Ontario Line

Transit Oriented Communities –

356 Eastern Avenue

Transportation Impact Assessment Study

Issued for Rezoning

Site: 356 Eastern Ave,
Toronto, Canada

Contract RFS-2019-NAFC-110

PO 214244

HDR Project 10206938

Ontario Line Technical Advisor

TORONTO, ONTARIO

November 10, 2022

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This report was initially prepared using the previous version of the Site Plan (August 23rd, 2022), including the Site statistics. The revised Site Plan as part of this package has the same number of dwelling units and 7 sq. ft fewer retail space than the previous site plans (August 23rd, 2022). The report, including the analysis and recommendations, has not been updated because the changes to the Eastern Rezoning Resubmission Package since this report are minimal and will not materially affect the outcomes and recommendations provided in this report.

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1 Introduction

HDR Corporation was retained by Metrolinx to undertake a Transportation Impact Study and Parking Assessment for a proposed mixed-use development to be located on 356 Eastern Avenue, north of the future East Harbour Transit Hub (EHTH).

The subject properties currently contain a self-storage facility. The proposed redevelopment consists of a 12-storey high-rise with non-residential uses on the first floor:

- **Residential**
  - Consists of 142 residential units (100 one-bedroom, 21 two-bedroom, 17 three-bedroom, and 4 townhouse units).
- **Non-residential**
  - 607 m^2 and 309 m^2 of space is provided on the ground level, and mezzanine, respectively for non-residential use.

Underground parking will be provided on site. A ramp to the underground parking is accessible only via the site driveway on Saulter Street. The site driveway on Lewis Street is intended as access for trucks loading and unloading. **Figure 1** shows the location of the redevelopment on 356 Eastern Avenue.

The traffic impact study report includes documentation of the following components:

- Existing Conditions
- Background Traffic Conditions
- Proposed TOC Trip Generation
- Future Total Traffic Conditions with the TOC
- Parking Assessment
- Loading Assessment
- Transportation Demand Management
- Preliminary Findings and Next Steps

Figure 1: Study Area and Site Context

1.1 Scope of Work

The scope of work has been prepared in accordance with the **City of Toronto Guidelines for the Preparation of Transportation Impact Studies** (2003), and is as follows:

Study Area	• The study area is bounded by Broadview Avenue, Eastern Avenue, Queen Street, and McGee Street
Analysis Scenarios	• Existing 2022 Traffic Conditions • Future 2032 Background Traffic Conditions (10-year horizon) *Includes 0.5% annual general background traffic growth, the future East Harbour Station plus other new development traffic in the vicinity of the site* • Future 2032 Total Traffic Conditions (10-year horizon) *Includes future background traffic volumes plus traffic resulting from the proposed development, minus traffic from the existing site land uses.*
Analysis Time Periods	The following time periods were analyzed as they represent peak trip generation times for residential developments: • Weekday AM peak hour between 7:00 AM and 9:00 AM • Weekday PM peak hour between 3:00 PM and 6:00 PM
Study Area Intersections for Analysis	The following intersections were analyzed for capacity, level of service, and delays: • Queen Street and Broadview Avenue • Queen Street and Lewis Street • Queen Street and Saulter Street • Queen Street and McGee Street
Parking and Loading Study	A loading assessment was undertaken for the proposed development using the City of Toronto Zoning By-law 569-2013 as the basis of the assessment. Parking assessment was undertaken using Zoning By-law 89-2022. A Transportation Demand Management (TDM) Plan has been developed to further support the proposed parking supply and to ensure a wholesome approach to transportation management that addresses the needs of all modes and achieves planning goals of encouraging multi-modal decision making through the provision of alternative and sustainable modes of travel, and reduce single-occupant vehicle use.

1.2 Intersection Operations and Analysis Methodology

Intersection operations were assessed for the study area intersections and future site driveways using the software program Synchro Traffic Software Version 11, which employs methodology from the **Highway Capacity Manual** (HCM 2000, 2010, and 6th Edition) published by the Transportation Research Board National Research Council. Synchro can analyze both signalized and unsignalized intersections in a road corridor or network, taking into account the spacing, interaction, queues and operations between intersections.

The signalized and unsignalized intersection analysis considers three separate measures of performance:

- The capacity of all intersection movements, represented by the volume to capacity (v/c) ratio;
- the level of service (LOS) for all intersection turning movements as well as for the overall intersection. The overall intersection LOS is based on the average control delay per vehicle (weighted) for the various movements through the intersection; and
- the forecasted queue lengths (95th percentile queue length) and storage requirements.

LOS is an indicator of how long a vehicle must wait to complete a movement and is represented by a letter between 'A' and 'F', with 'F' being the longest delay. The volume to capacity (v/c) ratio is a measure of the degree of capacity utilized at an intersection. HCM definitions are summarized in **Table 1**.

Table 1: Highway Capacity Manual Level of Service Definitions

Level of Service (LOS)	Signalized Control Delay per Vehicle (s)	Unsignalized Control Delay per Vehicle (s)	Description
A	≤ 10	≤ 10	Ideal
B	> 10 and ≤ 20	> 10 and ≤ 15	Acceptable
C	> 20 and ≤ 35	> 15 and ≤ 25	Acceptable
D	> 35 and ≤ 55	> 25 and ≤ 35	Somewhat undesirable
E	> 55 and ≤ 80	> 35 and ≤ 50	Undesirable
F	> 80	> 50	Unacceptable

The analysis undertaken in this study also follows the **City of Toronto Guidelines for Using Synchro 11 (Including SimTraffic 11[1])** (March 18th, 2016), City of Toronto **'Guidelines for the Preparation of Transportation Impact Studies**[2]' (July 2003), and City of Toronto **'Traffic Signal Operations Policies and Strategies**' (May 2015)[3].

[1] https://www.toronto.ca/wp-content/uploads/2021/01/964c-TSSignal-OptimizationSynchro-11-Guidelines.pdf

[2] http://arris.ca/~arris2/ARCHIVE/traffic-impact-study-guidelines.pdf

[3] https://www.toronto.ca/wp-content/uploads/2017/11/91d6-0_2015-11-13_Traffic-Signal-Operations-Policies-and-Strategies_Final-a.pdf

2 Existing Conditions

2.1 Site Context

As shown in **Figure 1**, the study site is bounded by Lewis Street to the West, Saulter Street and Lakeshore East GO rail line to the East, and Eastern Avenue to the South.

The site is situated in an area with decent surface transit service on Queen Street. The closest existing TTC streetcars/busses are located on Queen Street, approximately 400 metres to the north, and the future EHTH will be located south of the study site. The future EHTH will contain the new Ontario Line East Harbour Station, and a new GO rail station. The site is currently occupied by a large self-storage facility. Public vehicle access to the existing site is provided on Lewis Street. Additional access to the site is off of Saulter Street via a secured wooden gate.

2.2 Existing Road Network

The existing road network is shown in **Figure 2,** including existing traffic controls and lane configurations. All study roadways are under the jurisdiction of the City of Toronto.

The existing road network is described below:

Queen Street	Queen Street is a two-way east-west minor arterial street with a speed limit of 40 km/h. It has a four-lane cross section, with sidewalks on both sides of the street. Within the study area, portions of Queen Street narrow to one vehicular travel lane per direction to accommodate for parklets.
Eastern Avenue	Eastern Avenue is a two-way east-west major arterial street with a speed limit of 50 km/h. It has a four-lane cross section, with sidewalks on both sides of the street.
Broadview Avenue	Broadview Avenue is a two-way east-west minor arterial street with a speed limit of 40 km/h. It has a four-lane cross section, with sidewalks provided on both sides of the street.
Lewis Street	Lewis Street is a local north-south street with sidewalks on both sides of the street. Lewis street operates as a two-way street at Eastern Avenue, then transitions to a one-way northbound street north of the site access at 350 Eastern Avenue
Saulter Street	Saulter Street is a local north-south street with sidewalks on both sides of the street. Saulter Street beings at Queen Street and ends at the subject site and accommodates both northbound and southbound travel.
McGee Street	McGee Street is a local north-south street with sidewalks on both sides of the street. McGee street is a one-way street that only accommodates for southbound travel.

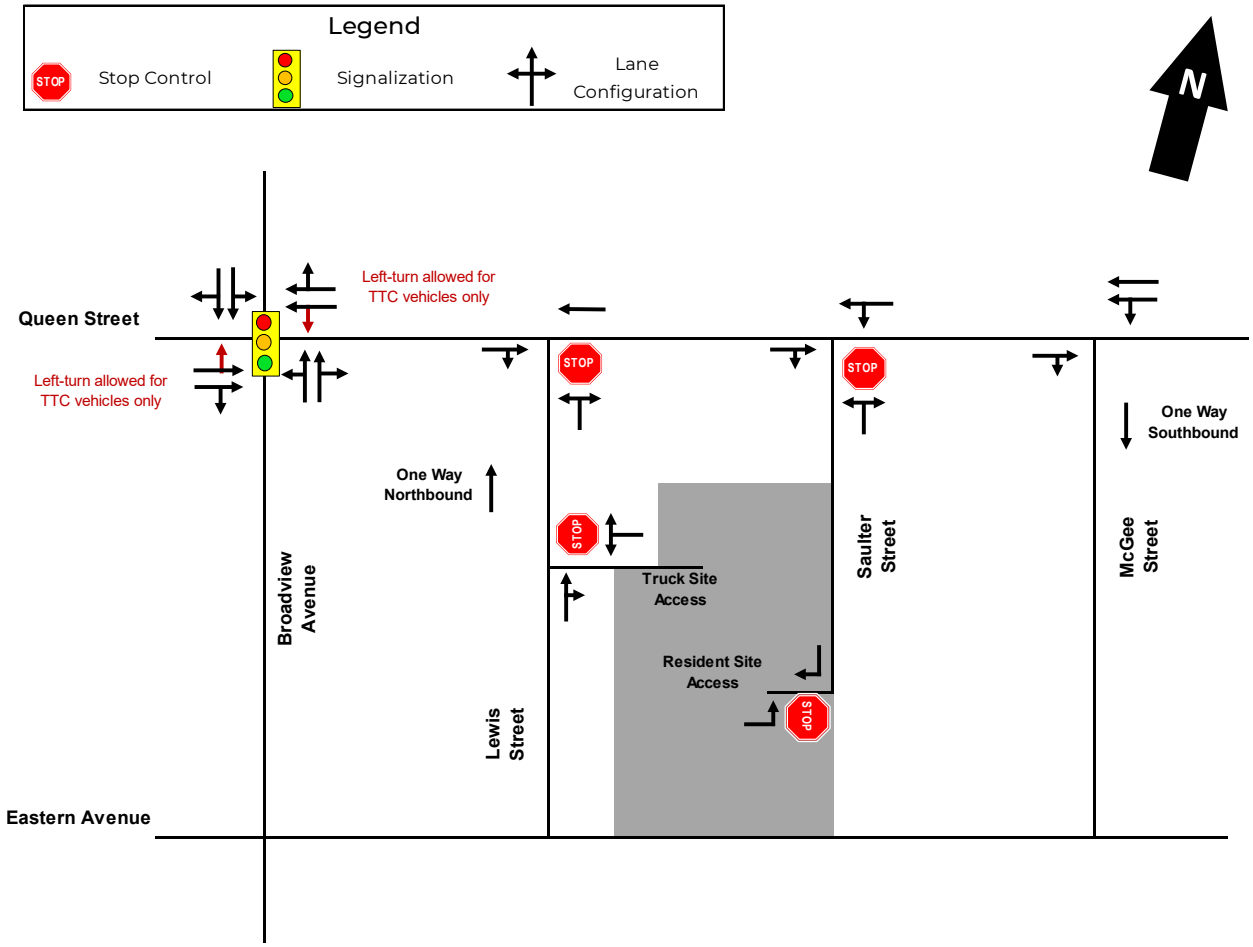


Figure 2: Existing Lane Configuration and Traffic Control

2.3 Existing Transit Services

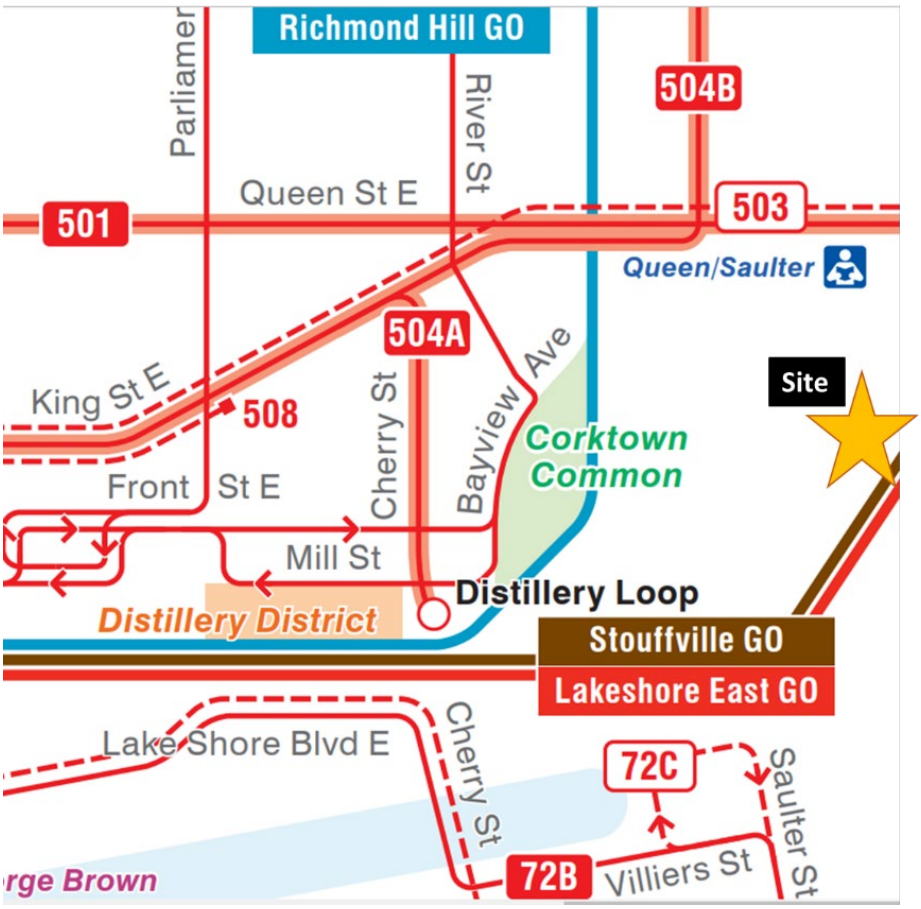
The TTC operates bus services along Broadview Avenue and Queen Street in the study area. The surface transit routes provide connections to downtown and to the Toronto subway system (Line 1 at King Station and Line at Broadview Station). Existing transit services are summarized in **Table 2**, and an excerpt from the TTC system map[4] is also shown in **Figure 3**. Route 504 operates along the King Street Transit Priority Corridor, where stops are generally at the far side of each intersection, and through and left movements are banned for most traffic at most intersections between Bathurst Street and Jarvis Street. The TTC also provides a night bus service on Queen Street.

The Stouffville and Lakeshore East GO lines are located immediately east of the site, and the site is approximately 6.0 kilometres away from the nearest GO stations at Danforth Station. Overall, there is good transit network availability in the broader study area.

[4] TTC System Map for August 2022, https://ttc-cdn.azureedge.net/-/media/Project/TTC/DevProto/Images/Home/Routes-and-Schedules/Landing-page-pdfs/TTC_SystemMap_2021-11.pdf?rev=0eee66a913bc40ae930be7f546c547d8

Table 2: Transit Service Summary

Route #	Route Name	Route Description	Peak Hour Headways	Nearest Stops & Walking Distance
501	Queen	East west route from Long Brach Loop to Neville Park Loop	< 9 minutes	Queen Street and Broadview Avenue (approx.. 400 metres)
503	Kingston	East-west route between Kingston Road and Victoria Park Avenue	< 10 minutes	Queen Street and Broadview Avenue (approx.. 400 metres)
504B	King	Operates between Dundas West Station and Broadview Station	< 8 minutes	Queen Street and Broadview Avenue (approx.. 400 metres)



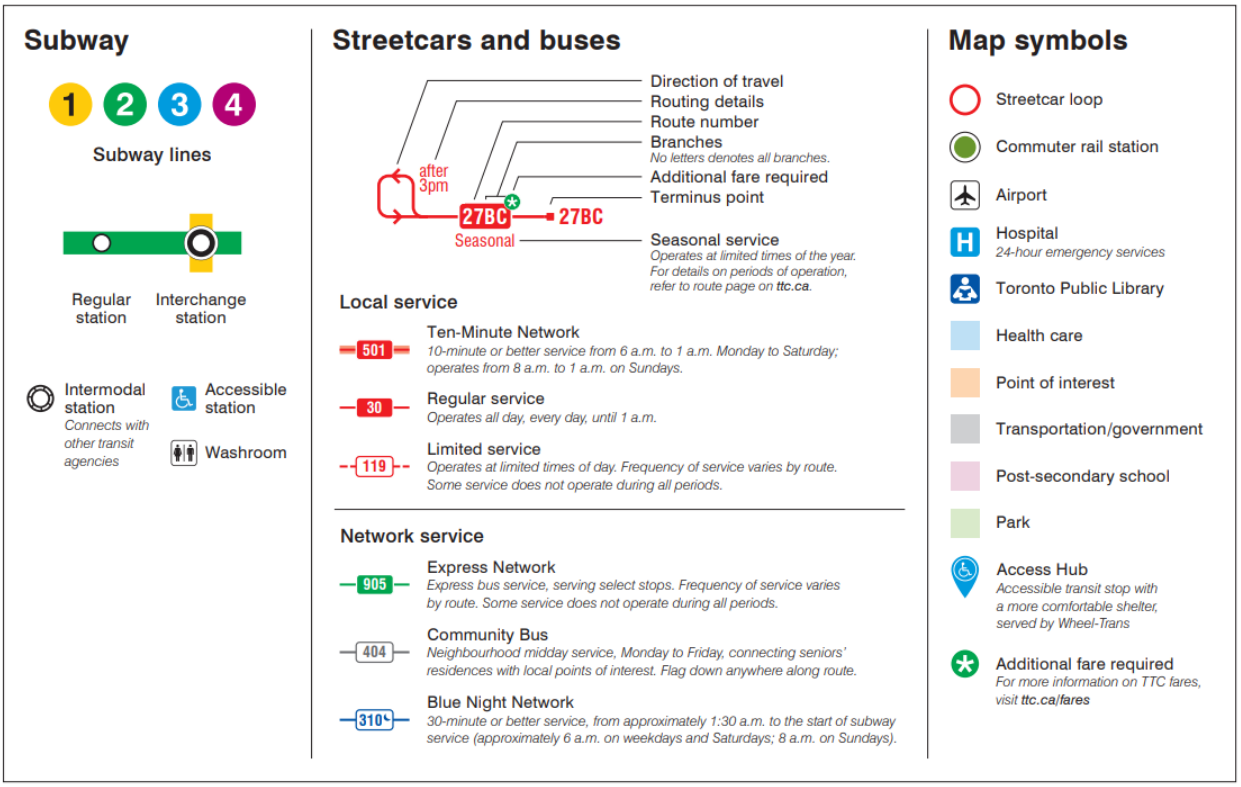


Figure 3: Existing Transit Service

2.4 Existing Cycling and Pedestrian Facilities

Pedestrian connectivity within the study area is good in terms of sidewalks, paths, and pedestrian crossings. All major streets have sidewalks on both sides. Crosswalks are present on all legs of the signalized intersections within the study area.

