed Traffic	4	Less than or equal to 40 km/h	N/A	D
			South	Mixed Traffic	4	Less than or equal to 40 km/h	N/A	D

Future (per City's Cycling Network Plan):

-None planned along Queen St W

Mon Mar 27 2023 22:08:15 GMT-0400 (Eastern Daylight Time) - Run Time: 984ms

Cross Tabulation Query Form - Transit - 2016 v1.1

Row: Planning district of transit egress pt. - pd_egrs
Column: Route used on link #1 - route_1

Filters:
(2006 GTA zone of origin - gta06_orig In 89, 109, 110, 113
and
Trip purpose of origin - purp_orig In H
and
Start time of trip - start_time In 600-1000)

Tran 2016
Table:

	GO - Lakes	GO - Kitche	29 Dufferir	47 Caledor	63 Oakwoc	80 Parkside	TTC Wheel	501 Queen	504 King St	505 Dunda	506 Colleg	509 Harboi	511 Bathur	Cherry Stre	Yonge-Univ	Bloor Danforth	
	GT01	GT03	T029	T047	T063	T080	TTC Wheel	T501	T504	T505	T506	T509	T511	T514	T593	T596	
PD 1 of Toronto	93	13	113	169	556	0	0	570	4356	141	53	101	27	173	20	16	
PD 2 of Toronto	0	0	26	137	29	0	0	66	690	0	4	0	0	0	0	0	
PD 3 of Toronto	0	0	37	57	12	0	0	0	137	0	0	0	0	0	0	0	
PD 4 of Toronto	0	0	41	69	126	0	0	0	244	0	0	4	0	0	0	53	
PD 5 of Toronto	0	0	0	0	22	0	0	0	108	0	0	0	0	0	0	0	
PD 6 of Toronto	0	0	43	78	43	0	6	6	55	0	0	0	0	0	0	0	
PD 7 of Toronto	0	0	0	0	0	11	0	120	0	0	0	0	0	0	0	0	
PD 8 of Toronto	0	0	148	0	0	85	0	24	0	0	0	0	0	0	0	0	
PD 9 of Toronto	0	0	0	6	7	0	0	0	64	0	0	0	0	0	0	41	
PD 10 of Toronto	0	0	90	32	27	0	0	0	156	0	0	0	0	0	0	0	
PD 11 of Toronto	0	0	11	0	20	0	0	17	30	0	0	0	0	0	0	0	
PD 12 of Toronto	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	
PD 15 of Toronto	0	0	97	0	0	0	0	0	21	0	0	0	0	0	0	0	
Richmond Hill	0	0	0	0	0	0	0	0	54	0	0	0	0	0	0	0	
Markham	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	
Mississauga	0	0	0	0	0	0	0	0	74	0	0	0	0	0	0	0	
Milton	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oakville	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SUM	***123***	***13***	***632***	***548***	***842***	***96***	***6***	***803***	***6002***	***141***	***57***	***105***	***27***	***173***	***20***	***110***	***9698***

Summary by Route

Transit Route	Trips	%	
TTC Bus			**23%**
29 Dufferin	632	7%	
47 Caledonia	548	6%	
63 Oakwood	842	9%	
80 Parkside	96	1%	
TTC Wheel Trans	6	0%	
509 Harbourfront Bus	105	1%	
TTC Streetcar			**74%**
501 Queen Streetcar	803	8%	
504 King Streetcar	6002	63%	
505 Dundas Streetcar	141	1%	
506 College / Carloton Streetcar	57	1%	
511 Bathurst Streetcar	27	0%	
Cherry Streetcar	173	2%	<--not operational
TTC Subway			**1%**
Yonge-University West	20	0%	
Bloor Danforth	110	1%	
GO			**1%**
GO - Lakeshore West	123	1%	
GO - Kitchener	13	0%	
TOTAL	***9525***	***100%***	

APPENDIX L

Functional Design Review

ACCESS DESIGN PER CITY OF TORONTO T-350.01

QUEEN STREET WEST

(ORIGINAL ROAD ALLOWANCE BETWEEN BROKEN FRONT CONCESSION AND CONCESSION 1, FROM THE BAY)
PIN 21339-0038

MAINTAIN EXISTING ACCESS

MATCH EXISTING DROP CURB

EXTEND CURB CUT

REMOVE AND REPLACE EXISTING CONCRETE CURB AND GUTTER WITH DEPRESSED CONCRETE CURB AND GUTTER AS PER T-600.05-1

DRIVEWAY ENTRANCE AS PER T-350.01

EX HYDRANT TO BE RELOCATED

EX HYDRO POLE TO BE RELOCATED

Existing Hydrant to be relocated

MATCH TO EXISTING CURB AND SIDEWALK

MATCH INTO EXISTING GRADES ALONG EXISTING TOP OF CURB

LIMIT OF UNDERGROUND PARKING STRUCTURE

Proposed Fire Hydrant

PROPERTY LINE

R5.00m

6.00m

HED LINE INDICATES P1 EXTENTS

GRADES ALONG PROPERTY LINE (TYP.)