Dedicated cycling facilities are not present in the study area. The existing active transportation network is depicted in **Figure 5**. Generally, the sidewalks in the study area are 1.8m wide or wider, but due to objects such as power poles, traffic signals, waste bins and street trees, the clear pedestrian zone may be narrower in many locations, as illustrated in **Figure 4**.

The highest pedestrian activity area is generally along Queen Street likely due to the high number of bus and streetcar stops, retail, and restaurants along the street.

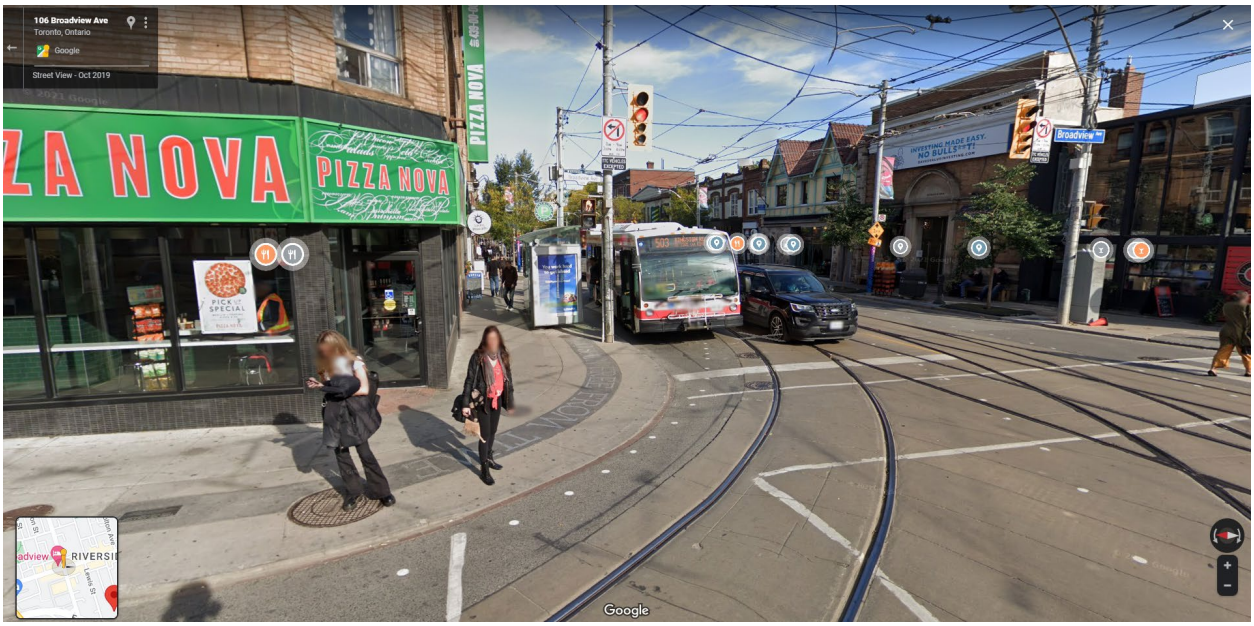


Figure 4: Sidewalks on Queen Street (north side of Broadview Avenue, looking east of Queen Street)

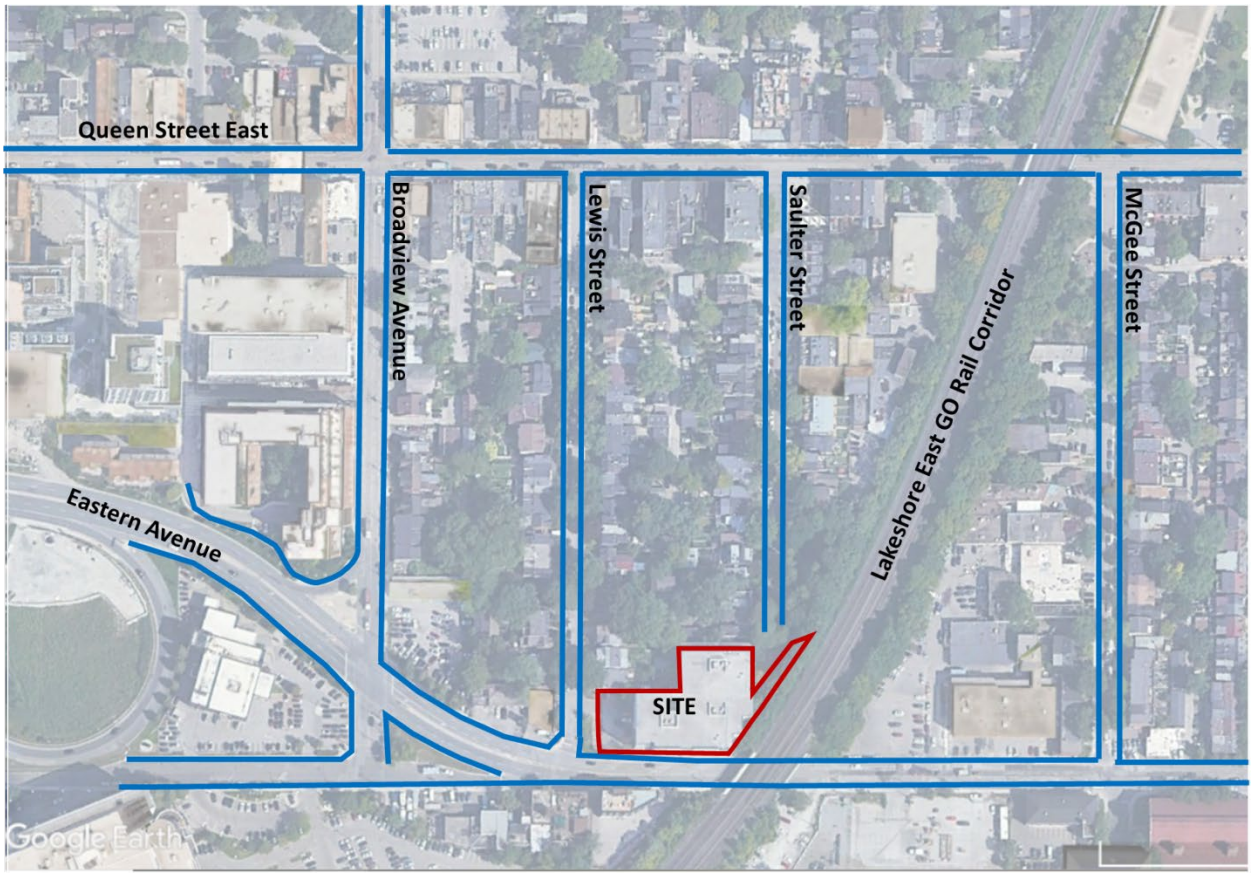


Figure 5: Active Transportation Network

2.5 Existing Traffic Volumes

A summary of the intersections and their sources are provided in **Table 3** below.

HDR used counts from the City of Toronto's Open Database for the intersection of Queen Street and Broadview, and Queen Street and Saulter Street. The most recent counts for both intersections were used. Turning movement going into and out of Lewis Street was collected on site on August 16th and 19th, 2022. Through volumes at Lewis Street were balanced with the City's database counts. Turning volumes at McGee Street were estimated with the Institute of Transportation Engineers (ITE) Trip Generation Informational Report (11th edition), as well as balanced with the City's latest counts at McGee Street and Eastern Avenue.

Table 3: Traffic Count Source

Intersection	Count Source / Date
Queen Street and Broadview Avenue	City of Toronto Traffic Count Database – 2021
Queen Street and Lewis Street	City of Toronto Traffic Count Database (2021) + Site Counts (2022)
Queen Street and Saulter Street	City of Toronto Traffic Count Database - 2017

Intersection	Count Source / Date
Queen Street and McGee Street	Estimated using trip generation and volume balancing with City of Toronto Traffic Count Database (2020)

Individual intersection peak hour traffic volumes are shown and were used in the study analysis, which is more conservative than calculating a global peak hour.

Figure 6 shows the existing traffic volumes at the study area intersections.

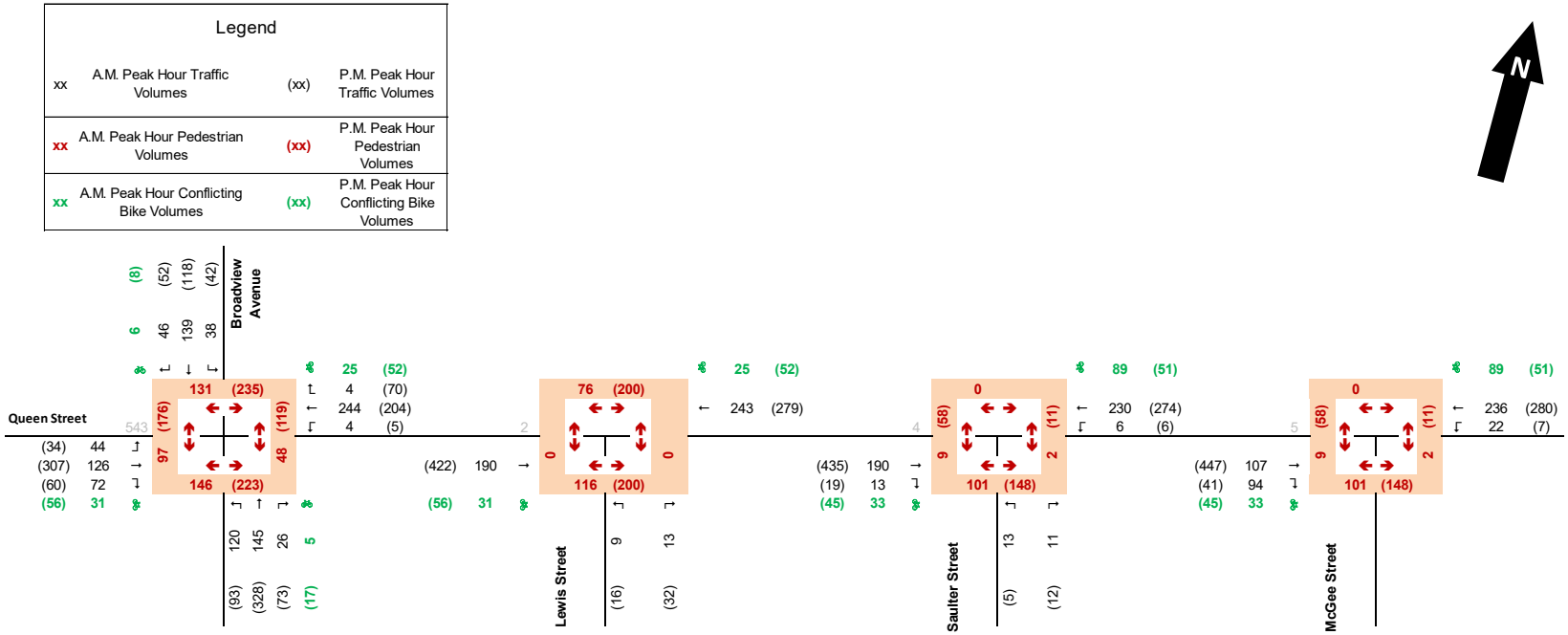


Figure 6: Existing Traffic Volumes

2.6 Existing Operations

Based on the existing traffic volumes and road network, intersection operations were assessed using Synchro 11 traffic analysis software. Existing signal timings used in the analysis are provided in **Appendix A**.

Table 4 summarizes the level-of-service (LOS) and volume/capacity ratio (v/c ratio) for each movement under existing conditions. Detailed Synchro results and reports for all study area intersections are provided in **Appendix B**.

Under existing traffic conditions, Queen Street and Broadview Avenue intersection operates at LOS B during the AM peak hour and LOS D during the PM peak hour. All movements operate under capacity and do not exceed available storage.

Table 4: Existing Conditions – Summary

Intersection and Movement		Lanes	Storage (m)	AM Peak Hour			PM Peak Hour		
				LOS	v/c	95th Q	LOS	v/c	95th Q
Queen & Broadview		-	-	**B**	-	-	**D**	-	-
Eastbound	Left-Through-Right	2	80	A	0.16	12	A	0.26	28
Westbound	Left-Through-Right	2	92	A	0.15	16	A	0.20	17
Northbound	Left-Through-Right	2	225	C	0.64	26	C	0.87	49
Southbound	Left-Through-Right	2	64	C	0.43	28	C	0.51	27
Queen & Lewis		-	-	-	-	-	-	-	-
Northbound	Left-Right	1	280	B	0.04	1	C	0.17	19
Queen & Saulter		-	-	-	-	-	-	-	-
Westbound	Left	1	75	A	0.01	0	A	0.01	0
Northbound	Left-Right	1	235	B	0.05	1	C	0.05	1
Queen & Saulter		-	-	-	-	-	-	-	-
Westbound	Left	1	71	A	0.02	0	A	0.01	0

Note: LOS = level of service; v/c = volume to capacity ratio; 95th Q = 95th Percentile Queue using HCM 2000, and Pedestrian Crosswalk LOS using HCM 2010. Critical movements are highlighted in **red** as defined by the City's TIS Guidelines. Movements with LOS F are highlighted in **yellow**.

3 Future Background Conditions

3.1 Planned Roadway Improvements

Based on the City of Toronto's Ongoing Infrastructure & Construction Projects[5] , the City is planning on extending Broadview Avenue further south towards Lake Shore Boulevard East. The final recommended plans for these improvements have not yet been confirmed. Additionally, any improvements are not anticipated to significantly affect the intersection laning and/or operations at the study area intersections, and therefore no changes were made to the future model based on this project.

3.2 Background Traffic Volumes

Background traffic volumes are comprised of existing traffic volumes plus general background traffic growth, plus traffic associated with nearby developments, and each component is summarized below.

3.2.1 Background Developments

As part of the analysis, nearby background developments were reviewed and accounted for as available in the traffic forecasting process. As shown in **Figure 7**, there are two development applications spanning across 26 properties within a 250 metre radius, both of them are active and under review. See the Planning and Urban Design Rationale submitted with this proposal for more information on the nearby development activity. No documentation was available for the closed project, and the projects under review / being appealed have not yet been approved.

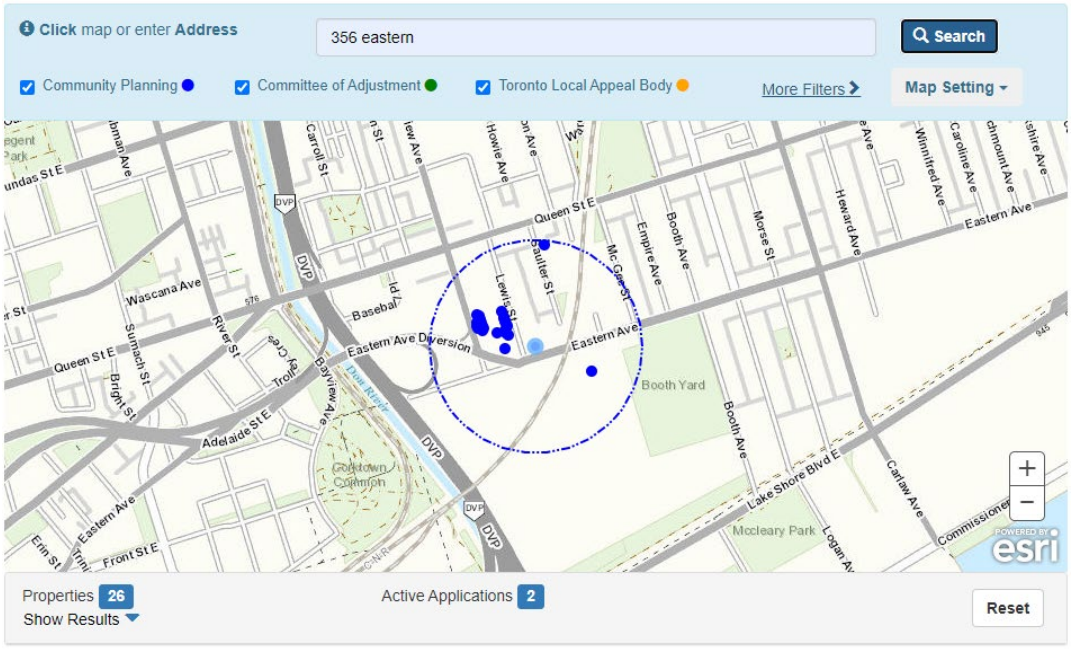


Figure 7: Adjacent Background Developments for Consideration

[5] https://www.toronto.ca/community-people/get-involved/public-consultations/infrastructure-projects/

3.2.2 General Background Growth

A review of the historical traffic counts from various sources, including previous transportation studies, revealed that the magnitude of traffic volumes within the study area has been relatively stable, despite variations in traffic patterns. There are also some movements that have experienced negative growth. A vehicular growth rate of 0.50% was applied to all through movements. This approach was used to assess the worst-case growth conditions of all movements in the study area and is considered a conservative assumption. No growth rate was applied for pedestrians or bicycles. **Figure 8** shows the total future 2032 background traffic volumes, which include background growth, and the adjacent development traffic volumes.

3.2.3 East Harbour Transit Hub

The East Harbour Transit Hub has been included as a layer of background growth, and walking and transit trips to/from the station were generated. The generated walking and transit trips were for the 2080 horizon, and are therefore conservative. These trips were distributed and assigned to the study area network, and details can be found in **Figure 8**.

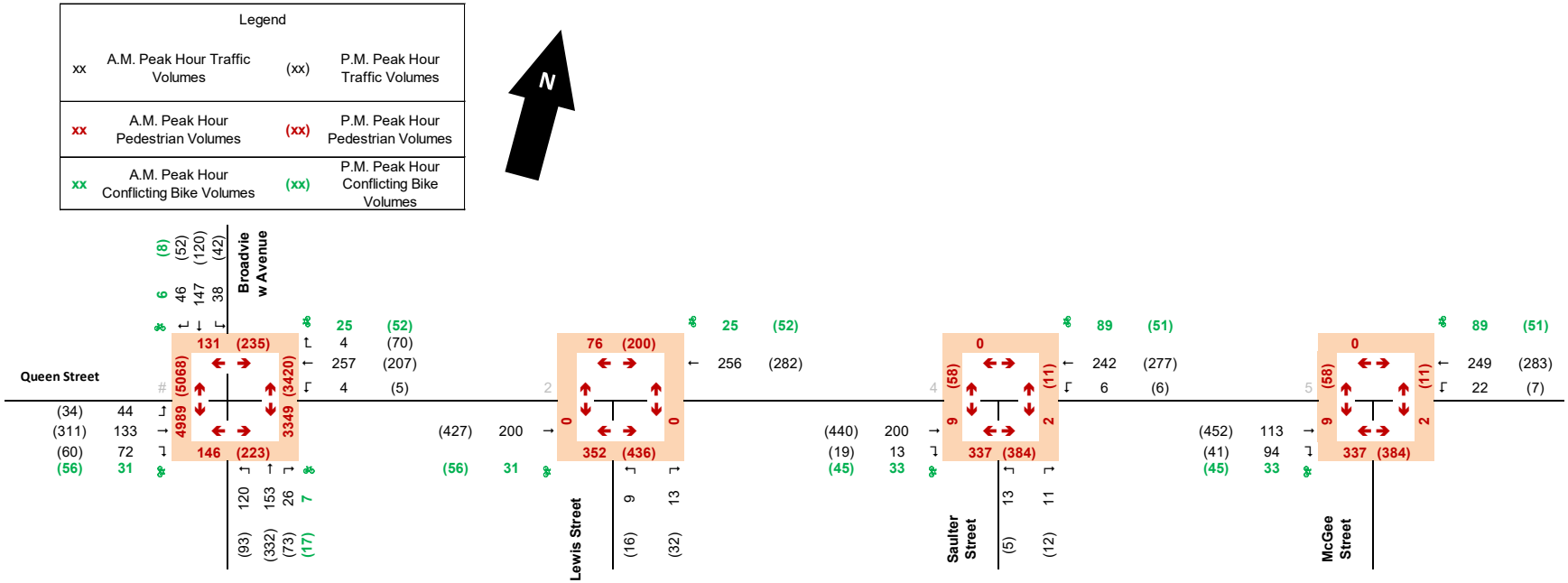


Figure 8: Future 2032 Background Traffic Volumes

3.3 Background Traffic Operations

Table 5 summarizes the LOS and v/c ratio for movements under future background conditions based on the forecast traffic volumes. Signal timing split optimization was incorporated, if needed, into both the AM and PM Synchro models. Detailed Synchro results and reports for all study area intersections are provided in **Appendix B.** Under future background conditions, most movements will operate with LOS 'D' or better, except for the northbound movement at Queen Street and Lewis Street. This movement is expected to operate at LOS 'E'.

Table 5: 2032 Background Conditions – Summary

Intersection and Movement		Lanes	Storage (m)	AM Peak Hour			PM Peak Hour		
				LOS	v/c	95th Q	LOS	v/c	95th Q
Queen & Broadview		-	-	B	-	-	B	-	-
Eastbound	Left-Through-Right	2	80	A	0.16	13	A	0.27	28
Westbound	Left-Through-Right	2	92	A	0.16	17	C	0.20	17
Northbound	Left-Through-Right	2	225	C	0.77	26	D	0.94	52
Southbound	Left-Through-Right	2	64	C	0.51	30	C	0.53	28
Queen & Lewis		-	-	-	-	-	-	-	-
Northbound	Left-Right	1	280	C	0.07	2	E	0.31	10
Queen & Saulter		-	-	-	-	-	-	-	-
Westbound	Left	1	75	A	0.01	0	A	0.01	0
Northbound	Left-Right	1	235	C	0.09	2	D	0.10	3
Queen & Saulter		-	-	-	-	-	-	-	-
Westbound	Left	1	71	A	0.02	0	A	0.01	0

Note: LOS = level of service; v/c = volume to capacity ratio; 95th Q = 95th Percentile Queue using HCM 2000, and Pedestrian Crosswalk LOS using HCM 2010. Critical movements are highlighted in **red** as defined by the City's TIS Guidelines. Movements with LOS F are highlighted in **yellow**.

4 Proposed TOC Trip Generation

4.1 Conceptual Site Plan

Figure 9 shows the conceptual site plans, and **Table 6** shows the site statistics for the site, which were received on August 23rd, 2022.

Table 6: Site Plan Statistics

Proposal	Residential Units	Commercial Size
Total	**142 units**	**917 m² GFA**

Residential vehicle access to underground parking is provided on Saulter Street, while truck access for loading/unloading will utilize the existing site driveway on Lewis Street.

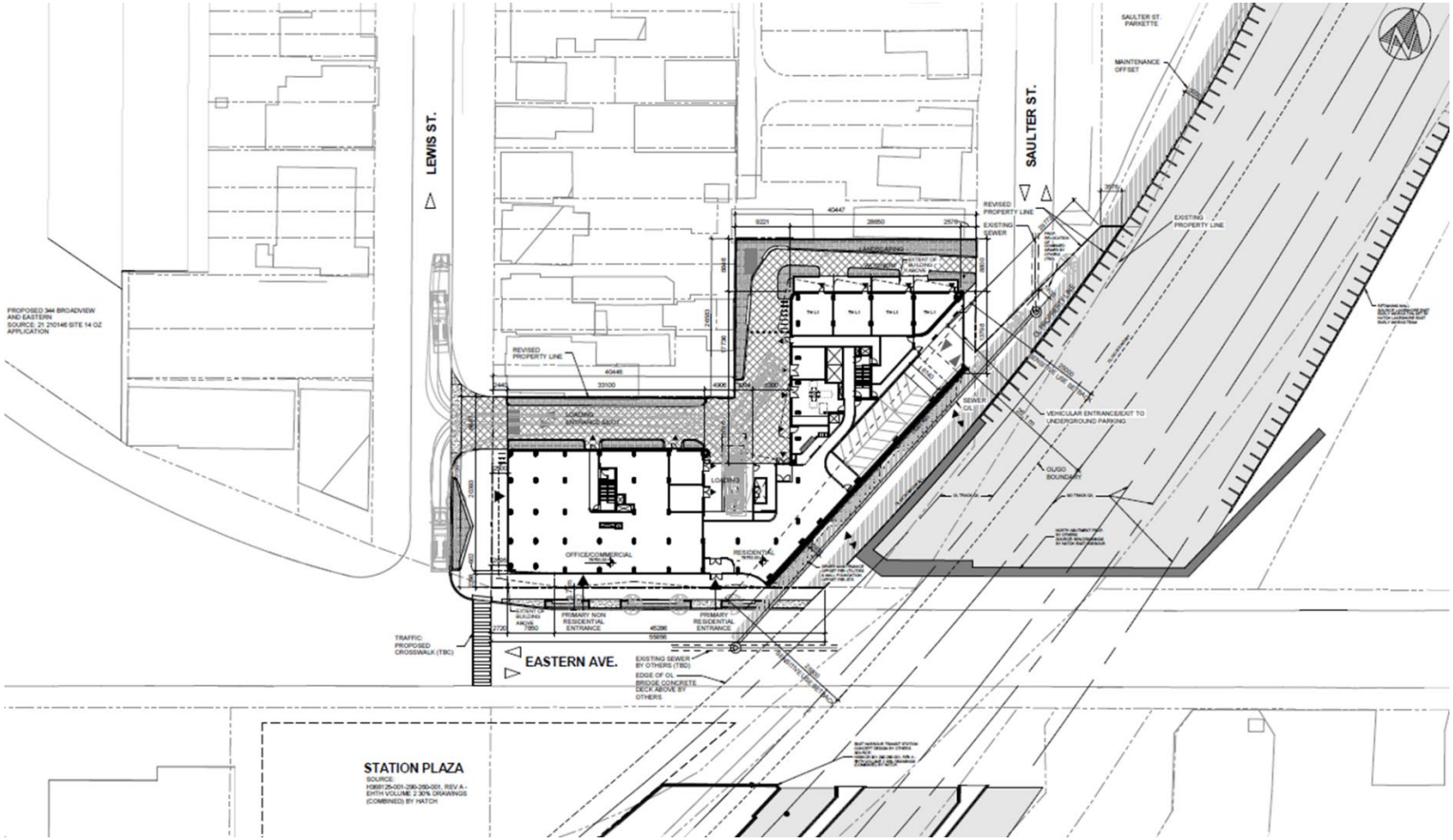


Figure 9: Draft Site Plan (November 9, 2022)

4.2 Site Trip Generation

4.2.1 Mode Splits

The 2016 Transportation Tomorrow Survey (TTS) was used to inform the future mode split assumptions for the proposed development using existing information. The TTS is a survey of households within the Greater Golden Horseshoe, including the Greater Toronto Area, that summarizes travel patterns and other related transportation information that can be used to aid in planning, such as mode splits. The 2016 TTS divides geographical areas into 'zones' for the purposes of determining trip patterns from one zone to another.

The existing mode splits for the area were obtained through a review of TTS (2006) Zones 5, 268, and 271, which are the zones including and surrounding the subject site. The TTS data and the proposed mode splits are summarized in **Table 7**.

The proposed mode splits for AM and PM trips were taken as averages of the respective AM/PM TTS mode splits. The proposed mode splits are considered conservative as they are based on existing mode splits, when in fact, auto trips are anticipated to continue to shift to transit and active transportation as the study area continues to develop and densify, and this change will be further spurred with the addition of the future Ontario Line and East Harbour Station near the subject site.

Table 7: Mode Splits

Mode	Existing (TTS)				Proposed	
	AM (In)	AM (Out)	PM (In)	PM (Out)	AM	PM
Transit	20%	31%	45%	31%	25%	38%
Walking	24%	16%	9%	17%	20%	13%
Cycling	10%	10%	5%	9%	10%	7%
Auto Passenger	6%	8%	12%	12%	8%	12%
Auto Driver / Taxi	40%	35%	29%	31%	37%	30%
Total	100%	100%	100%	100%	100%	100%

4.2.2 Trip Generation

Trips were generated for the proposed development using the information provided in the Institute of Transportation Engineers (ITE) Trip Generation Informational Report (11th edition). Trip generation rates for Land Use 222 (Multifamily Housing – High-Rise), Land Use 215 (Single-Family Attached Housing), and Land Use 820 (Shopping Centre).

The land use assumes dense multi-use conditions for Land Use 222, and general urban/suburban conditions were for the other land uses as the dense multi-use category was not available or data was insufficient.

Table 8 shows the ITE trip generation rates used for each site land use, and it includes person trip rate, where available. Person trips were back-calculated using vehicle trip rates and mode splits for land use codes without person trip rates. The purpose of generating person trips rather than vehicle trips was to be able to assign pedestrian, cycling and transit trips to the study network.

Table 9 shows the resulting trip generation for the subject site by mode. Due to the density of compatible land uses in close proximity, an assumed 5% internal capture rate was applied to all trip types, and this is also considered a conservative assumption. Trips generated by Land Use 215 were combined with Land Use 222 due to negligible trips generated (<2 inbound and outbound trips).

Table 8: ITE Trip Generation Rates

Land Use	ITE LUC	Peak Hour	ITE Persons Trip Rate	Equation*	Entering	Exiting
Residential	222 Multi-family High Rise	AM	0.21	Ln(T) = 0.84 Ln(X) - 0.65	12%	88%
		PM	0.19	Ln(T) = 0.81 Ln(X) - 0.60	70%	30%
	215 Single-Family Attached	AM	0.52	T = 0.51(X) + 1.22	75%	25%
		PM	0.57	T = 0.60(X) - 3.93	57%	43%
Land Use	**ITE LUC**	**Peak Hour**	**ITE Vehicle Trip Rate**	**Equation***	**Entering**	**Exiting**
Retail	820 Shopping Centre	AM	0.94	T = 0.50(X) + 151.78	62%	38%
		PM	3.81	Ln(T) = 0.74 Ln(X) + 2.89	48%	52%

Note: The trip generation equation was only used for Residential Land Use, for all other land uses, the total person trips were calculated by multiplying the ITE vehicle trip rate by the person trips per vehicle value to get total person trips.

Table 9: Trip Generation by Mode

Land Use	AM Peak Hour			PM Peak Hour		
	Total	In	Out	Total	In	Out
Residential – LUC 222 Multifamily High Rise + LUC 215 Single-Family Attached						
Total	**94**	**23**	**70**	**74**	**42**	**32**
Transit	24	6	18	19	11	8
Walking	19	5	14	15	8	6
Cycling	9	2	7	7	4	3
Auto Passenger	7	2	5	5	3	2
Auto Driver	35	9	26	28	16	12
Retail – LUC 820 Shopping Centre						
Total	**17**	**11**	**7**	**67**	**32**	**35**
Transit	4	3	2	24	12	13
Walking	3	2	1	8	4	4
Cycling	2	1	1	4	2	2
Auto Passenger	1	1	0	8	4	4
Auto Driver	7	4	3	21	10	11
Site Total – Including 5% Internal Capture						
Total	**111**	**34**	**77**	**140**	**74**	**66**
Transit	28	9	19	43	22	21
Walking	22	7	15	23	12	11
Cycling	11	3	8	12	6	5
Auto Passenger	8	3	6	14	7	7
Auto Driver	42	13	29	49	26	23

4.2.3 Existing Vehicle Site Trips

As there is an existing storage facility on the study sites, site visits were conducted to determine existing vehicle trips generated. The AM peak hour site visit occurred on Tuesday, August 16th, 2022, during 7:45 AM – 8:45 AM, and the PM peak hour site visit occurred on Friday, August 19th, 2022, from 5:00 PM – 6:00 PM. During the site visits, only one vehicle traveled in/out of the existing storage facility.

4.3 Site Traffic Distribution and Assignment

Future trip distribution was estimated using the information from the 2016 TTS. The trip distribution for the site was based on the existing distribution to TTS zones (TTS 2006 Zones 5, 268, and 271). Trips were distributed based on each mode of transportation with the assumption that transit trips are made by walking. This is because the trip maker is expected to walk towards the nearest bus/streetcar route. Google directions were also used to understand the fastest routes by time of day, which was used to inform trip assignments. Trip distributions for site trips are summarized in **Table 10**.

A separate trip distribution for walk trips (to/from the station) was conducted for the station. Metrolinx's Greater Golden Horseshoe Model (GGHM) EMME model for Ontario Line provided estimates for walking trips inbound and outbound of EHTH, as well as surface transfers between busses and streetcars. Surface transfers between GO Transit and Ontario Line were also provided. However, they were not assigned to the study intersections because these trips will be contained within the station. A separate trip distribution was conducted for the station, with different distributions used for the walk trips (to/from the station) and the transit trips to/from the station (applied as walk trips but destined to/from the nearby surface transit stops). The distribution for these trips is shown in **Table 11**. They are based on the location of density near the site (related to the walking trips to/from the station) and based on the location of the nearest transit stops (with most located at the intersection of Queen Street and Broadview Avenue. Trips between EHTH and transit trips are distributed 100% to the north because the closest transit streetcars and busses are located at Queens Street and Broadview Avenue (directly north of the station).

Table 10: Assumed Trip Distribution – Subject Site

Mode	Time Period / Direction	Direction				
		North	East	South	West	Total
Walk	AM (In)	65%	0%	0%	35%	100%
	AM (Out)	38%	2%	3%	57%	100%
	PM (In)	32%	5%	3%	60%	100%
	PM (Out)	40%	22%	0%	38%	100%
Cycle	AM (In)	21%	23%	0%	56%	100%
	AM (Out)	18%	6%	2%	74%	100%
	PM (In)	21%	0%	2%	76%	100%
	PM (Out)	29%	10%	0%	62%	100%
Transit (Walk)	AM (In)	13%	30%	0%	57%	100%
	AM (Out)	7%	16%	0%	77%	100%
	PM (In)	7%	20%	0%	73%	100%
	PM (Out)	17%	24%	0%	59%	100%
Auto	AM (In)	23%	41%	1%	34%	100%
	AM (Out)	14%	39%	4%	44%	100%
	PM (In)	26%	29%	3%	43%	100%
	PM (Out)	30%	37%	2%	31%	100%

Table 11: Assumed Trip Distribution – East Harbour Station

Mode	Time Period / Direction	Direction				
		North	East	South	West	Total
Walk	AM / PM	30%	25%	10%	35%	100%
Transit (Walk)	AM / PM	100%	0%	0%	0%	100%