SHARED TYPE G+ B LOADING
13m X 4m X 6.1m CLEARANCE
200mm REINFORCED CONCRETE SLAB

Staging
25 m²
[274 ft²]

Retail
479 m²
[5152 ft²]

Residential Lobby

Bulk Storage
13 m²
[135 ft²]

Waste/ Recycling
77 m²
[827 ft²]

GARBAGE TRI-SORTER/ COMPACTOR

Siamese Connection

Lobby
84 m²
[901 ft²]

Mail Rm
26 m²
[276 ft²]

PIPE SHAFT

CACF
7 m²
[71 ft²]

Parcel Rm
13 m²
[142 ft²]

Pet Wash
12 m²
[125 ft²]

EXHAUST (MAX GRATE POSITY 20mm x 20mm)

TWO-WAY DRIVE AISLE

YIELD SIGN TYP.

STRM. TANK. ACC.

GATE

GAS CHAMBER (BC)

CONCRETE CURB

CURB CUT

BIKE RACK

PARKING METER

BOLLARD

SIDEWALK

PLOT DATE: April 24, 2023

DRAWN BY: H.S.

LEA Consulting Ltd.
Consulting Engineers and Planners
www.LEA.ca

N

Project No. 23322

Date APR 24, 2023

1437-1455 QUEEN ST.
TORONTO ONTARIO

2 0 2 4 6m
1:200

ACCESS DESIGN REVIEW

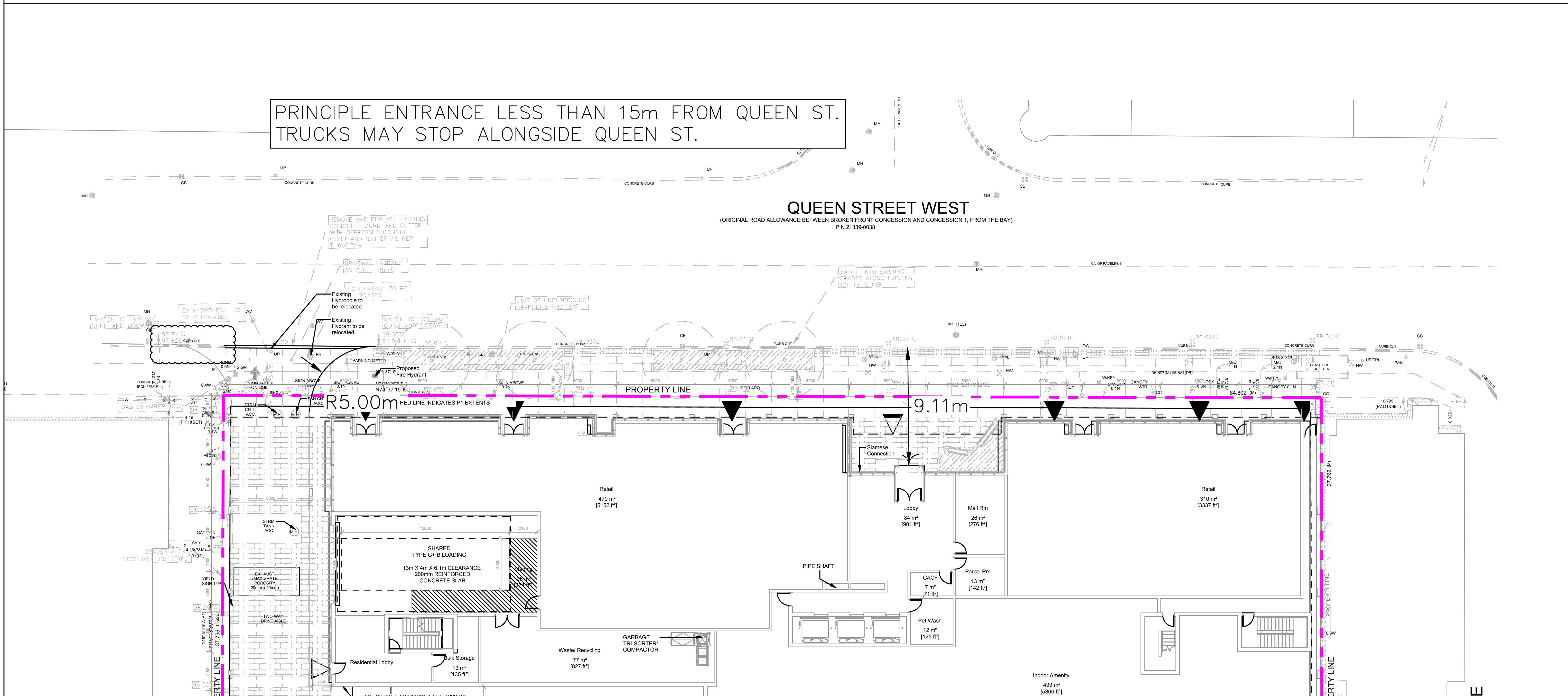
Drawing No. 000

DRAWING NAME: C:\Users\HSami\AppData\Local\Temp\Ac

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



DRAWN BY: H.S.