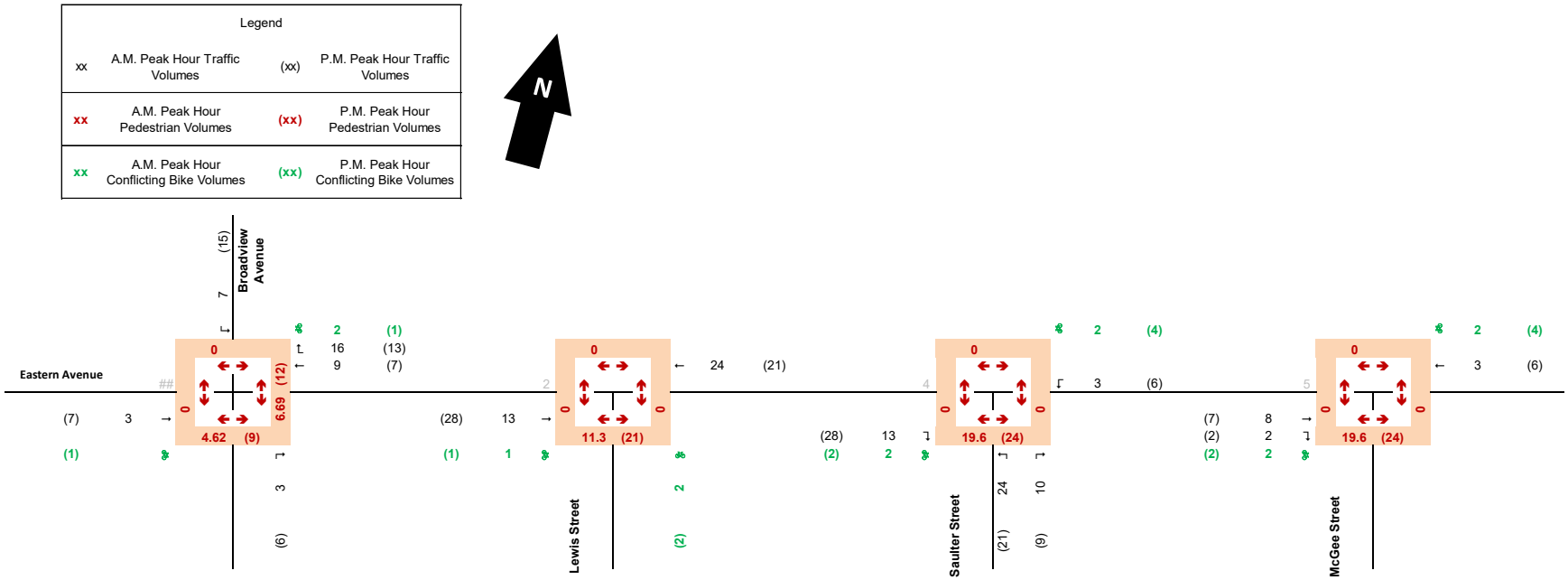


Figure 10: Total Site Trips

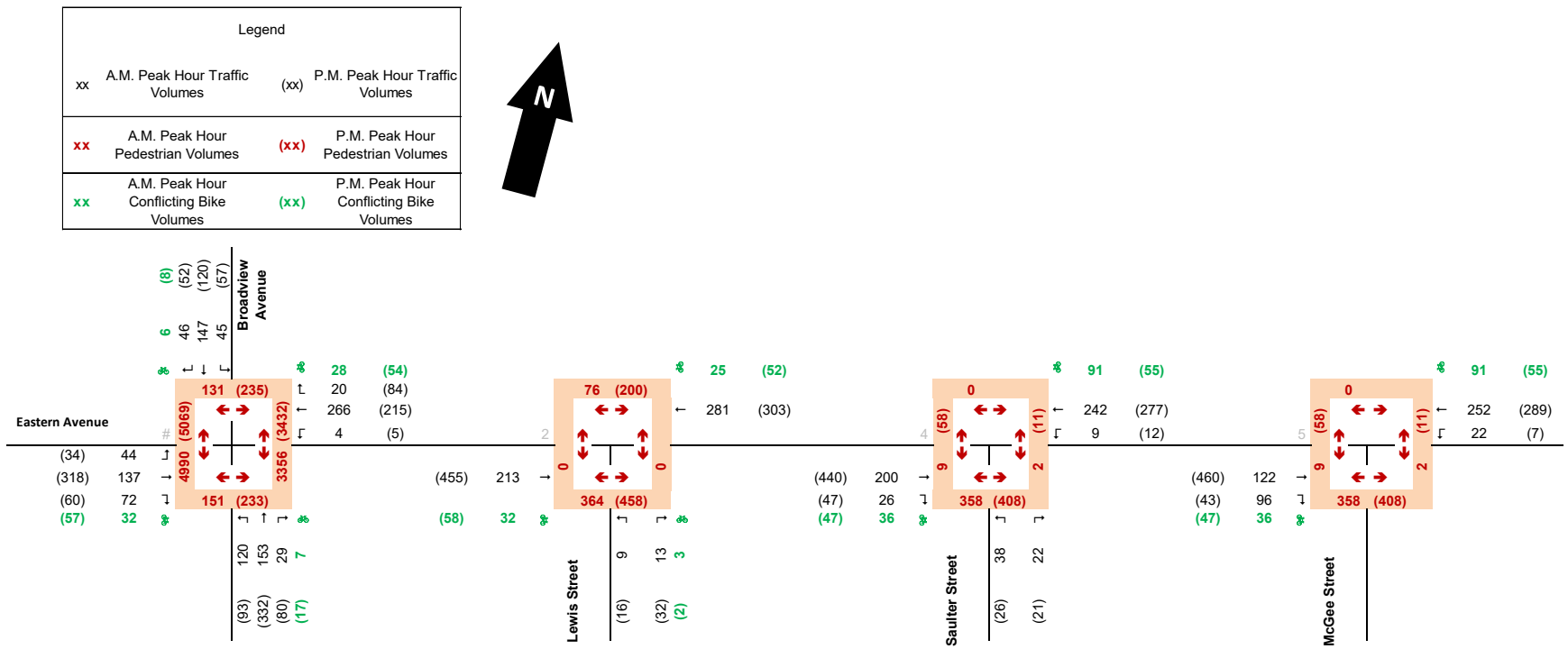


Figure 11: 2032 Total Traffic Volumes

5 Future Total Traffic Conditions with TOC

Table 12 summarizes the future total traffic operations at the study area intersections. Traffic operations at the proposed Lewis Street and Saulter Street are not presented because they are expected to operate excellently based on existing conditions. The Lewis Street access currently operates without issues and will continue to do so since only trucks will be using this access. The Saulter Street access is at the very end of the road; thus, there will not be conflicting vehicles affecting the inbound and outbound movements at this access. There were no assumed geometric improvements. Detailed results and reports for all study area intersections are provided in **Appendix B**.

Under future total conditions, all movements will still be operating with LOS 'E' or better, and with residual capacity. The addition of pedestrians on Queen Street is expected to increase v/c ratios for the northbound movements at Lewis Street and Saulter Street. That notwithstanding, these movements are still well under capacity.

Optimizing signal phases at Queen Street and Broadview Avenue improves v/c for the northbound approach without significantly degrading the east/west movement performance. However, existing signal timing plans provide sufficient traffic operations at Queen Street and Broadview Avenue under total future conditions.

Table 12: Future 2030 Total Conditions – Summary

Intersection and Movement		Lanes	Storage (m)	AM Peak Hour			PM Peak Hour		
				LOS	v/c	95th Q	LOS	v/c	95th Q
Queen & Broadview		-	-	C	-	-	C	-	-
Eastbound	Left-Through-Right	2	80	A	0.16	13	A	0.28	29
Westbound	Left-Through-Right	2	92	A	0.18	18	A	0.22	18
Northbound	Left-Through-Right	2	225	C	0.78	26	D	0.95	52
Southbound	Left-Through-Right	2	64	C	0.55	31	C	0.60	31
Queen & Lewis		-	-	-	-	-	-	-	-
Northbound	Left-Right	1	280	C	0.08	2	E	0.35	12
Queen & Saulter		-	-	-	-	-	-	-	-
Westbound	Left	1	75	A	0.01	0	A	0.03	1
Northbound	Left-Right	1	235	C	0.23	7	E	0.34	11
Queen & Saulter		-	-	-	-	-	-	-	-
Westbound	Left	1	71	A	0.02	1	A	0.01	0

Note: LOS = level of service; v/c = volume to capacity ratio; 95th Q = 95th Percentile Queue using HCM 2000, and Pedestrian Crosswalk LOS using HCM 2010. Critical movements are highlighted in **red** as defined by the City's TIS Guidelines. Movements with LOS F are highlighted in **yellow**.

6 Parking and Loading Assessment

The proposed parking supply was originally reviewed based on the parking requirements of the City-wide Zoning By-law 569-2013, as amended (Office Consolidation) Version Date: March 9th, 2022. The by-law includes specific requirements for parking (bicycle and vehicle) as well as loading. However, the City enacted and passed Zoning By-law 89-2022 on February 3, 2022, which officially shifts the City's approach to one of a maximum limit on supplied parking at new developments instead of a minimum supply requirement. We understand By-law 89-2022 was appealed during the 20-day appeal period mandated by the provincial Planning Act. However, By-law 89-2022 is now in force as of October 12, 2022. Our assessment has review of both by-laws but only the applicable by-law has been documented below.

6.1 Policy Area Designations and Parking Requirements

The current city-wide Zoning By-law 89-2022, an amendment to By-law 569-2013 includes multiple sets of vehicle parking rates with diminishing requirements for some areas that have better transit accessibility. Under By-law 89-2022, the 356 Eastern Avenue TOC site falls under Zone "L" as shown in **Figure 12**.

According to By-law No. 569-2013, within Bicycle Zone 1, if bicycle parking is provided in excess of the required minimums, then the minimum vehicle parking requirements can be reduced by 1 vehicle space for every 5 bicycle parking spaces provided beyond the minimum, to a maximum of 20% of the required minimum vehicle parking. The subject site is located in Bicycle Zone 1, which is defined as the area of the City bounded by the Humber River on the west, Lawrence Ave. on the north, Victoria Park Ave. on the east and Lake Ontario on the south.

Toronto Green Standard Version 4 states that "all residential parking spaces provided for dwelling units located in an apartment building, mixed use building, multiple dwelling unit building, excluding visitor parking spaces, must include an energized outlet capable of providing Level 2 charging or higher to the parking space;"[6].

[6] https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/toronto-green-standard/toronto-green-standard-version-4/mid-to-high-rise-residential-non-residential-version-4/air-quality/

Figure 12: City of Toronto By-law 89-2022 Parking Zone Areas

6.2 Vehicular Parking Supply

The total proposed vehicular parking supply for the site is 35 spaces. The parking is comprised of resident tenant parking and visitor parking, commercial parking. A single level below-grade parking garage will serve residents, visitors, and commercial patrons, and will be accessible from Saulter Street. Surface parking is not provided by the TOC development. However, on-street parking is available on Saulter Street and Lewis Street outside of the TOC development.

The parking supply for the site is summarized in **Table 13.**

Table 13: Vehicle Parking Supply

Residential	Residential Visitor	Non-residential	Car share	TOTAL
25	8	0	2	35

Of the 35 proposed parking spaces, two are designated as accessible parking. In addition, the development proposes 2 car-share spaces, 8 residential visitor spaces, and 25 residential parking. As a result, the blended visitor and residential parking rates are 0.06 and 0.18 per dwelling units, respectively.

As per requirements of Toronto Green Standard Version 4, all residential parking spaces are outfitted with energized outlets capable of providing Level 2 charging for electric vehicles.

6.3 Vehicle Parking Requirements (By-law 89-2022)

Vehicle parking requirements were reviewed using By-law 89-2022, and the requirements are as shown in **Table 14**.

Table 14: Vehicle Parking Zoning By-law 89-2022 Requirements

Type	Units	By-law 89-2022 [Parking Zone B]		
		Maximum Rate	Minimum # Spaces	Maximum # Spaces
Bachelor (<45 sqm)	-	0.7 spaces per unit	n/a	0
1-bed	100 units	0.8 spaces per unit		80
2-bed	21 units	0.9 spaces per unit		19
3-bed	21 units	1.1 spaces per unit		23
Maximum Resident				122
Visitor Minimum	142 units	2.0 + 0.05/unit	9	-
Visitor Maximum		1.0/unit (first 5 units) + 0.1/unit (6th unit onwards)	-	19
Proposed Visitor Parking			8 (not between 9 and 19 ×)	
Proposed Resident Parking			25 (less than 178 ✓)	
Non-residential	917 SM	4.0 spaces / 100 SM GFA (Maximum)	37 spaces maximum	

As per By-law 89-2022, the maximum number of parking spaces allowed for the subject site is 141 space, and the minimum number of visitor parking spaces required is 9. The subject site is proposed to provide total 35 parking spaces, thus satisfying By-law 89-2022 parking requirements. However, the visitor parking supply will be deficient by 1 spaces. While the site does not meet parking supply requirements based on By-law 89-2013, on May 24, 2022 in the Final Pre-Submission Meeting with City of Toronto, the City recommended that the site could provide zero parking. No minimum requirements for vehicular parking was imposed onto the developer. However, to support the overall development and avoid illegal on-street parking, one level of parking below grade (with 35 parking spots) was recommended, which was received favourably by the City during this meeting.

Table 15 below shows the comparison of proposed parking supply to parking requirements under Zoning By-law 89-2022.

Table 15: Parking Requirements Summary

Site	Minimum # of Spaces	Maximum # of Spaces	Proposed Spaces	Supplied Parking Rate
Residential	0	122	25	0.18
Visitor	9	19	8	0.06

Non-residential	0	37	0	0.00

Accessible parking requirements were reviewed based on the new by-laws. **Table 16** show the calculation of effective parking and required accessible parking for 356 Eastern Avenue. The proposed development requires 7 accessible parking spaces whereas, only 2 spaces are provided, which is appropriate with the one underground parking level.

Table 16: Effective Parking Rates for Accessible Parking

Type	Units	By-law No. 89-2022	
		Effective Rate	Effective Spaces
Bachelor (<45 sqm)	0 units	0.7 spaces per unit	0
1-bed	100 units	0.8 spaces per unit	80
2-bed	21 units	0.9 spaces per unit	19
3-bed	21 units	1.1 spaces per unit	23
Visitor	-	0.1 spaces per unit	14
Non-residential	917 SM	2.0 spaces / 100 SM GFA	18
		Total Effective	154
		Total Parking Provided	35
		Greater of the Above (Actual Effective)	154
		Required Accessible Parking (if the number of effective parking spaces is more than 100, a minimum of 5 accessible parking spaces plus 1 accessible parking space for every 50 effective parking spaces or part thereof in excess of 100 parking spaces)	7 accessible parking spaces required
		Accessible Parking Provided	2 spaces
		Surplus/Deficit	-5 spaces

6.4 Bicycle Parking Supply

Bicycle parking for the site will be provided in the form of short-term and long-term bicycle parking spaces. Short-term bicycle parking will be provided at-grade as well as underground, and will serve residential visitors, commercial patrons, and potentially residents who are making short stops at home. Long-term bicycle parking will be located on the underground parking level. The bicycle parking supply is summarized in **Table 17**.

Table 17: Bicycle Parking Supply

	Bicycle Parking Space Type					
	Residence Long Term	Residential Short Term	Non-residential Long Term	Non-residential Short Term	Transit	Total
Total	132	16	8	6	0	**162**

As per requirements of Toronto Green Standard Version 4, at least a 15% long-term bicycle parking spaces of long-term bicycle parking spaces will be adjacent to an Energized Outlet (120 V). Thus, meeting the requirement that 15% long-term bicycle parking spaces shall include an Energized Outlet (120 V).

6.5 Bicycle Parking Requirements

Bicycle parking requirements were reviewed for By-law 569-2013 and summarized in **Table 18**. The proposed bicycle parking supply provides what is required in the By-Law 569-2013 and will have a surplus of 18 spaces. Overall, the proposed bicycle parking supply is anticipated to serve the development well.

Table 18: Bicycle Parking Zoning By-law Requirements – North Site

Land Use		Unit or per 100 sqm	By-law No. 569-2013			
			Long Term		Short Term	
			Rate	# required	Rate	# required
356 Eastern Avenue	Residential	143	0.9	128	0.1	15
	Non-residential	560	0.2	2	0.3 + 0.3 / 100 sqm	6
Total Required			-	130	-	21
Proposed			-	140	-	22
Surplus / Deficit			-	10	-	1

6.6 Loading Space Requirements

Loading space requirements of Zoning By-law 569-2013 were also reviewed for the proposed site. The loading space requirements as per the By-law, and loading spaces provided, are shown in **Table 19**.

Table 19: Loading Spaces Required Based on By-Law Rates

Land Use Type	Unit or sqm	Loading space required	Loading space provided
Residential	142	1 Type “G”	1 Type “G”
Non-residential	917	1 Type “B”	1 Type “B”
Total (Shared)	**-**	**1 Type “B” and 1 Type “G”**	**1 Type “B” and 1 Type “G”**

The dimensions of the proposed loadings spaces meet the By-law requirements, with the dimensions of each type listed below.

Type “G”

- Minimum Length: 13.0 metres
- Minimum Width: 4.0 metres
- Minimum Clearance: 6.1 metres

Type “B”

- Minimum Length: 11.0 metres

- Minimum Width: 3.5 metres
- Minimum Clearance: 4.0 metres

6.6.1 Loading Swept Path Analysis

The loading areas were tested using AutoTURN software (within AutoCAD) to check the loading space accessibility for the anticipated design vehicles entering the site, and for each of the building loading areas. A Medium Single-Unit Truck ('MSU') style delivery or moving vehicle and a front end load garbage / recycling truck (FEL) were tested. The design vehicles are shown in **Figure 13.**

Figure 14 and **Figure 15** shows inbound and outbound swept path analysis of each design vehicle. All loading spaces are accessible with the design vehicles.

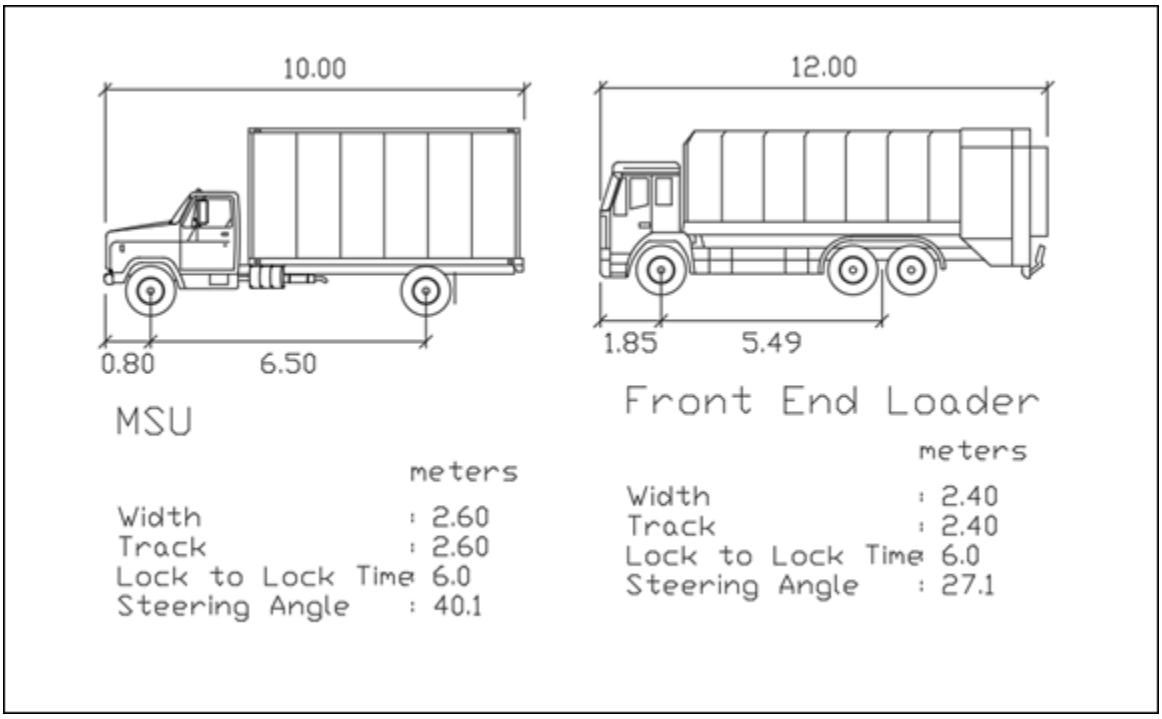


Figure 13: Design Vehicles

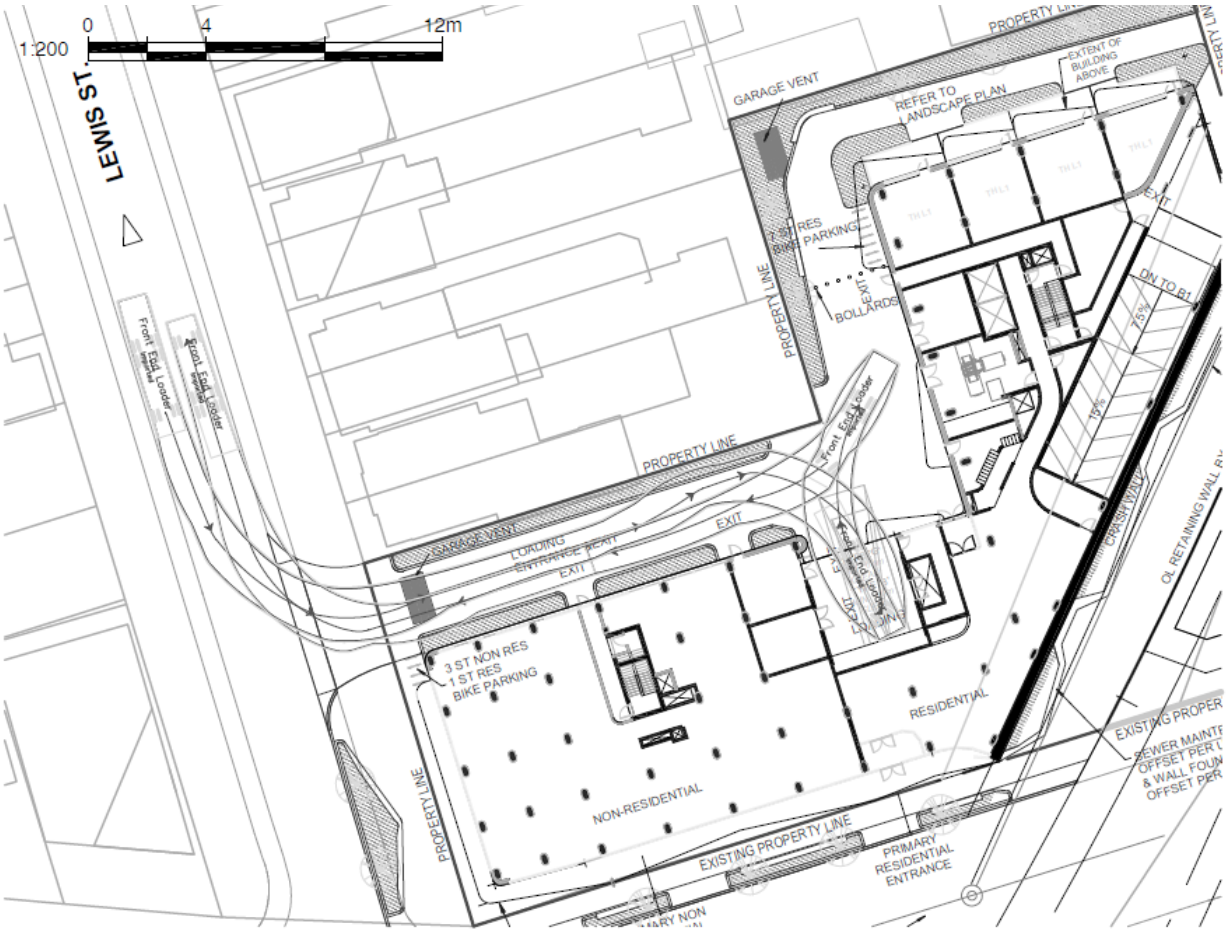


Figure 14: FEL Swept Path Analyses

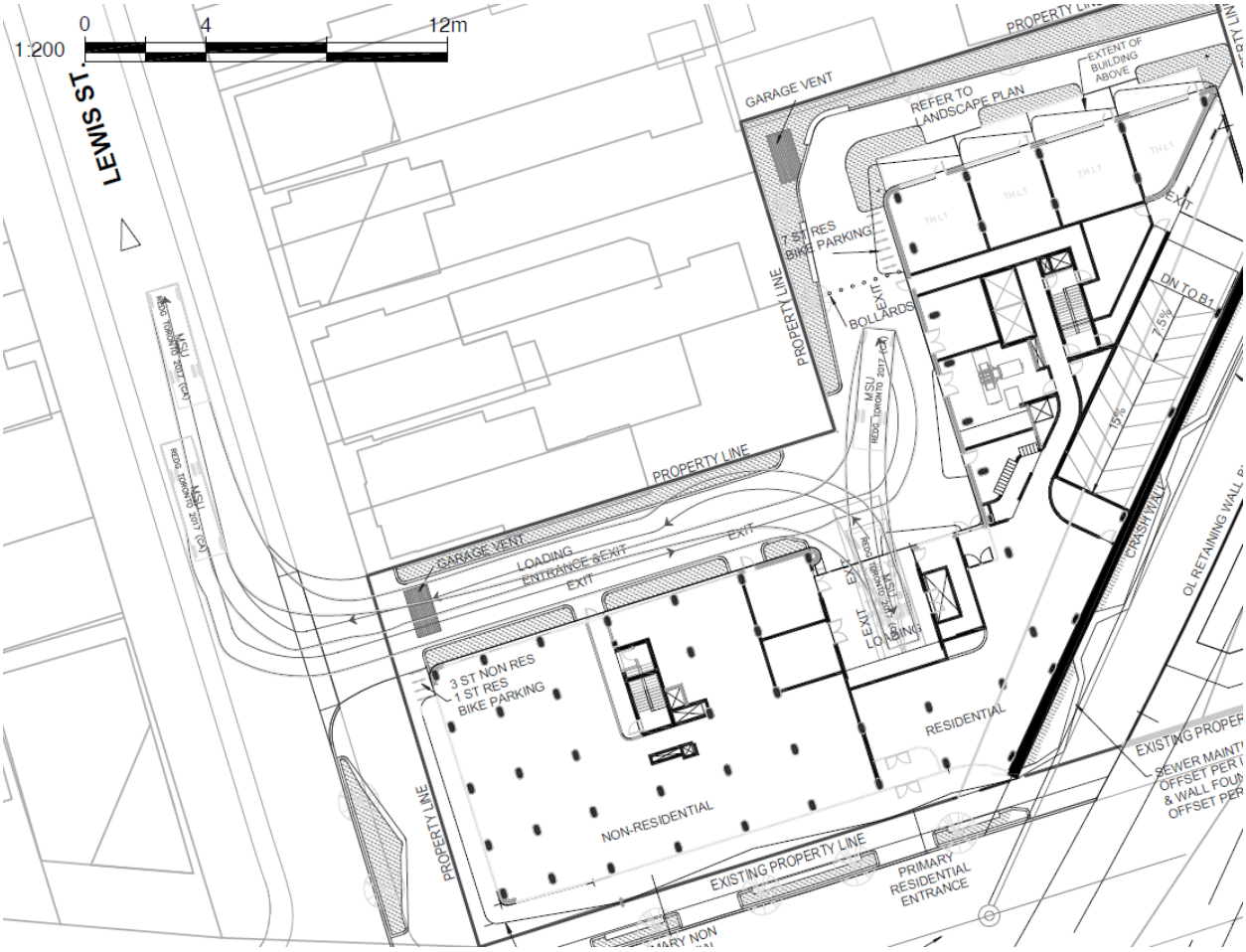


Figure 15: MSU Swept Path Analyses

7 Transportation Demand Management ('TDM')

Transportation Demand Management (TDM) measures are methods employed to reduce the traffic impacts of a development through the reduction of Single-Occupant Vehicle (SOV) trips as well as the encouragement of more sustainable forms of travel and more efficient use of the transportation network for all mods of travel. TDM measures can be 'hard measures', such as infrastructure like bicycle parking, or can be 'soft measures' such as policies that allow for working-from-home or flex hours. TDM measures must also be tied to the surrounding transportation network context of the development. For example, bicycle parking will be ineffective if there is no surrounding bicycle infrastructure like bicycle lanes, multi-use paths, or a lack of bicycle parking at the ultimate destination. For this reason, successful TDM implementation requires a united effort and coordination between the City and developers.

Hard measures are physical infrastructure improvements that encourage alternative modes of travel and mode shifts away from single-occupant vehicles. This can include the provision of bicycle parking or enhanced pedestrian and cyclist facilities on-site including shower and change facilities for employment uses. Soft measures are programs or policies, such as unbundling or condo units to parking spaces, work-from-home policies, transit subsidies, carpooling assistance etc. In many cases, hard and soft measures work together and provide mutual benefit. For instance, transit pass subsidies are soft measures, but when paired with hard measures like improved waiting areas, can have a greater impact on mode choice.

The Toronto Green Standard (Version 4) requires measures that will support a 25% or greater reduction in single occupancy vehicle (SOV) trips.

For the subject site, the general context of the area as a downtown city centre-core, mixed-use environment with excellent transit access and future direct transit access to the Ontario Line, will have an impact on the potential TDM measures. In fact, the inherent nature of the area and the presence of the Ontario Line and streetcar surface transit routes along both roadways adjacent to the development will make this location an excellent candidate to benefit from TDM initiatives.

The mixed use nature of surrounding areas allows for synergy and mixed-use interactions between the proposed mid-rise building, and non-residential uses at the ground floor, and the surrounding retail-commercial and services that are in the area. Additionally, due to the location near the East Harbour Transit Hub, there is an expectation that many of the residents will work within the general area and will not rely on transit to make their daily trips. Rather, these residents will walk or cycle. The mixed-use, and walkable nature of the area will in itself help to reduce vehicle trips by encouraging walking and linked trips.

Regardless of the ability for the development to leverage TDM initiatives, the strongest TDM measure will be the fact that mid-rise building will be able to provide limited vehicular parking. A significant amount of trips generated by the development will be pick-up/drop-off or taxi/rideshare trips. The occupancy of the buildings will be market-driven, meaning that a lot of residents who decide to purchase units in this building will want to be car-free and many will live and work in close proximity, thus relying on transit, walking, and cycling to get around.

Since the ancillary commercial will primarily serve the surrounding area and the residential condos above, the TDM plan will be geared towards adapting the residential component.

7.1 TDM Measures

7.1.1 Local and Regional Transit Accessibility

As already discussed, there is excellent transit coverage within the vicinity of the site even without the construction of Ontario Line. TTC surface transit is provided in the form of streetcars along Queen Street and Broadview Avenue (in mixed traffic). Additionally, the streetcar route provides direct access to the Toronto subway system along Line 1 (westerly to Queen Station). Bus transit stops are located directly at the intersection of Queen Street and Broadview Avenue, 400 metres from the site.

With Ontario Line, subway access will be directly accessible by residents within a 250 metre walking distance. Ontario Line riders will be able to transfer at Queen Station (Queen Street and Yonge Street).

The study area already has a high non-vehicle modal split of around 70% non-auto, and this is expected to increase in general due to the increase in transit availability. The site itself will further benefit and leverage this proximity and access.

7.1.2 Pedestrian and Cycling Connections

The site will be directly fronting Eastern Avenue, and Lewis Street for direct access to the cycling network. The surrounding area is well-served for pedestrians with well-connected sidewalk networks. Residents and costumers at 356 Eastern Avenue will not have issues walking to transit and/or retailers around the area.

Bicycles are also allowed on the GO Rail and Ontario Line system outside of peak periods. Residents will be able to bring their bicycles on the subway and use them to complete the last leg of their trips, if it is conducive to their needs.

7.1.3 Bicycle Parking

The building will be equipped with long-term bicycle parking that will be available to all residents. Long-term bicycle parking ensures that residents are encouraged to own bicycles in the first place by providing them with easily accessible, secure and sheltered bicycle parking. Short-term bicycle parking will be provided for visitors. The short-term bicycle parking will be placed in safe, well lit, accessible areas at ground level. This will encourage visitors to feel cycling is a viable option.

Toronto Bike Share is also available within the general area. There are two bikeshare stations within 400 metres walking distance. These will also be available for use by residents and visitors if they use the bikeshare services. Bikeshare spaces are considered usable if they are occupied or empty, as they can be used by residents or visitors when leaving the site (bicycle is available) or when returning (there is a free "dock").

One bicycle repair station is recommended to be installed on site. Bicycle repair stations further encourage residents and visitors to travel by bicycle by providing tools needed to do routine and basic maintenance on bicycles.

7.1.4 Car-Share Services

Car-share services are an effective way to reduce auto dependency and parking needs for both residential and non-residential developments, by providing vehicles that can be used by residents on an as-needed basis. The result is that the development will attract those who do not own vehicles and typically rely on alternative forms of transportation, thus reducing the number of parking spaces required on site and attracting residents that will generally produce fewer vehicle trips, but will still occasionally require a vehicle.

The proposed two car share spaces are more than sufficient to accommodate potential demands for the proposed size of development.

7.1.5 Unbundled Resident Parking

Bundling parking spaces with unit sales, whether intended or not intended, results in the building being marketed to drivers and vehicles owners. For those who do not own vehicles and do not wish to own a parking space, these hidden costs are forced on them and at the very least result in unwanted effort required to rent out and seek a renter for the parking space in an effort to recuperate lost money.

Therefore, unbundling further benefits the developer as well as the community because the building will automatically be marketed to and attract those who do not drive as a primary form of transportation. This theoretically reduces parking requirements for the building, reduces the amount of congestion on the surrounding road network, and allows for more efficient site design and use of the transportation network. Unbundled parking could lead to a potential 10% to the residential parking rates.[7]

Unbundled resident parking is a given for this proposed TOC site given that there will only be 25 parking spaces for 142 units. Summary of Transportation Demand Management

The following summarizes the measures that will support a 25% or greater reduction in single occupancy vehicle (SOV) trips as required by the Toronto Green Standard (Version 4):

- Proximity to Ontario Line and GO rail service;
- Proximity to other surface transit routes along Queen Street and Broadview Avenue;
- Location in a mixed-use corridor environment to promote walking and cycling trips;
- Unbundled Resident Parking; and
- Carshare services.

[7] https://www.vtpi.org/park_man.pdf

7.2 Toronto Green Standard

The TDM plan presented in **Section 7.1** supports the Tier 1 standard of the updated Toronto Green Standards (Version 4) for mid and high-rise residential buildings requiring that all development proposals have a 25% or greater reduction occupancy vehicle SOV trips.

Conservative estimates of the expected SOV trip reductions for the TDM measures are summarized in **Table 20**.

Table 20: Estimated Decrease in SOV

TDM Measure	Estimated % decrease in SOV	Details
Reduced Vehicle Parking Supply in combination with car share services, increased bike parking spaces, and bicycle repair station	≤ 20%	Overprovision of parking is known to encourage and reinforce the use of single occupant vehicles, even when transit is a viable option. Therefore, reduced parking supplies are expected to result in reduced parking demand and vehicle trips under some circumstances such as when there is a mixed-use environment, supporting nearby amenities, good transit services. The subject development meets this criterion. The proposed parking supply is 80% lower than the require parking supply based on the current in-force zoning By-law 89-2022. There, the vehicle trips are also likely to be reduced.
Pedestrian Connections	≤ 1%	The site is located directly adjacent to Eastern Avenue and Lewis Street and will have direct access to sidewalks.
Supporting Amenities	≤ 5%	The location of the development is approximately 300 metres from mixed-used developments with supporting amenities such as banks and grocery stores will increase interaction trips.
Total:	≤ 26%	Expected to exceed the minimum 25% reduction of SOV Trips

The above measures are expected to meet and likely to exceed the required 25% reduction to single occupant vehicle trips. Additionally, there are other measure that will also contribute to the marketing of this development as transit oriented and will encourage a market interest by those who do not rely on single-occupant vehicles even if those measures may not directly impact mode choice.

Toronto Green Standard Requirement	Proposed Development
AQ 1.1 Single-Occupant Vehicle Trips Reduce single occupancy auto vehicle trips generated by the proposed development by 25% through a variety of multimodal infrastructure strategies and Transportation Demand Management (TDM) measures	As discussed in **Section 7.1**, the TDM measures proposed are expected to meet and likely exceed the required 25% reduction to single-occupant vehicle trips.
AQ 1.2 Electric Vehicle Infrastructure Parking spaces must be equipped with an energized outlet, which is clearly marked and identified for electric vehicle charging, in accordance with Zoning By-law 569-2013, as amended: 2,3,4,5,6,7,8 1. all residential parking spaces provided for dwelling units located in an apartment building, mixed use building, or multiple dwelling unit building, excluding visitor parking spaces, must include an energized outlet capable of providing Level 2 charging or higher to the parking space; and, 2. in cases other than those set out in (A) above, 25 percent of the residential and non-residential parking spaces in a building must include an energized outlet capable of providing Level 2 charging or higher.	All resident parking spaces will be electrified.
AQ 2.1 Bicycle Parking Rates Provide bicycle parking spaces in accordance with Chapter 230 of Zoning By-law 569-2013.	The bicycle parking supply meets the requirements outlined in the City-wide Zoning by-law
AQ 2.2 Long-term Bicycle Parking Location Long-term bicycle parking must be provided in a secure controlled-access bicycle parking facility or purpose-built bicycle locker on the first or second story of the building or on levels below ground commencing with the first level below ground	Long-term bicycle parking spaces are provided at basement level 1.
AQ 2.3 Short-term Bicycle Parking Location Locate 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	As discussed in **Section 6.4**, all short-term bicycle parking spaces are located at-grade in publicly accessible locations.
AQ 2.4 Electric Bicycle Infrastructure Residential: At least 15% of the required long-term bicycle parking spaces, or one parking space, whichever is greater, shall include an Energized Outlet (120 V) adjacent to the bicycle rack or parking space.	Long-term parking spaces for residents will be electrified.
AQ 2.5 Shower and Change Facilities Provide shower and change facilities consistent with the rate identified in Chapter 230 of the City-wide Zoning By-law.	N/A
AQ 2.6 Publicly Accessible Bicycle Parking For all uses within 500m of transit station entrance, provide at least 10 additional publicly accessible, short-term bicycle parking spaces, at-grade on the site or within the public boulevard in addition to bicycle parking required under **AQ 2.1.**	Not applicable to development site since no existing transit station exists within 500 metre of the proposed development. The future East Harbour Transit Hub will be constructed after the proposed development and will provide sufficient publicly accessible bicycle parking on its site.
AQ 3.1 Connectivity Provide safe, direct, universally accessible pedestrian routes, including crosswalks and midblock crossings that connect the buildings on-site to the off-site pedestrian network and priority destinations.	Main entrances have pedestrian connections directly to the neighbourhood sidewalk network.
AQ 3.2 Sidewalk Space Provide a context-sensitive pedestrian clearway that is a minimum of 2.1m wide, to safely and comfortably accommodate pedestrian flow.	Pedestrian areas surrounding the building will be designed to meet this criterion.
AQ 3.3 Weather Protection Provide covered outdoor waiting areas for pedestrian comfort and protection from inclement weather.	Canopies are provided above the main entrances of the building.
AQ 3.4 Pedestrian Specific Lighting Provide pedestrian scale lighting that is evenly spaced, continuous and directed onto sidewalks, pathways, entrances, outdoor waiting areas and public spaces.	Pedestrian-scale lighting will be provided throughout the site.

8 Preliminary Findings and Next Steps

8.1 Traffic Forecasts

The study network currently operates within standard performance thresholds. The proposed development will add approximately 50 two-way peak hour vehicle trips (AM/PM) to the street network. The future East Harbour Transit Hub is estimated to add approximately 17,000 pedestrians onto the surround network. A vast majority of these pedestrians are walking directly to/from the station and approximately 1,500 pedestrians are estimated to transfer to surface transit.

8.2 Traffic Capacity and Operations

Under existing conditions, the study intersections along Queen Street operate satisfactory and is well under capacity. The addition of pedestrians to/from East Harbour Transit Hub in future background conditions, it is expected to worsen traffic operations at Queen Street and Broadview Avenue. However, the intersection is expected to operate overall satisfactory. All movements at Queen Street and Broadview Avenue are expected to be under capacity. The northbound approach is nearing capacity with v/c = 0.94. Under total future conditions, the additional site traffic is not expected to significantly worsen traffic operations along Queen Street. All study intersections are anticipated to operate under capacity.

8.2.1 Recommended Mitigation Measures

The closest pedestrian crossing of Eastern Avenue is at Broadview Avenue, which is about 110 meters west of Lewis Street. The anticipated TOC pedestrian volumes generated from the TOC development are very low; around 20 during AM and PM peak periods. This does not warrant a Intersection Pedestrian Signal on Eastern Avenue. The proposed East Harbour Station will have primary access through Broadview Avenue and secondary access through Eastern Avenue. To accommodate and distribute pedestrian movements, and to provide safe and convenient pedestrian crossing destined to East Harbour Transit Hub, we recommend a pedestrian crosswalk at the east leg of Eastern Avenue and Lewis Street intersection. We also recommend a pedestrian crossing warning signs on Eastern Avenue, east and west of Lewis Street. This mitigation is recommended based on the traffic volume generated by the TOC development site and it should be further evaluated by the East Harbour Transit Hub Design team to ensure it is sufficient to accommodate the station pedestrian traffic.