PLOT DATE: April 24, 2023

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Project No.	23322
Date	APR 24, 2023

1437–1455 QUEEN ST.
TORONTO ONTARIO

3 0 3 6 9m
1:300

FIRE ROUTE REVIEW

Drawing No. 001

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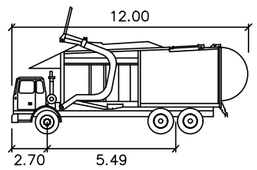


GARBAGE TO meters

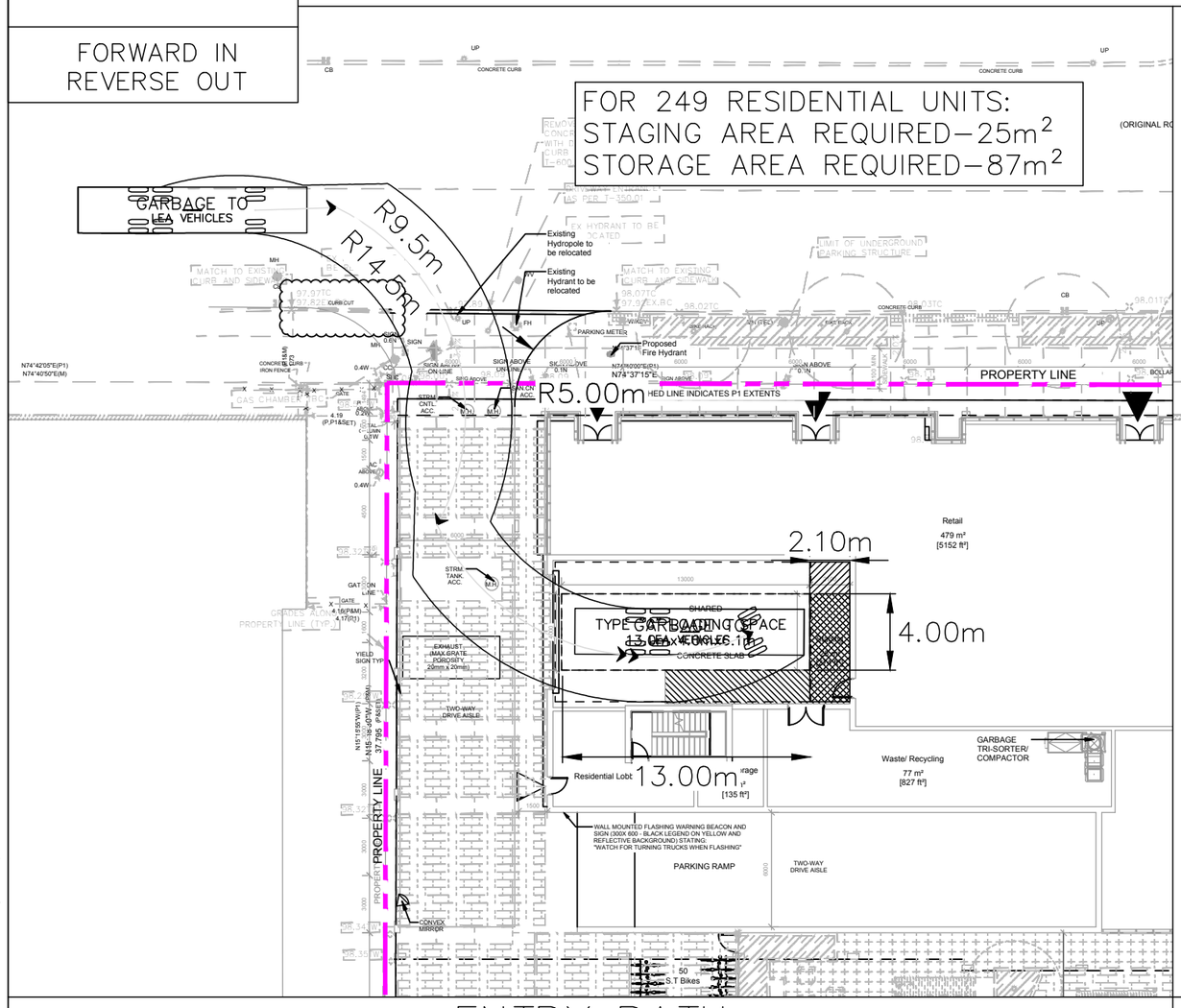
Width	: 2.40
Track	: 2.40
Lock to Lock Time	: 6.0
Steering Angle	: 27.1