8.3 Parking

The maximum parking space allowed for the proposed development is 178 spaces (122 for residents, 19 for visitors, and 37 for non-residential) based on By-law 89-2022. The proposed parking supply is well under By-law 89-2022 requirements. The minimum parking space required for the proposed development is 9 visitor parking based on By-law 89-2022. The proposed number of visitor parking is 8. The minimum parking requirements are not satisfied based on By-law 89-2022. City of Toronto staff has identified no minimum parking requirements at this site for the development. Therefore, the development on 356 Eastern Avenue does not have to adhere parking requirements set out by By-law 89-202.

As per the Toronto Green Standard Version 4 requirements, all residential parking spaces will include an energized outlet capable of providing a minimum of Level 2 charging.

The bicycle parking requirements based on By-law 569-2013 are 162. The bike parking provided is in surplus to the requirement and will serve all anticipated needs.

8.4 Loading

Application of Zoning By-laws 569-2013 and 438-86 requires one Type ‘G’, and one Type ‘C’ loading spaces on all sites. Loading sites provided satisfy all the requirements. The proposed development also accommodates the required maneuvering of all truck types, coming in and going out.

Appendix A: Signal Timing

LOCATION: Queen St E & Broadview Ave
MODE/COMMENT: SA1 with TSP**, 2-Wire Polara APS & LPI
TCS: 543
PREPARED BY / DATE: HDR / September 30, 2021
CHECKED BY / DATE: Syed Qasim / Ihtesham Ahmad / October 14, 2021
IMPLEMENTATION DATE: November 3, 2021

ATO (District) / WARD: 1 (Toronto and East York) / 14
COMPUTER SYSTEM: TransSuite
CONTROLLER/CABINET TYPE: Peek ATC-1000 / TS2T1
CONFLICT FLASH: Red & Red
DESIGN WALK SPEED: 1.0 m/s (FDW based on full crossing @ 1.2 m/s)
CHANNEL/DROP: 5025/1
CONTROLLER FIRMWARE: 3.018.1.2976

N

NEMA Phase		OFF	AM	PM	NIGHT	WKND	DVP	Gardiner Closure	Phase Mode (Fixed/Demanded or Callable)
		All Other Times	06:30-09:30 M-F	15:00-19:00 M-F	23:00-06:30 Daily	09:00-21:00 Sat & Sun			
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 15	Pattern 16	
	Split Table	Split 1	Split 2	Split 3	Split 4	Split 5	Split 15	Split 16	
1 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
2 Queen St E	WLK 7								Fixed
	FDW 14								POZ activated by
	MIN 21								Request Loop
	MAX1 48								(max extension of 16 secs in
	AMB 3.0								Green/Solid Don't Walk)
	ALR 2.7								
	SPLIT	53	59	56	53	53	54	63	
3 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
4 Broadview Ave	WLK DLY 5								Fixed
	WLK 7								POZ activated by
	FDW 13								Request Loop
	MIN 15								(max extension of 16 secs in
	MAX1 19								Green/Solid Don't Walk)
	AMB 3.3								Split shown includes 5 secs of
	ALR 2.6								NS LPI
	SPLIT	31	31	34	31	31	40	31	
5 EBTB	WLK								EBTB/EBG/EWDW
	FDW								Eastbound Transit Bar (EBTB)
	MIN 7								callable by track switch
	MAX1 7								interrogator
	AMB 3								
	ALR 6								
	SPLIT	16	16	16	16	16	16	16	
6 Queen St E	WLK 7								Fixed
	FDW 14								POZ activated by
	MIN 21								Request Loop
	MAX1 32								(max extension of 16 secs in
	AMB 3.0								Green/Solid Don't Walk)
	ALR 2.7								
	SPLIT	37	43	40	37	37	38	47	
7 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
8 Broadview Ave	WLK DLY 5								Fixed
	WLK 7								POZ activated by
	FDW 13								Request Loop
	MIN 15								(max extension of 16 secs in
	MAX1 19								Green/Solid Don't Walk)
	AMB 3.3								Split shown includes 5 secs of
	ALR 2.6								NS LPI
	SPLIT	31	31	34	31	31	40	31	
	CL	84	90	90	84	84	94	94	
	OF	63	30	22	3	21	17	1	

NOTES No EBLT movement allowed 7 am-9 am & 3:30 pm-6:30 pm M-F, TTC vehicles excepted
No WBLT movement allowed 7 am-10 am & 4 pm-6 pm M-F, TTC vehicles excepted

Remarks

Pedestrian Minimums:
EWWK = 7 sec, EWFD = 14 sec
NSWK = 7 sec, NSFD = 13 sec
**See back for TSP instructions.

TSP activated on March 25, 2019 with TransSuite conversion.

Phase Sequence:

RING STRUCTURE

	2	4	
5	6	8	

Transit Passage Time = 2 sec

Public Holidays 2019 Dates	2021 & 2022 Holidays
1: New Years Day	*January 03, 2022
2: Family Day	February 15, 2021
3: Good Friday	April 2, 2021
4: Easter Mondy	April 5, 2021
5: Victoria Day	May 24, 2021
6: Canada Day	July 1, 2021
7: Civic/Provincial Day	August 2, 2021
8: Labour Day	September 6, 2021
9: Thanksgiving Day	October 11, 2021
10: Remembrance Day	November 11, 2021
11: Christmas Day	*December-27-21
12: Boxing Day	*December-28-21

*When a designated holiday falls on a Saturday or Sunday (with the exception of Remembrance Day), the City of Toronto designates an alternative day as the day of observance of the holiday. If Remembrance Day falls on Saturday or Sunday, the City of Toronto is not required to designate an alternative weekday as a day of observance of this holiday. No need to do the controller programming.

**EB Transit Bar phase is temporarily included within cycle length with unused time allocated to EWG, due to ATC-1000 firmware issues.
When firmware issues are resolved, the Transit Bar phase will be insertable by TSP outside of the cycle length.

Gardiner rehabilitation signal timings section 2019 - 2020

APS on for full East/West & North/South walk periods and when no transit bar is displayed.

Extended push activation = 3 sec.

NS Leading Pedestrian Interval - NSWK comes up 5 seconds before NS vehicle green.

The following grades were used to calculate the AMB intervals:
North Leg = -1.2%
South Leg = 0.6%
East Leg = 0.1%
West Leg = -0.6%

LOC: Queen St E & Broadview Ave

MODE: SA1 with TSP**, 2-Wire Polara APS & LPI

TCS: 543

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.	--	16	--	16	--	16	--	16	84	10	20 s [25 %]
	Rdc.	--	10	--	--	--	10	--	--			
AM												Pattern 2
Split 2	Ext.	--	17	--	17	--	17	--	17	90	16	23 s [26 %]
	Rdc.	--	12	--	--	--	12	--	--			
PM												Pattern 3
Split 3	Ext.	--	17	--	17	--	17	--	17	90	16	23 s [26 %]
	Rdc.	--	9	--	3	--	9	--	3			
NGHT												Pattern 4
Split 4	Ext.	--	16	--	16	--	16	--	16	84	10	20 s [25 %]
	Rdc.	--	10	--	--	--	10	--	--			
WKND												Pattern 5
Split 5	Ext.	--	16	--	16	--	16	--	16	84	10	20 s [25 %]
	Rdc.	--	10	--	--	--	10	--	--			
DVP												Pattern 6
Split 15	Ext.	--	18	--	17	--	18	--	17	94	20	24 s [25 %]
	Rdc.	--	7	--	5	--	7	--	5			
GARDINER												Pattern 16
Split 16	Ext.	--	18	--	17	--	18	--	17	94	20	24 s [26 %]
	Rdc.	--	12	--	--	--	12	--	--			

OC Rdc set to be proportional to splits with FXT operation where possible.

Input Script 2: "TCS543Det5Delay"

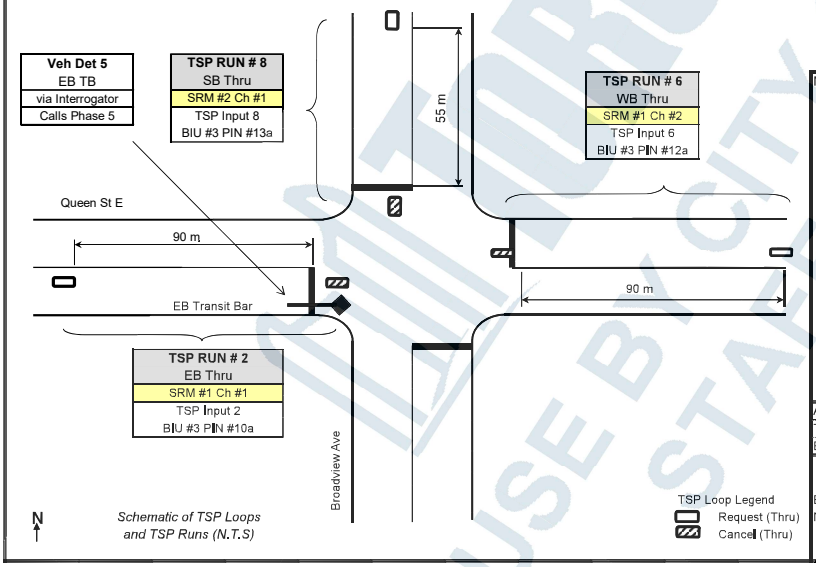
Puts a delays on Det 5 by time of day using Elapsed time

2.8.6 TSP Split Tables: 1, 2, 3, 4, 5, 15 & 16

	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
GRN EXT (SDW Extension)	--	16	--	16	--	16	–	16
GRN RDC (Reduction)	--	--	--	--	--	–	–	–
WLK EXT (Walk Extension)	--	--	--	--	--	–	–	–

T.S.P. PARAMETERS

	TSP RUN # 2 EB Thru	TSP RUN # 6 WB Thru	TSP RUN # 8 SB Thru
2.8.2 Transit Run Parameters			
ATC Green Extend Mode (Equivalent TTC Algorithm)	Mode 0 B-2	Mode 0 B-2	Mode 0 B-2
2.8.3 Transit Action Plan 1 (Used for Patterns 1, 5, 15 & 16)			
Run Enable (X = Yes)	X	X	X
Run Config = **1** Recovery = 2 (O.C. with delay)			
2.8.3 Transit Action Plan 2 (Used for Pattern 2)			
Run Enable (X = Yes)	X	X	X
Run Config = **2** Recovery = 2 (O.C. with delay)			
2.8.3 Transit Action Plan 3 (Used for Pattern 3)			
Run Enable (X = Yes)	X	X	X
Run Config = **3** Recovery = 2 (O.C. with delay)			
2.8.3 Transit Action Plan 4 (Used for Pattern 4)			
Run Enable (X = Yes)	X	X	X
Run Config = **4** Recovery = 2 (O.C. with delay)			
2.8.4 Transit Run Configuration 1			
Delay / Extend / Fail	23 / 4 / 235	24 / 2 / 235	26 / 2 / 235
Max Req During Offset Corr	1	1	1
CALLS (and Extends)	**Ø 2/6**	**Ø 2/6**	**Ø 4/8**
Skips	–	–	–
Reduces (Truncates)	–	–	–
2.8.4 Transit Run Configuration 2			
Delay / Extend / Fail	23 / 4 / 235	24 / 2 / 235	32 / 2 / 235
Max Req During Offset Corr	1	1	1
CALLS (and Extends)	**Ø 2/6**	**Ø 2/6**	**Ø 4/8**
Skips	–	–	–
Reduces (Truncates)	–	–	–
2.8.4 Transit Run Configuration 3			
Delay / Extend / Fail	34 / 4 / 235	24 / 2 / 235	20 / 2 / 235
Max Req During Offset Corr	1	1	1
CALLS (and Extends)	**Ø 2/6**	**Ø 2/6**	**Ø 4/8**
Skips	–	–	–
Reduces (Truncates)	–	–	–
2.8.4 Transit Run Configuration 4			
Delay / Extend / Fail	23 / 4 / 235	24 / 2 / 235	19 / 2 / 235
Max Req During Offset Corr	1	1	1
CALLS (and Extends)	**Ø 2/6**	**Ø 2/6**	**Ø 4/8**
Skips	–	–	–
Reduces (Truncates)	–	–	–



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

Notes:

ATC Mode	0	2	3	4
TTC Algorithm	B-2	A	C	D
Extensions	SDW	Walk	W/SDW	W/SDW

TSP SUMMARY

Maximum Green Extensions:

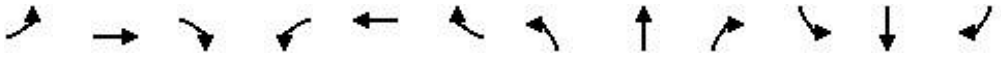
EWG:16 s Green/SDW

NSG:16 s Green/SDW

Appendix B: Detailed Synchro Results

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	126	72	4	244	4	120	145	26	38	139	46
Future Volume (vph)	44	126	72	4	244	4	120	145	26	38	139	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		35.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.90			1.00			0.94			0.95	
Frt		0.955			0.998			0.987			0.969	
Flt Protected		0.991			0.999			0.980			0.992	
Satd. Flow (prot)	0	3084	0	0	3044	0	0	3217	0	0	3031	0
Flt Permitted		0.860			0.952			0.744			0.836	
Satd. Flow (perm)	0	2573	0	0	2895	0	0	2315	0	0	2523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		76			3			10			33	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.4			98.7			275.6			166.9	
Travel Time (s)		14.9			7.1			19.8			12.0	
Confl. Peds. (#/hr)	131		146	146		131	97		48	48		97
Confl. Bikes (#/hr)			31			25			5			6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	25%	13%	50%	11%	3%	0%	0%	4%	31%
Bus Blockages (#/hr)	9	14	0	0	13	0	0	0	0	0	0	9
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	46	133	76	4	257	4	126	153	27	40	146	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	0	0	265	0	0	306	0	0	234	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.05	1.01	1.01	1.05	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	21.0	21.0		21.0	21.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	28.0	28.0		26.7	26.7		26.0	26.0		23.0	23.0	
Total Split (s)	59.0	59.0		59.0	59.0		26.0	26.0		26.0	26.0	
Total Split (%)	65.6%	65.6%		65.6%	65.6%		28.9%	28.9%		28.9%	28.9%	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Grade (%)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Mid-Block Traffic (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	53.3	53.3		53.3	53.3		20.1	20.1		20.1	20.1	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.7			5.7			5.9			5.9	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		0.0	0.0		5.0	5.0		2.0	2.0	
Flash Dont Walk (s)	14.0	14.0		0.0	0.0		14.0	14.0		13.0	13.0	
Pedestrian Calls (#/hr)	100	100		100	100		100	100		100	100	
Act Effct Green (s)		56.0			56.0			18.4			18.4	
Actuated g/C Ratio		0.62			0.62			0.20			0.20	
v/c Ratio		0.16			0.15			0.64			0.43	
Control Delay		5.6			7.7			32.6			29.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.6			7.7			32.6			29.0	
LOS		A			A			C			C	
Approach Delay		5.6			7.7			32.6			29.0	
Approach LOS		A			A			C			C	
90th %ile Green (s)	53.3	53.3		53.3	53.3		20.1	20.1		20.1	20.1	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
70th %ile Green (s)	54.4	54.4		54.4	54.4		19.0	19.0		19.0	19.0	
70th %ile Term Code	Coord	Coord		Coord	Coord		Ped	Ped		Hold	Hold	
50th %ile Green (s)	54.4	54.4		54.4	54.4		19.0	19.0		19.0	19.0	
50th %ile Term Code	Coord	Coord		Coord	Coord		Ped	Ped		Hold	Hold	
30th %ile Green (s)	54.4	54.4		54.4	54.4		19.0	19.0		19.0	19.0	
30th %ile Term Code	Coord	Coord		Coord	Coord		Ped	Ped		Hold	Hold	
10th %ile Green (s)	63.4	63.4		63.4	63.4		15.0	15.0		15.0	15.0	
10th %ile Term Code	Coord	Coord		Coord	Coord		Min	Min		Min	Min	
Stops (vph)		69			99			280			160	
Fuel Used(l)		7			6			21			12	
CO Emissions (g/hr)		137			113			394			224	
NOx Emissions (g/hr)		26			22			76			43	
VOC Emissions (g/hr)		32			26			91			52	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (m)		6.6			10.0			30.8			16.6	
Queue Length 95th (m)		12.3			16.1			m26.4			27.6	
Internal Link Dist (m)		183.4			74.7			251.6			142.9	
Turn Bay Length (m)												
Base Capacity (vph)		1629			1802			524			589	
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		0.16			0.15			0.58			0.40	

Intersection Summary	
Area Type:	Other

Cycle Length: 90

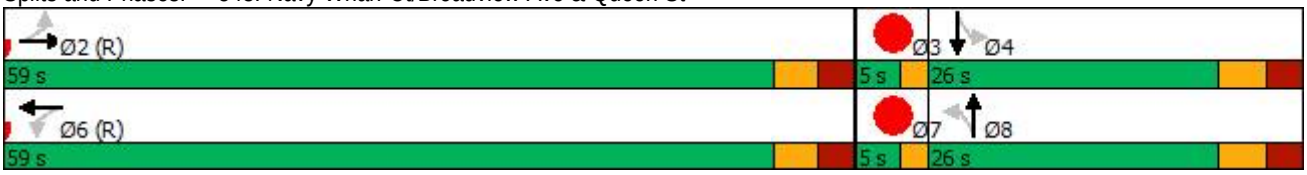
Lane Group	Ø3	Ø7
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Minimum Gap (s)	3.0	3.0
Time Before Reduce (s)	0.0	0.0
Time To Reduce (s)	0.0	0.0
Recall Mode	None	None
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	100	100
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	Max	Max
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	Max	Max
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	Max	Max
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	Max	Max
10th %ile Green (s)	0.0	0.0
10th %ile Term Code	Skip	Skip
Stops (vph)		
Fuel Used(l)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Actuated Cycle Length: 90	
Offset: 30 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 19.1	Intersection LOS: B
Intersection Capacity Utilization 82.0%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 543: Navy Wharf Ct/Broadview Ave & Queen St



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	190	0	0	243	9	13
Future Volume (Veh/h)	190	0	0	243	9	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	200	0	0	256	9	14
Pedestrians					116	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					9	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	99					
pX, platoon unblocked			0.99		0.99	0.99
vC, conflicting volume			316		572	316
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			302		561	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	98
cM capacity (veh/h)			1127		441	665

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	200	256	23
Volume Left	0	0	9
Volume Right	0	0	14
cSH	1700	1700	554
Volume to Capacity	0.12	0.15	0.04
Queue Length 95th (m)	0.0	0.0	1.0
Control Delay (s)	0.0	0.0	11.8
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.8
Approach LOS			B

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		23.3%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	190	13	6	230	13	11
Future Volume (Veh/h)	190	13	6	230	13	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	198	14	6	240	14	11
Pedestrians	9			2	101	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			0	8	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	201					
pX, platoon unblocked						
vC, conflicting volume			313		567	308
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			313		567	308
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %			99		97	98
cM capacity (veh/h)			998		442	675