FORWARD IN
REVERSE OUT

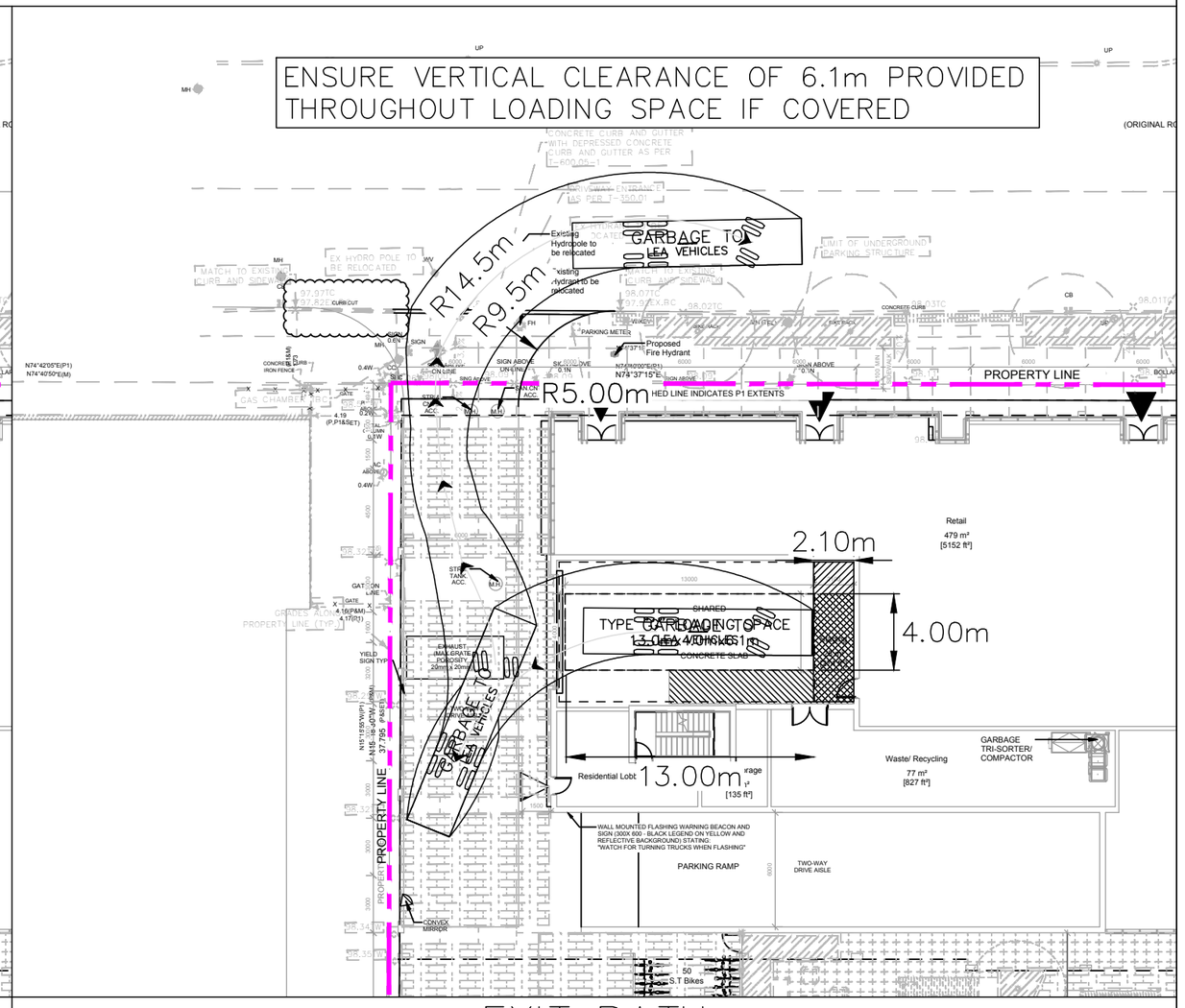
NOTES: AS PER THE CITY OF TORONTO REQUIREMENTS FOR GARBAGE, RECYCLING AND ORGANICS COLLECTION SERVICES FOR NEW DEVELOPMENTS AND REDEVELOPMENTS (MARCH 2022):

1. PAGE 27 WASTE STORAGE ROOM – PROVIDE MIN. 25m² FOR THE FIRST 50 UNITS PLUS AN ADDITIONAL 13m² FOR EACH ADDITIONAL 50 UNITS. PROVIDE MIN. 10m² FOR UNCOMPACTED WASTE.
2. PAGE 29 LOADING SPACE – TYPE G LOADING SPACE MUST BE: ON PRIVATE PROPERTY; 13m IN LENGTH; 4m IN WIDTH; 6.1m UNENCUMBERED VERTICAL CLEARANCE THROUGHOUT
3. PAGE 29 STAGING & LOADING AREA – ADD 5m² FOR EVERY 50 UNITS > 50. USE 2m³ CONTAINERS FOR WASTE COLLECTION.
4. PAGE 30 – MIN. 6.1m VERTICAL CLEARANCE THROUGHOUT THE LOADING SPACE AND STAGING AREA.
5. PAGE 32 ACCESS – MIN. 6.0m AT THE POINT OF INGRESS/EGRESS TO THE SITE, MIN. 4.5m WIDE THROUGHOUT THE SITE WITH A MIN. 4.4m VERTICAL CLEARANCE THROUGHOUT THE SITE.

6. FLASHING WARNING SYSTEM
   - 6.1. FLASHING WARNING LIGHT TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE.
   - 6.2. A TRAINED ON-SITE STAFF MEMBER WILL BE AVAILABLE TO MANEUVER THE GARBAGE BINS FOR THE COLLECTION DRIVER AND ACT AS A FLAGMAN WHEN THE TRUCK IS REVERSING. IF THE STAFF IS UNAVAILABLE AT THE TIME THE CITY COLLECTION VEHICLE ARRIVES AT THE SITE, IT WILL LEAVE THE SITE AND RETURN ON THE NEXT SCHEDULED COLLECTION DAY.