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	212	246	25
Volume Left	0	6	14
Volume Right	14	0	11
cSH	1700	998	522
Volume to Capacity	0.12	0.01	0.05
Queue Length 95th (m)	0.0	0.1	1.2
Control Delay (s)	0.0	0.3	12.2
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	12.2
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

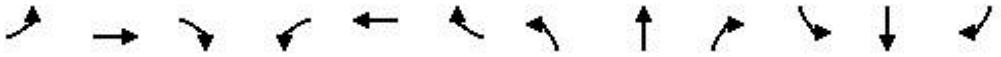
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	107	94	22	236	0	0
Future Volume (Veh/h)	107	94	22	236	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	111	98	23	246	0	0
Pedestrians	9			2	101	
Lane Width (m)	3.5			3.5	0.0	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	371					
pX, platoon unblocked						
vC, conflicting volume			310		562	263
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			310		562	263
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	100
cM capacity (veh/h)			1262		476	774

Direction, Lane #	EB 1	WB 1
Volume Total	209	269
Volume Left	0	23
Volume Right	98	0
cSH	1700	1262
Volume to Capacity	0.12	0.02
Queue Length 95th (m)	0.0	0.4
Control Delay (s)	0.0	0.8
Lane LOS		A
Approach Delay (s)	0.0	0.8
Approach LOS		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	307	60	5	204	70	93	328	73	42	118	52
Future Volume (vph)	34	307	60	5	204	70	93	328	73	42	118	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		35.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.94			0.92			0.90			0.90	
Frt		0.977			0.962			0.978			0.963	
Flt Protected		0.996			0.999			0.991			0.990	
Satd. Flow (prot)	0	3222	0	0	2827	0	0	3178	0	0	2948	0
Flt Permitted		0.902			0.947			0.827			0.646	
Satd. Flow (perm)	0	2869	0	0	2672	0	0	2543	0	0	1874	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		36			78			21			47	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.4			98.7			275.6			166.9	
Travel Time (s)		14.9			7.1			19.8			12.0	
Confl. Peds. (#/hr)	235		223	223		235	176		119	119		176
Confl. Bikes (#/hr)			56			52			17			8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	10%	6%	0%	4%	0%	0%	3%	20%
Bus Blockages (#/hr)	8	14	0	0	13	0	0	0	0	0	0	8
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	38	341	67	6	227	78	103	364	81	47	131	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	446	0	0	311	0	0	548	0	0	236	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.05	1.01	1.01	1.05	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	21.0	21.0		21.0	21.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0	
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0		29.0	29.0	
Total Split (%)	62.2%	62.2%		62.2%	62.2%		32.2%	32.2%		32.2%	32.2%	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Grade (%)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Mid-Block Traffic (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
Yellow Time (s)	3.0	3.0		3.3	3.3		3.3	3.3		4.0	4.0	
All-Red Time (s)	2.7	2.7		2.6	2.6		2.6	2.6		3.0	3.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.7			5.9			5.9			7.0	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		2.0	2.0		2.0	2.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	100	100		100	100		100	100		100	100	
Act Effct Green (s)		52.6			52.4			21.8			20.7	
Actuated g/C Ratio		0.58			0.58			0.24			0.23	
v/c Ratio		0.26			0.20			0.87			0.51	
Control Delay		9.4			7.4			33.6			27.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.4			7.4			33.6			27.8	
LOS		A			A			C			C	
Approach Delay		9.4			7.4			33.6			27.8	
Approach LOS		A			A			C			C	
90th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
70th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
70th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
50th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
50th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
30th %ile Green (s)	51.7	51.7		51.5	51.5		21.7	21.7		20.6	20.6	
30th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	60.5	60.5		60.3	60.3		17.9	17.9		16.8	16.8	
10th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Hold	Hold	
Stops (vph)		174			95			459			144	
Fuel Used(l)		15			6			36			11	
CO Emissions (g/hr)		273			118			668			207	
NOx Emissions (g/hr)		53			23			129			40	
VOC Emissions (g/hr)		63			27			154			48	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (m)		18.8			10.1			54.6			15.3	
Queue Length 95th (m)		27.7			16.8			m49.1			27.2	
Internal Link Dist (m)		183.4			74.7			251.6			142.9	
Turn Bay Length (m)												
Base Capacity (vph)		1692			1588			668			493	
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		0.26			0.20			0.82			0.48	

Intersection Summary	
Area Type:	Other

Cycle Length: 90

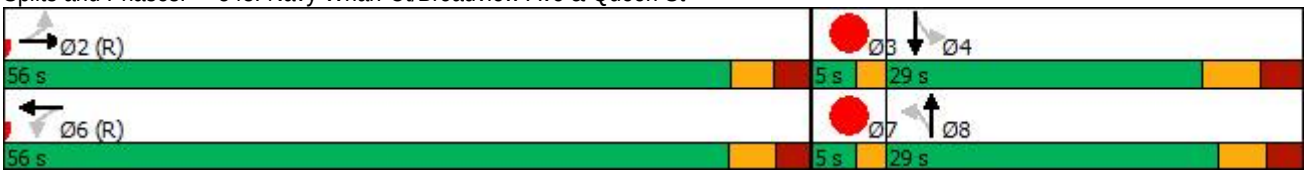
Lane Group	Ø3	Ø7
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Minimum Gap (s)	3.0	3.0
Time Before Reduce (s)	0.0	0.0
Time To Reduce (s)	0.0	0.0
Recall Mode	None	None
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	100	100
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	Max	Max
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	Max	Max
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	Max	Max
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	Max	Max
10th %ile Green (s)	0.0	0.0
10th %ile Term Code	Skip	Skip
Stops (vph)		
Fuel Used(l)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Actuated Cycle Length: 90	
Offset: 22 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 20.4	Intersection LOS: C
Intersection Capacity Utilization 81.5%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 543: Navy Wharf Ct/Broadview Ave & Queen St



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	422	0	0	279	16	32
Future Volume (Veh/h)	422	0	0	279	16	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	469	0	0	310	18	36
Pedestrians					200	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					16	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	99					
pX, platoon unblocked			0.92		0.92	0.92
vC, conflicting volume			669		979	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			594		932	594
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		92	91
cM capacity (veh/h)			755		229	391

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	469	310	54
Volume Left	0	0	18
Volume Right	0	0	36
cSH	1700	1700	317
Volume to Capacity	0.28	0.18	0.17
Queue Length 95th (m)	0.0	0.0	4.8
Control Delay (s)	0.0	0.0	18.7
Lane LOS			C
Approach Delay (s)	0.0	0.0	18.7
Approach LOS			C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	435	19	6	274	5	12
Future Volume (Veh/h)	435	19	6	274	5	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	453	20	6	285	5	12
Pedestrians	58			11	148	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	5			1	12	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	201					
pX, platoon unblocked			0.93		0.93	0.93
vC, conflicting volume			621		966	622
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			551		923	552
tC, single (s)			4.4		6.8	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.9	3.3
p0 queue free %			99		97	97
cM capacity (veh/h)			715		198	434

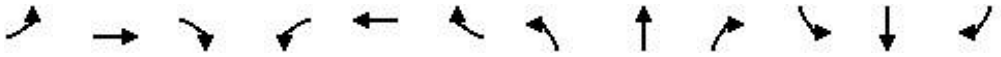
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	473	291	17
Volume Left	0	6	5
Volume Right	20	0	12
cSH	1700	715	321
Volume to Capacity	0.28	0.01	0.05
Queue Length 95th (m)	0.0	0.2	1.3
Control Delay (s)	0.0	0.3	16.8
Lane LOS		A	C
Approach Delay (s)	0.0	0.3	16.8
Approach LOS			C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	447	41	7	280	0	0
Future Volume (Veh/h)	447	41	7	280	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	466	43	7	292	0	0
Pedestrians	58			11	148	
Lane Width (m)	3.5			3.5	0.0	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	5			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	371					
pX, platoon unblocked			0.97		0.97	0.97
vC, conflicting volume			657		1000	646
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			629		983	618
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			932		253	469

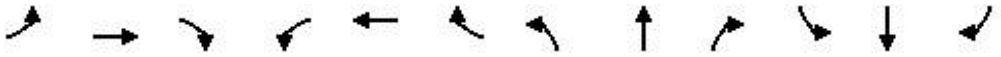
Direction, Lane #	EB 1	WB 1
Volume Total	509	299
Volume Left	0	7
Volume Right	43	0
cSH	1700	932
Volume to Capacity	0.30	0.01
Queue Length 95th (m)	0.0	0.2
Control Delay (s)	0.0	0.3
Lane LOS		A
Approach Delay (s)	0.0	0.3
Approach LOS		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	133	72	4	257	4	120	153	26	38	147	46
Future Volume (vph)	44	133	72	4	257	4	120	153	26	38	147	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		35.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.91			1.00			0.78			0.81	
Frt		0.956			0.998			0.987			0.970	
Flt Protected		0.991			0.999			0.980			0.992	
Satd. Flow (prot)	0	3093	0	0	3045	0	0	3006	0	0	2823	0
Flt Permitted		0.859			0.952			0.744			0.838	
Satd. Flow (perm)	0	2582	0	0	2896	0	0	1929	0	0	2163	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		76			3			10			31	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.4			98.7			275.6			166.9	
Travel Time (s)		14.9			7.1			19.8			12.0	
Confl. Peds. (#/hr)	131		146	146		131	4989		3348	3348		4989
Confl. Bikes (#/hr)			31			25			7			6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	25%	13%	50%	11%	3%	0%	0%	4%	31%
Bus Blockages (#/hr)	9	14	0	0	13	0	0	0	0	0	0	9
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	46	140	76	4	271	4	126	161	27	40	155	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	262	0	0	279	0	0	314	0	0	243	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.05	1.01	1.01	1.05	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	21.0	21.0		21.0	21.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	28.0	28.0		26.7	26.7		26.0	26.0		23.0	23.0	
Total Split (s)	59.0	59.0		59.0	59.0		26.0	26.0		26.0	26.0	
Total Split (%)	65.6%	65.6%		65.6%	65.6%		28.9%	28.9%		28.9%	28.9%	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Grade (%)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Mid-Block Traffic (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	53.3	53.3		53.3	53.3		20.1	20.1		20.1	20.1	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.7			5.7			5.9			5.9	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		0.0	0.0		5.0	5.0		2.0	2.0	
Flash Dont Walk (s)	14.0	14.0		0.0	0.0		14.0	14.0		13.0	13.0	
Pedestrian Calls (#/hr)	100	100		100	100		100	100		100	100	
Act Effct Green (s)		55.7			55.7			18.7			18.7	
Actuated g/C Ratio		0.62			0.62			0.21			0.21	
v/c Ratio		0.16			0.16			0.77			0.51	
Control Delay		5.8			8.0			34.6			31.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.8			8.0			34.6			31.2	
LOS		A			A			C			C	
Approach Delay		5.8			8.0			34.6			31.2	
Approach LOS		A			A			C			C	
90th %ile Green (s)	53.3	53.3		53.3	53.3		20.1	20.1		20.1	20.1	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
70th %ile Green (s)	53.3	53.3		53.3	53.3		20.1	20.1		20.1	20.1	
70th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
50th %ile Green (s)	53.9	53.9		53.9	53.9		19.5	19.5		19.5	19.5	
50th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	54.4	54.4		54.4	54.4		19.0	19.0		19.0	19.0	
30th %ile Term Code	Coord	Coord		Coord	Coord		Ped	Ped		Hold	Hold	
10th %ile Green (s)	63.4	63.4		63.4	63.4		15.0	15.0		15.0	15.0	
10th %ile Term Code	Coord	Coord		Coord	Coord		Min	Min		Min	Min	
Stops (vph)		72			106			286			172	
Fuel Used(l)		8			6			22			13	
CO Emissions (g/hr)		142			121			412			243	
NOx Emissions (g/hr)		27			23			80			47	
VOC Emissions (g/hr)		33			28			95			56	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (m)		7.0			10.7			31.7			17.7	
Queue Length 95th (m)		12.6			16.8			m25.5			29.7	
Internal Link Dist (m)		183.4			74.7			251.6			142.9	
Turn Bay Length (m)												
Base Capacity (vph)		1625			1792			438			507	
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		0.16			0.16			0.72			0.48	

Intersection Summary	
Area Type:	Other

Cycle Length: 90

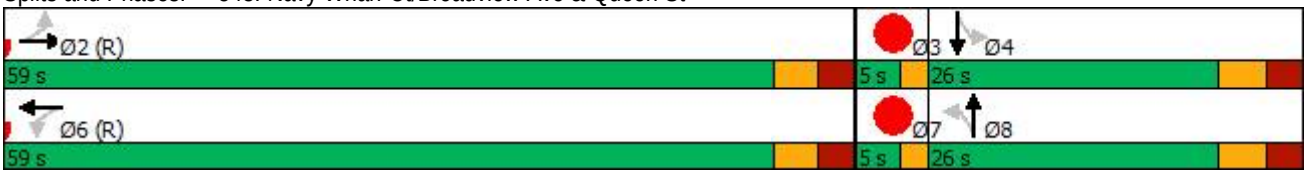
Lane Group	Ø3	Ø7
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Minimum Gap (s)	3.0	3.0
Time Before Reduce (s)	0.0	0.0
Time To Reduce (s)	0.0	0.0
Recall Mode	None	None
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	100	100
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	Max	Max
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	Max	Max
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	Max	Max
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	Max	Max
10th %ile Green (s)	0.0	0.0
10th %ile Term Code	Skip	Skip
Stops (vph)		
Fuel Used(l)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Actuated Cycle Length: 90	
Offset: 30 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 20.2	Intersection LOS: C
Intersection Capacity Utilization 82.7%	ICU Level of Service E
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 543: Navy Wharf Ct/Broadview Ave & Queen St



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	200	0	0	256	9	13
Future Volume (Veh/h)	200	0	0	256	9	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	211	0	0	269	9	14
Pedestrians					352	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					29	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	99					
pX, platoon unblocked			0.98		0.98	0.98
vC, conflicting volume			563		832	563
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			548		821	548
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	96
cM capacity (veh/h)			719		244	380

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	211	269	23
Volume Left	0	0	9
Volume Right	0	0	14
cSH	1700	1700	312
Volume to Capacity	0.12	0.16	0.07
Queue Length 95th (m)	0.0	0.0	1.9
Control Delay (s)	0.0	0.0	17.5
Lane LOS			C
Approach Delay (s)	0.0	0.0	17.5
Approach LOS			C

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		23.5%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	200	13	6	242	13	11
Future Volume (Veh/h)	200	13	6	242	13	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	208	14	6	252	14	11
Pedestrians	9			2	337	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			0	27	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	201					
pX, platoon unblocked						
vC, conflicting volume			559		825	554
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			559		825	554
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %			99		94	97
cM capacity (veh/h)			633		247	389

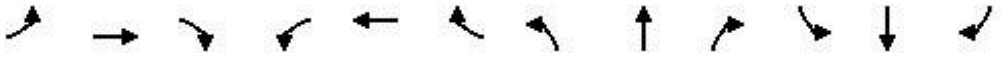
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	222	258	25
Volume Left	0	6	14
Volume Right	14	0	11
cSH	1700	633	294
Volume to Capacity	0.13	0.01	0.09
Queue Length 95th (m)	0.0	0.2	2.2
Control Delay (s)	0.0	0.4	18.4
Lane LOS		A	C
Approach Delay (s)	0.0	0.4	18.4
Approach LOS			C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	113	94	22	249	0	0
Future Volume (Veh/h)	113	94	22	249	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	118	98	23	259	0	0
Pedestrians	9			2	337	
Lane Width (m)	3.5			3.5	0.0	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	371					
pX, platoon unblocked						
vC, conflicting volume			553		818	506
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			553		818	506
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	100
cM capacity (veh/h)			1027		335	565

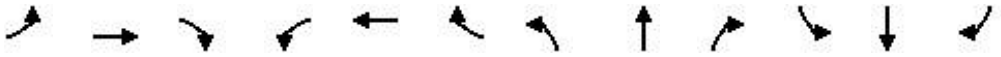
Direction, Lane #	EB 1	WB 1
Volume Total	216	282
Volume Left	0	23
Volume Right	98	0
cSH	1700	1027
Volume to Capacity	0.13	0.02
Queue Length 95th (m)	0.0	0.5
Control Delay (s)	0.0	0.9
Lane LOS		A
Approach Delay (s)	0.0	0.9
Approach LOS		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	311	60	5	207	70	93	332	73	42	120	52
Future Volume (vph)	34	311	60	5	207	70	93	332	73	42	120	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		35.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.94			0.92			0.80			0.81	
Frt		0.978			0.963			0.978			0.963	
Flt Protected		0.996			0.999			0.991			0.990	
Satd. Flow (prot)	0	3227	0	0	2832	0	0	2924	0	0	2772	0
Flt Permitted		0.902			0.947			0.827			0.660	
Satd. Flow (perm)	0	2875	0	0	2677	0	0	2263	0	0	1731	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		36			78			21			46	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.4			98.7			275.6			166.9	
Travel Time (s)		14.9			7.1			19.8			12.0	
Confl. Peds. (#/hr)	235		223	223		235	5068		3419	3419		5068
Confl. Bikes (#/hr)			56			52			17			8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	10%	6%	0%	4%	0%	0%	3%	20%
Bus Blockages (#/hr)	8	14	0	0	13	0	0	0	0	0	0	8
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	38	346	67	6	230	78	103	369	81	47	133	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	451	0	0	314	0	0	553	0	0	238	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.05	1.01	1.01	1.05	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	21.0	21.0		21.0	21.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0	
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0		29.0	29.0	
Total Split (%)	62.2%	62.2%		62.2%	62.2%		32.2%	32.2%		32.2%	32.2%	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Grade (%)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Mid-Block Traffic (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
Yellow Time (s)	3.0	3.0		3.3	3.3		3.3	3.3		4.0	4.0	
All-Red Time (s)	2.7	2.7		2.6	2.6		2.6	2.6		3.0	3.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.7			5.9			5.9			7.0	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		2.0	2.0		2.0	2.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		100	100		100	100		100	100	
Act Effct Green (s)		51.6			51.4			22.8			21.7	
Actuated g/C Ratio		0.57			0.57			0.25			0.24	
v/c Ratio		0.27			0.20			0.94			0.53	
Control Delay		9.7			7.6			40.6			28.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.7			7.6			40.6			28.5	
LOS		A			A			D			C	
Approach Delay		9.7			7.6			40.6			28.5	
Approach LOS		A			A			D			C	
90th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
70th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
70th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
50th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
50th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
30th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
30th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
10th %ile Green (s)	56.8	56.8		56.6	56.6		21.6	21.6		20.5	20.5	
10th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Hold	Hold	
Stops (vph)		179			98			448			149	
Fuel Used(l)		15			6			39			11	
CO Emissions (g/hr)		280			121			719			212	
NOx Emissions (g/hr)		54			23			139			41	
VOC Emissions (g/hr)		64			28			166			49	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (m)		19.1			10.2			55.7			15.7	
Queue Length 95th (m)		28.1			17.0			m51.8			28.2	
Internal Link Dist (m)		183.4			74.7			251.6			142.9	
Turn Bay Length (m)												
Base Capacity (vph)		1663			1562			596			457	
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		0.27			0.20			0.93			0.52	