ENTRY PATH



EXIT PATH

PLOT DATE: April 24, 2023

DRAWN BY: H.S.

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N

Project No. 23322

Date APR 24, 2023

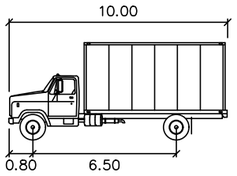
1437–1455 QUEEN ST.
TORONTO ONTARIO

3 0 3 6 9m
1:300

LOADING TYPE 'G' REVIEW
CITY GARBAGE TRUCK
ENTRY AND EXIT PATHS

Drawing No. 002

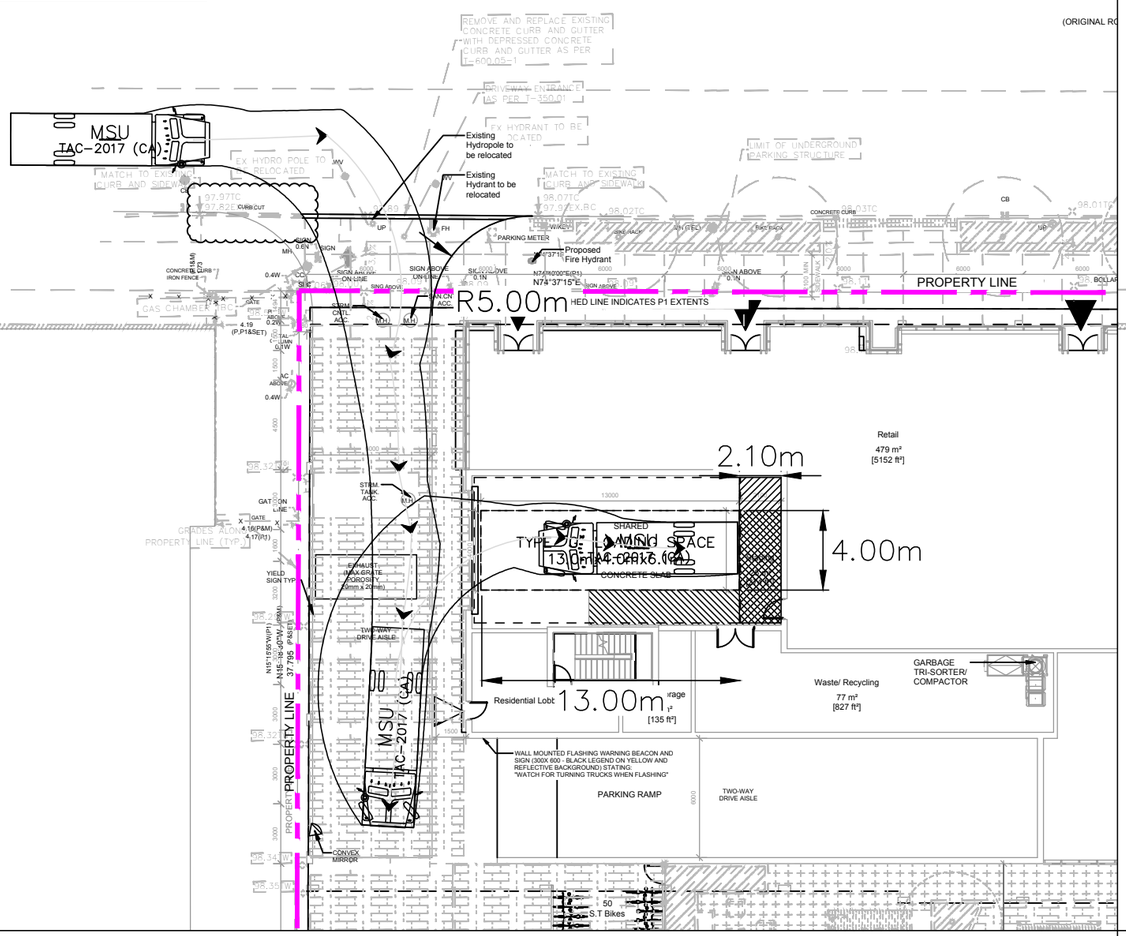
DRAWING NAME: C:\Users\HSami\AppData\Local\Temp\Acf



MSU

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

REVERSE IN
FORWARD OUT



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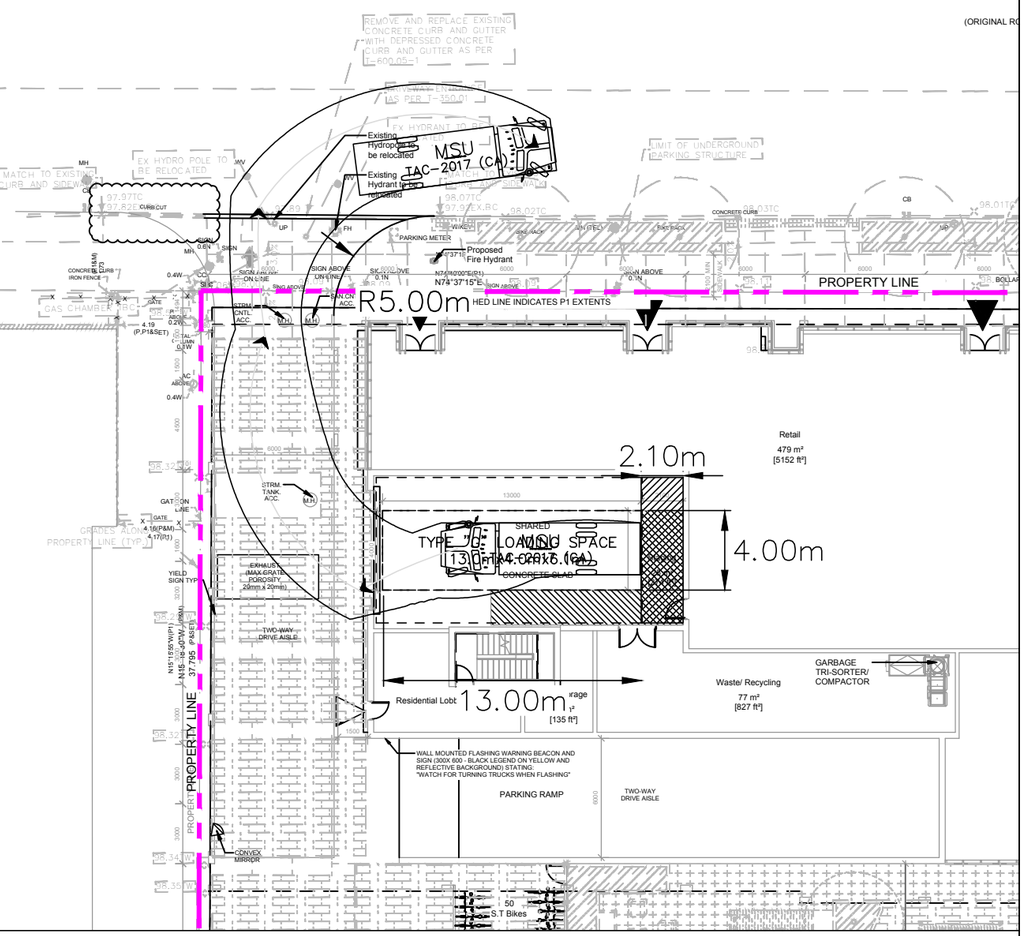