Intersection Summary	
Area Type:	Other

Cycle Length: 90

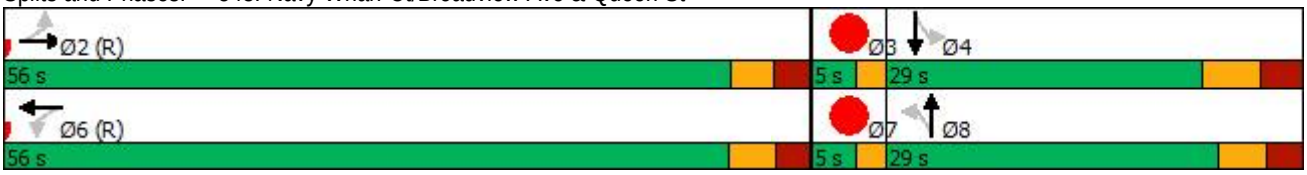
Lane Group	Ø3	Ø7
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Minimum Gap (s)	3.0	3.0
Time Before Reduce (s)	0.0	0.0
Time To Reduce (s)	0.0	0.0
Recall Mode	None	None
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	100	100
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	Max	Max
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	Max	Max
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	Max	Max
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	Max	Max
10th %ile Green (s)	0.0	0.0
10th %ile Term Code	Skip	Skip
Stops (vph)		
Fuel Used(l)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Actuated Cycle Length: 90	
Offset: 22 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 83.3%	ICU Level of Service E
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 543: Navy Wharf Ct/Broadview Ave & Queen St



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	427	0	0	282	16	32
Future Volume (Veh/h)	427	0	0	282	16	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	474	0	0	313	18	36
Pedestrians					436	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					35	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	99					
pX, platoon unblocked			0.91		0.91	0.91
vC, conflicting volume			910		1223	910
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			855		1197	855
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		85	83
cM capacity (veh/h)			464		123	214

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	474	313	54
Volume Left	0	0	18
Volume Right	0	0	36
cSH	1700	1700	171
Volume to Capacity	0.28	0.18	0.32
Queue Length 95th (m)	0.0	0.0	10.2
Control Delay (s)	0.0	0.0	35.4
Lane LOS			E
Approach Delay (s)	0.0	0.0	35.4
Approach LOS			E

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	440	19	6	277	5	12
Future Volume (Veh/h)	440	19	6	277	5	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	458	20	6	289	5	12
Pedestrians	58			11	384	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	5			1	31	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	201					
pX, platoon unblocked			0.92		0.92	0.92
vC, conflicting volume			862		1211	863
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			808		1186	809
tC, single (s)			4.4		6.8	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.9	3.3
p0 queue free %			99		95	95
cM capacity (veh/h)			440		105	241

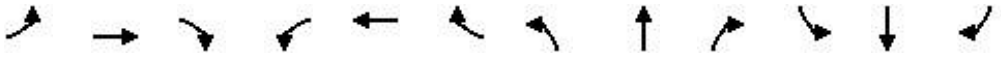
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	478	295	17
Volume Left	0	6	5
Volume Right	20	0	12
cSH	1700	440	174
Volume to Capacity	0.28	0.01	0.10
Queue Length 95th (m)	0.0	0.3	2.6
Control Delay (s)	0.0	0.5	27.9
Lane LOS		A	D
Approach Delay (s)	0.0	0.5	27.9
Approach LOS			D

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	452	41	7	283	0	0
Future Volume (Veh/h)	452	41	7	283	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	471	43	7	295	0	0
Pedestrians	58			11	384	
Lane Width (m)	3.5			3.5	0.0	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	5			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	371					
pX, platoon unblocked			0.96		0.96	0.96
vC, conflicting volume			898		1244	888
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			873		1233	863
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			750		177	337

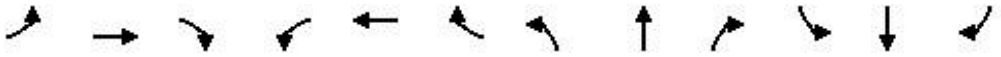
Direction, Lane #	EB 1	WB 1
Volume Total	514	302
Volume Left	0	7
Volume Right	43	0
cSH	1700	750
Volume to Capacity	0.30	0.01
Queue Length 95th (m)	0.0	0.2
Control Delay (s)	0.0	0.3
Lane LOS		A
Approach Delay (s)	0.0	0.3
Approach LOS		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	136	72	4	266	20	120	153	29	45	147	46
Future Volume (vph)	44	136	72	4	266	20	120	153	29	45	147	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		35.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.91			0.99			0.77			0.80	
Frt		0.957			0.990			0.985			0.971	
Flt Protected		0.991			0.999			0.981			0.991	
Satd. Flow (prot)	0	3092	0	0	2954	0	0	2971	0	0	2838	0
Flt Permitted		0.855			0.952			0.743			0.811	
Satd. Flow (perm)	0	2574	0	0	2811	0	0	1910	0	0	2079	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		76			15			12			29	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.4			98.7			275.6			166.9	
Travel Time (s)		14.9			7.1			19.8			12.0	
Confl. Peds. (#/hr)	131		151	151		131	4990		3356	3356		4990
Confl. Bikes (#/hr)			32			27			7			6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	25%	13%	50%	11%	3%	0%	0%	4%	31%
Bus Blockages (#/hr)	9	14	0	0	13	0	0	0	0	0	0	9
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	46	143	76	4	280	21	126	161	31	47	155	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	305	0	0	318	0	0	250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.05	1.01	1.01	1.05	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	21.0	21.0		21.0	21.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	28.0	28.0		26.7	26.7		26.0	26.0		23.0	23.0	
Total Split (s)	59.0	59.0		59.0	59.0		26.0	26.0		26.0	26.0	
Total Split (%)	65.6%	65.6%		65.6%	65.6%		28.9%	28.9%		28.9%	28.9%	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Grade (%)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Mid-Block Traffic (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	53.3	53.3		53.3	53.3		20.1	20.1		20.1	20.1	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.7			5.7			5.9			5.9	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		0.0	0.0		5.0	5.0		2.0	2.0	
Flash Dont Walk (s)	14.0	14.0		0.0	0.0		14.0	14.0		13.0	13.0	
Pedestrian Calls (#/hr)	100	100		100	100		100	100		100	100	
Act Effct Green (s)		55.6			55.6			18.8			18.8	
Actuated g/C Ratio		0.62			0.62			0.21			0.21	
v/c Ratio		0.16			0.18			0.78			0.55	
Control Delay		5.9			7.8			34.7			32.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.9			7.8			34.7			32.6	
LOS		A			A			C			C	
Approach Delay		5.9			7.8			34.7			32.6	
Approach LOS		A			A			C			C	
90th %ile Green (s)	53.3	53.3		53.3	53.3		20.1	20.1		20.1	20.1	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
70th %ile Green (s)	53.3	53.3		53.3	53.3		20.1	20.1		20.1	20.1	
70th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
50th %ile Green (s)	53.6	53.6		53.6	53.6		19.8	19.8		19.8	19.8	
50th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	54.4	54.4		54.4	54.4		19.0	19.0		19.0	19.0	
30th %ile Term Code	Coord	Coord		Coord	Coord		Ped	Ped		Hold	Hold	
10th %ile Green (s)	63.4	63.4		63.4	63.4		15.0	15.0		15.0	15.0	
10th %ile Term Code	Coord	Coord		Coord	Coord		Min	Min		Min	Min	
Stops (vph)		72			112			285			183	
Fuel Used(l)		8			7			22			14	
CO Emissions (g/hr)		144			130			416			258	
NOx Emissions (g/hr)		28			25			80			50	
VOC Emissions (g/hr)		33			30			96			59	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (m)		7.2			11.5			32.0			18.6	
Queue Length 95th (m)		12.8			17.8			m25.7			31.0	
Internal Link Dist (m)		183.4			74.7			251.6			142.9	
Turn Bay Length (m)												
Base Capacity (vph)		1619			1742			435			486	
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		0.16			0.18			0.73			0.51	

Intersection Summary	
Area Type:	Other

Cycle Length: 90

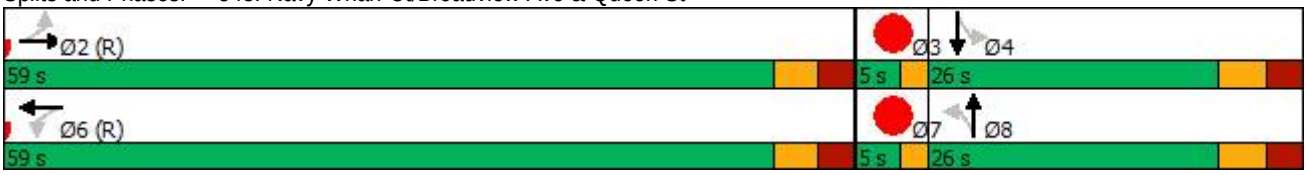
Lane Group	Ø3	Ø7
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Minimum Gap (s)	3.0	3.0
Time Before Reduce (s)	0.0	0.0
Time To Reduce (s)	0.0	0.0
Recall Mode	None	None
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	100	100
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	Max	Max
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	Max	Max
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	Max	Max
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	Max	Max
10th %ile Green (s)	0.0	0.0
10th %ile Term Code	Skip	Skip
Stops (vph)		
Fuel Used(l)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Actuated Cycle Length: 90	
Offset: 30 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 20.3	Intersection LOS: C
Intersection Capacity Utilization 82.7%	ICU Level of Service E
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 543: Navy Wharf Ct/Broadview Ave & Queen St



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	212	0	0	280	9	13
Future Volume (Veh/h)	212	0	0	280	9	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	223	0	0	295	9	14
Pedestrians					364	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					29	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	99					
pX, platoon unblocked			0.98		0.98	0.98
vC, conflicting volume			587		882	587
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			571		871	571
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	96
cM capacity (veh/h)			694		225	363

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	223	295	23
Volume Left	0	0	9
Volume Right	0	0	14
cSH	1700	1700	293
Volume to Capacity	0.13	0.17	0.08
Queue Length 95th (m)	0.0	0.0	2.0
Control Delay (s)	0.0	0.0	18.4
Lane LOS			C
Approach Delay (s)	0.0	0.0	18.4
Approach LOS			C

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		24.7%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	200	25	9	242	37	22
Future Volume (Veh/h)	200	25	9	242	37	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	208	26	9	252	39	23
Pedestrians	9			2	356	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			0	29	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	201					
pX, platoon unblocked						
vC, conflicting volume			590		856	579
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			590		856	579
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %			99		83	94
cM capacity (veh/h)			602		230	368

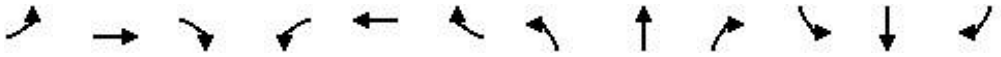
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	234	261	62
Volume Left	0	9	39
Volume Right	26	0	23
cSH	1700	602	267
Volume to Capacity	0.14	0.01	0.23
Queue Length 95th (m)	0.0	0.4	7.0
Control Delay (s)	0.0	0.6	22.5
Lane LOS		A	C
Approach Delay (s)	0.0	0.6	22.5
Approach LOS			C

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	122	96	22	252	0	0
Future Volume (Veh/h)	122	96	22	252	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	127	100	23	262	0	0
Pedestrians	9			2	356	
Lane Width (m)	3.5			3.5	0.0	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	371					
pX, platoon unblocked						
vC, conflicting volume			583		850	535
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			583		850	535
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	100
cM capacity (veh/h)			1001		321	544

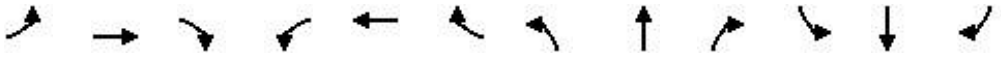
Direction, Lane #	EB 1	WB 1
Volume Total	227	285
Volume Left	0	23
Volume Right	100	0
cSH	1700	1001
Volume to Capacity	0.13	0.02
Queue Length 95th (m)	0.0	0.6
Control Delay (s)	0.0	0.9
Lane LOS		A
Approach Delay (s)	0.0	0.9
Approach LOS		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	317	60	5	213	81	93	332	79	55	120	52
Future Volume (vph)	34	317	60	5	213	81	93	332	79	55	120	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		35.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.94			0.91			0.80			0.81	
Frt		0.978			0.959			0.976			0.965	
Flt Protected		0.996			0.999			0.991			0.988	
Satd. Flow (prot)	0	3224	0	0	2801	0	0	2886	0	0	2806	0
Flt Permitted		0.900			0.948			0.824			0.610	
Satd. Flow (perm)	0	2868	0	0	2650	0	0	2232	0	0	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			90			23			41	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.4			98.7			275.6			166.9	
Travel Time (s)		14.9			7.1			19.8			12.0	
Confl. Peds. (#/hr)	235		231	231		235	5069		3430	3430		5069
Confl. Bikes (#/hr)			57			54			17			8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	10%	6%	0%	4%	0%	0%	3%	20%
Bus Blockages (#/hr)	8	14	0	0	13	0	0	0	0	0	0	8
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	38	352	67	6	237	90	103	369	88	61	133	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	457	0	0	333	0	0	560	0	0	252	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.05	1.01	1.01	1.05	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	21.0	21.0		21.0	21.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0	
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0		29.0	29.0	
Total Split (%)	62.2%	62.2%		62.2%	62.2%		32.2%	32.2%		32.2%	32.2%	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Grade (%)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Mid-Block Traffic (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
Yellow Time (s)	3.0	3.0		3.3	3.3		3.3	3.3		4.0	4.0	
All-Red Time (s)	2.7	2.7		2.6	2.6		2.6	2.6		3.0	3.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.7			5.9			5.9			7.0	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		2.0	2.0		2.0	2.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	100	100		100	100		100	100		100	100	
Act Effct Green (s)		51.4			51.2			23.0			21.9	
Actuated g/C Ratio		0.57			0.57			0.26			0.24	
v/c Ratio		0.28			0.22			0.95			0.60	
Control Delay		9.8			7.5			41.8			31.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.8			7.5			41.8			31.8	
LOS		A			A			D			C	
Approach Delay		9.8			7.5			41.8			31.8	
Approach LOS		A			A			D			C	
90th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Max	
70th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
70th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
50th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
50th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
30th %ile Green (s)	50.3	50.3		50.1	50.1		23.1	23.1		22.0	22.0	
30th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Hold	Hold	
10th %ile Green (s)	55.6	55.6		55.4	55.4		22.8	22.8		21.7	21.7	
10th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Hold	Hold	
Stops (vph)		183			102			447			168	
Fuel Used(l)		15			7			39			13	
CO Emissions (g/hr)		285			127			733			240	
NOx Emissions (g/hr)		55			24			142			46	
VOC Emissions (g/hr)		66			29			169			55	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (m)		19.5			10.6			56.3			17.8	
Queue Length 95th (m)		28.5			17.6			m52.2			31.2	
Internal Link Dist (m)		183.4			74.7			251.6			142.9	
Turn Bay Length (m)												
Base Capacity (vph)		1651			1545			589			422	
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		0.28			0.22			0.95			0.60	

Intersection Summary	
Area Type:	Other

Cycle Length: 90

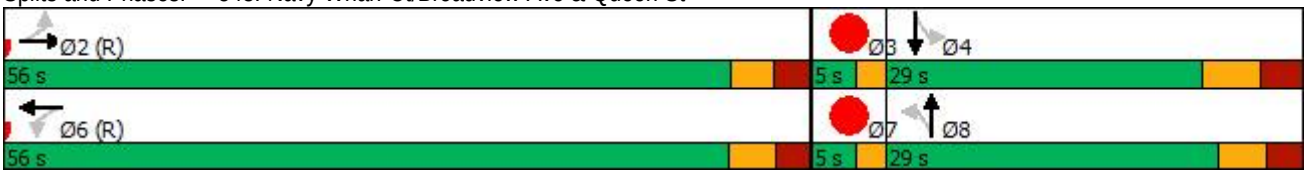
Lane Group	Ø3	Ø7
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Minimum Gap (s)	3.0	3.0
Time Before Reduce (s)	0.0	0.0
Time To Reduce (s)	0.0	0.0
Recall Mode	None	None
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	100	100
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	3.0	3.0
90th %ile Term Code	Max	Max
70th %ile Green (s)	3.0	3.0
70th %ile Term Code	Max	Max
50th %ile Green (s)	3.0	3.0
50th %ile Term Code	Max	Max
30th %ile Green (s)	3.0	3.0
30th %ile Term Code	Max	Max
10th %ile Green (s)	0.0	0.0
10th %ile Term Code	Skip	Skip
Stops (vph)		
Fuel Used(l)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Actuated Cycle Length: 90	
Offset: 22 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 24.0	Intersection LOS: C
Intersection Capacity Utilization 83.8%	ICU Level of Service E
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 543: Navy Wharf Ct/Broadview Ave & Queen St



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	451	0	0	299	16	32
Future Volume (Veh/h)	451	0	0	299	16	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	501	0	0	332	18	36
Pedestrians					454	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					37	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	99					
pX, platoon unblocked			0.91		0.91	0.91
vC, conflicting volume			955		1287	955
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			903		1267	903
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		83	82
cM capacity (veh/h)			434		109	195

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	501	332	54
Volume Left	0	0	18
Volume Right	0	0	36
cSH	1700	1700	154
Volume to Capacity	0.29	0.20	0.35
Queue Length 95th (m)	0.0	0.0	11.6
Control Delay (s)	0.0	0.0	40.4
Lane LOS			E
Approach Delay (s)	0.0	0.0	40.4
Approach LOS			E

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	440	43	11	277	22	20
Future Volume (Veh/h)	440	43	11	277	22	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	458	45	11	289	23	21
Pedestrians	58			11	404	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	5			1	33	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	201					
pX, platoon unblocked			0.92		0.92	0.92
vC, conflicting volume			907		1254	896
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			855		1232	842
tC, single (s)			4.4		6.8	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.9	3.3
p0 queue free %			97		76	91
cM capacity (veh/h)			411		94	225

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	503	300	44
Volume Left	0	11	23
Volume Right	45	0	21
cSH	1700	411	130
Volume to Capacity	0.30	0.03	0.34
Queue Length 95th (m)	0.0	0.7	10.9
Control Delay (s)	0.0	0.9	46.2
Lane LOS		A	E
Approach Delay (s)	0.0	0.9	46.2
Approach LOS			E

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	458	43	7	288	0	0
Future Volume (Veh/h)	458	43	7	288	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	477	45	7	300	0	0
Pedestrians	58			11	404	
Lane Width (m)	3.5			3.5	0.0	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	5			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	371					
pX, platoon unblocked			0.97		0.97	0.97
vC, conflicting volume			926		1276	914
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			907		1268	895
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			734		170	326

Direction, Lane #	EB 1	WB 1
Volume Total	522	307
Volume Left	0	7
Volume Right	45	0
cSH	1700	734
Volume to Capacity	0.31	0.01
Queue Length 95th (m)	0.0	0.2
Control Delay (s)	0.0	0.3
Lane LOS		A
Approach Delay (s)	0.0	0.3
Approach LOS		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		