EXIT PATH

DRAWN BY: H.S. PLOT DATE: April 24, 2023

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N

Project No. 23322

Date APR 24, 2023

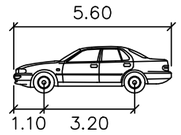
1437–1455 QUEEN ST.
TORONTO ONTARIO

3 0 3 6 9m
1:300

LOADING TYPE 'B' REVIEW
MOVING / DELIVERY VEHICLE – MSU
ENTRY AND EXIT PATHS

Drawing No. 003

DRAWING NAME: C:\Users\HSami\AppData\Local\Temp\Ac

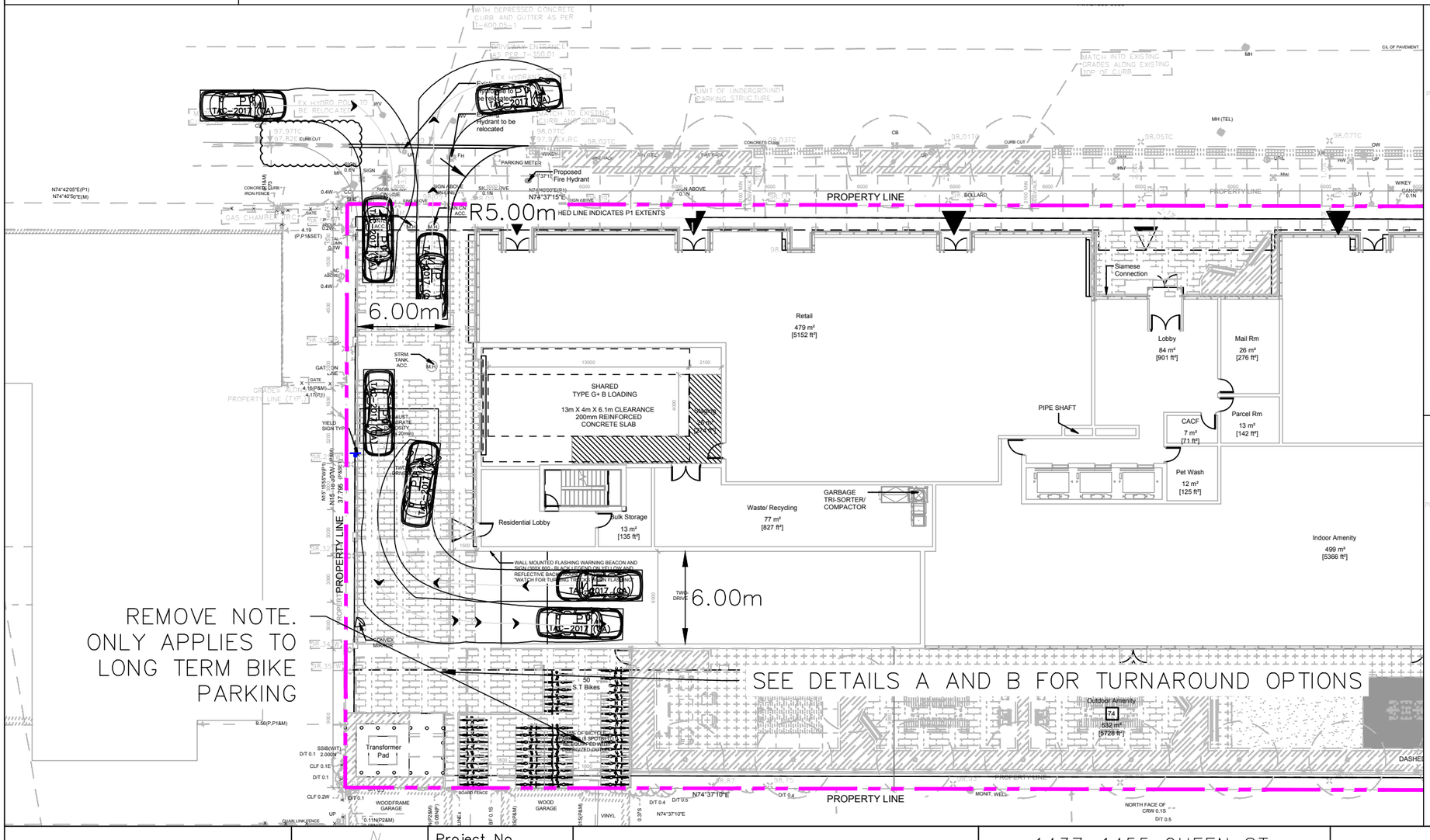


P

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

NOTES: CITY OF TORONTO ZONING BY-LAW 569-2013:

1. IF THE CENTRELINE OF A PARKING SPACE IS AT AN INTERIOR ANGLE OF 70 TO 90 DEGREES TO THE CENTRELINE OF THE DRIVE AISLE PROVIDING VEHICLE ACCESS, THE MINIMUM WIDTH FOR THAT ONE OR TWO LANE DRIVE AISLE IS 6.0m.
2. A PARKING SPACE MUST HAVE THE FOLLOWING MINIMUM DIMENSIONS:
   (i) LENGTH OF 5.6m; WIDTH OF 2.6m; VERTICAL CLEARANCE OF 2.0m; AND
   (ii) THE MINIMUM WIDTH IN (II) MUST BE INCREASED BY 0.3m FOR EACH SIDE OF THE PARKING SPACE THAT IS OBSTRUCTED.
3. THE MINIMUM DIMENSIONS OF A PARKING SPACE THAT IS ADJACENT AND PARALLEL TO A DRIVE AISLE FROM WHICH VEHICLE ACCESS IS PROVIDED ARE:
   (I) LENGTH – 6.7m; WIDTH – 2.6m; VERTICAL CLEARANCE – 2.0m; AND
   THE MINIMUM WIDTH IN (II) MUST BE INCREASED BY 0.3m FOR EACH SIDE OF THE PARKING SPACE THAT IS OBSTRUCTED ACCORDING TO (D) BELOW
4. THE SIDE OF A PARKING SPACE IS OBSTRUCTED IF ANY PART OF A FIXED OBJECT SUCH AS A WALL, COLUMN, BOLLARD, FENCE OR PIPE IS SITUATED:
   (I) WITHIN 0.3m OF THE SIDE OF THE PARKING SPACE, MEASURED AT RIGHT ANGLES, AND
   (II) MORE THAN 1.0m FROM THE FRONT OR REAR OF THE PARKING SPACE.



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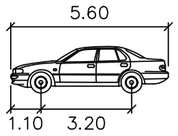
3 0 3 6 9m
1:300

PARKING REVIEW
GROUND FLOOR

Drawing No. 004

DRAWING NAME: C:\Users\HSami\AppData\Local\Temp\AcF



P

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

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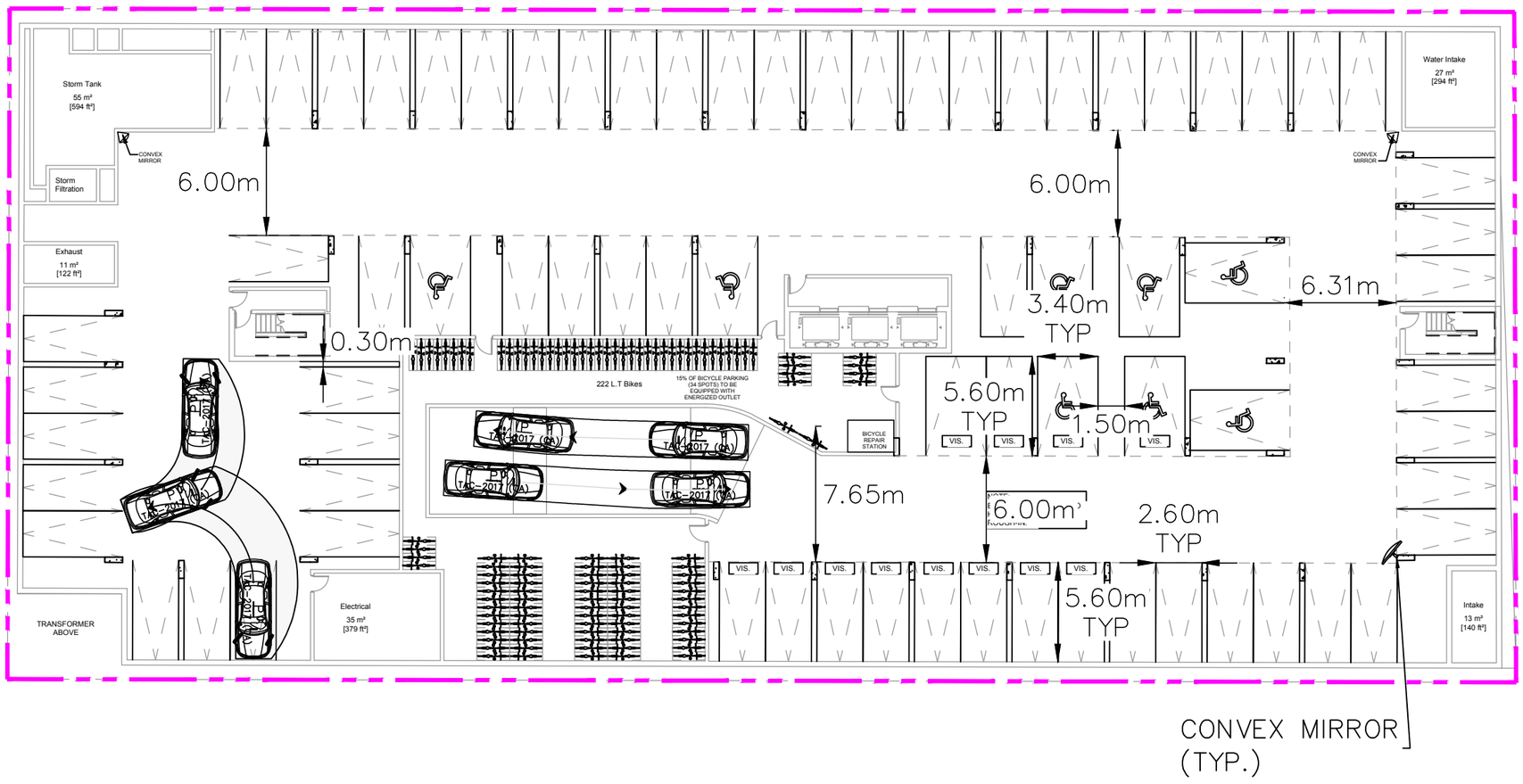
NOTE FOR ARCH:
SHOW ANY CONTROL ARM/GATE LOCATIONS



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3 0 3 6 9m
1:300

PARKING REVIEW
UNDERGROUND LEVEL

Drawing No. 005

DRAWING NAME: C:\Users\HSami\AppData\Local\Temp\Acl

PROPERTY LINE

DASHED LINE INDICATES P1 EXTENTS

Proposed Fire Hydrant

N74°37'15"E

N74°40'00"E (R1)

Retail

479 m²
[5152 ft²]

SHARED
TYPE G+ B LOADING

13m X 4m X 6.1m CLEARANCE
200mm REINFORCED
CONCRETE SLAB

Staging
25 m²
[274 ft²]

Residential Lobby

Bulk Storage
13 m²
[135 ft²]

Waste/ Recycling
77 m²
[827 ft²]

GARBAGE
TRI-SORTER/
COMPACTOR

WALL MOUNTED FLASHING WARNING BEACON AND SIGN (300X 600 - BLACK LEGEND ON YELLOW AND REFLECTIVE BACKGROUND) STATING: "CAUTION FOR TURNING TRUCKS WHEN FLASHING"

3.65m
@6.0%

PARKING RAMP

19.10m
@12.0%

ELEV: 97.78
S.T Bikes

ELEV AT GF: 98.00

ELEV AT OVERHANG: 95.48
ELEV AT GF: 98.00

VC = 2.52m > 2.1m + SLAB THICKNESS

PROPERTY LINE

N74°37'10"E

PART 1, PLAN 66R - 20671
PIN 21340 - 0213

FL/FL = 3.25m
GF ELEV: 98.00
P1 ELEV: 94.75

RAMP LENGTHS
MEASURED ON
INNER CURVES

222 L.T Bikes

15% OF BICYCLE PARKING
(34 SPOTS) TO BE
EQUIPPED WITH
ENERGIZED OUTLET

BICYCLE
REPAIR
STATION

4.32m
@12.0%

3.65m
@6.0%

ELEV AT END: 94.75

ELEV: 94.97

Electrical
35 m²
[379 ft²]

GROUND FLOOR

UNDERGROUND

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2 0 2 4 6m
1:200

RAMP GRADING REVIEW
GROUND FLOOR/UNDERGROUND

Drawing No. 006

DRAWING NAME: C:\Users\HSami\AppData\Local\Temp\Ac